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INTER-AMERICAN INSTITUTE FOR COOPERATION ON AGRICULTURE

III INTERAMERICAN MEETING OF DIRECTORS OF ANIMAL HEALTH
Buenos Aires, Argentina, August 5-8, 1981



OFFICE INTERNATIONAL
DES ÉPIZOOTIES

Vth CONFERENCE OF THE OIE REGIONAL COMMISSION FOR THE AMERICAS
Buenos Aires, Argentina, August 6, 1981

IICA
2.187
1981
Inglés

PRESENTACION DEL DR. JOSE EMILIO G. ARAUJO

IIIa. REUNION INTERAMERICANA DE DIRECTORES DE SALUD ANIMAL

BUENOS AIRES, 5 - 8 AGOSTO DE 1981

Señor Ministro, Señores Directores, Representantes de Organismos Internacionales, Observadores, Señoras y Señores.

Quiero agradecerle a Usted, Señor Ministro de Agricultura y Ganadería Dr. Jorge Aguado y, por su digno intermedio a las autoridades del Gobierno de este gran país, la posibilidad de encontrarnos en Buenos Aires para lo que estoy cierto, será un diálogo cordial, constructivo y a tono con las realidades del continente.

Nos han de inspirar las características sobresalientes de este gran pueblo Argentino, su dedicación al trabajo, su espíritu de empresa, su sentido de propósito nacional. En este clima de mutua comprensión han de realizarse esta IIIa. Reunion Interamericana de Directores de Salud Animal, que la consideramos parte muy importante y trascendental de esta nueva era del Instituto Interamericano de Cooperación para la Agricultura.

Especial significado tiene para nosotros en el I.I.C.A. esta Reunión, que nos ofrece la oportunidad de evaluar sumariamente lo que se ha realizado con respecto a una decisión fundamental que tomará la Junta Directiva en 1978 al establecer el Programa de Salud Animal hemos dado en el Instituto una gran prioridad a este Programa, puesto que siempre hemos considerado que

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las acciones de salud, en los animales destinados a la alimentación del hombre, constituyen parte integral de la producción.

Hay consenso en los Gobiernos en la necesidad de identificar los problemas que afectan el desarrollo del sector ganadero en nuestros países y su importante aporte a la producción de alimentos. Existe una verdadera extrategia internacional, cuyas metas representan un compromiso solidario de pueblos y Gobiernos para corregir los graves problemas de la subalimentación y mal nutrición, ambos el objetivo esencial de todo lo relativo a la promoción agropecuaria. La magnitud de esta empresa nos hace comprender lo imprescindible de un esfuerzo colectivo, concebir un sólo mundo y soñar con la confraternidad.

En este sentido la proyección hemisférica del Instituto a dado vigencia a una verdadera filosofía de cooperación técnica Interamericana para lo cual hemos asentado la capacidad instalada tanto cualitativa como cuantitativamente. El Programa de Salud y Producción Animal es parte de este desarrollo institucional apto para una cooperación técnica expedita y eficiente.

Cábeme informarles que en el período transcurrido desde vuestra IIa. Reunión en San José, Costa Rica, ocurrió un hecho de singular trascendencia, la ratificación de la nueva convención del I.I.C.A., que entró en vigor el 8 de diciembre de 1980. Una nueva convención, un nuevo mandato, un nuevo desafío para un mismo organismo.

Decíamos con motivo de la última Reunión de la Junta Directiva del Instituto Interamericano de Ciencias Agrícolas, que tuvo lugar en Washington, D.C., a fines del año pasado...."Es

oportuno analizar con mayor detalle el significado que tiene esta nueva convención para el Instituto. En primer lugar, el ámbito de competencia del IICA, concebido originalmente en torno a la investigación y enseñanza agropecuarias, se expande al desarrollo rural; bajo esta expresión de gran riqueza conceptual, quedan comprendidas la dimensión agrícola, entendida como la ciencia, la técnica y el arte aplicados a la producción de las plantas y animales; la dimensión agraria, en cuanto a las relaciones normativas, formales e informales, del hombre con la producción rural; la dimensión social, expresada en términos de bienestar rural, esto es, hacer que la calidad de vida de todos y cada uno de los habitantes del medio rural mejore en lo material, procurando erradicar los extremos de pobreza y miseria que aún persisten y que atentan contra la dignidad más elemental del hombre.

En segundo lugar el Instituto cuenta, por primera vez, con órganos directivos; la Junta Interamericana de Agricultura, el Comité Ejecutivo y la Dirección General. Una estructura formal acorde con la madurez del Instituto".

Precisamente la próxima semana se realizará en ésta acogedora Ciudad de Buenos Aires, y por expresa invitación del Gobierno Argentino, la 1a. Reunión Ordinaria de la Junta Interamericana de Agricultura.

En esta IIIa. REDISA, también debo informarles que, tal como lo anunciara el año pasado, hemos ampliado nuestras actividades de cooperación técnica en el campo de la Producción Animal, coordinando las acciones que ya realizaba el Instituto en este

campo, y estableciendo nuevos proyectos de acuerdo con las solicitudes y aspiración que han expresado los Gobiernos.

Pensamos orientar nuestros esfuerzos a lograr un incremento de la cantidad de proteínas de origen animal necesarias para el consumo de nuestras poblaciones, estimulando en ciertas regiones del Continente, con características ecológicas propias, la crianza y comercialización de especies menores y no convencionales. Esto, sin descuidar el capital ganadero que tanta influencia tiene en el desarrollo económico de los países. En 1979, América Latina produjo el 8% de la producción mundial de carne que totalizó 111 millones de toneladas. Dentro del grupo de países en vía de desarrollo, las Naciones Latinoamericanas produjeron 3/4 del total. La importancia para América Latina de la exportación de carne se ilustra por el hecho que el 6% del valor total de las exportaciones agrícolas están representadas por las exportaciones de carne, mostrando así el gran desarrollo de la ganadería en esta región del mundo.

Precisamente se da la feliz coincidencia que en estos días en que se realiza vuestra reunión en Buenos Aires, se celebra aquí la 95va. Exposición Nacional de Ganadería, Agricultura e Industria que organiza la Sociedad Rural Argentina, y que es una verdadera demostración del progreso y la alta tecnología que ha alcanzado el sector agropecuario de este país.

Los temas tratados en las reuniones hemisféricas y regionales en salud animal, los programas organizados y los resultados alcanzados, son expresión de la trascendencia de vuestro diálogo. Porque se ha hecho evidente que el control de la fiebre

aftosa, la peste porcina africana y la peste suina clásica, la babesiosis y la anaplasmosis, la brucelosis y muchas otras enfermedades prevalentes, es una necesidad urgente, si es que queremos llevar a un nivel productivo rentable el rebaño de los países de América Latina y el Caribe.

La magnitud de estos problemas y lo complejo de su dinámica, al igual que las consecuencias económicas que estas tienen para el desarrollo, requieren una inversión económica que va mucho más allá de la presente capacidad de los Gobiernos, pero este es un aspecto que han sabido superar los Gobiernos Americanos dentro del verdadero espíritu de fraternidad y colaboración, a través de créditos y aportes financieros de ayuda bilateral e internacional para la lucha contra las enfermedades de los animales. Digno ejemplo de esto es la reciente organización de un programa de erradicación de la peste porcina africana y desarrollo de la industria suina en la República de Haití, que cuenta con significativos aportes económicos y materiales de Estados Unidos de Norte América, Canadá y México. Este Programa, cuyos convenios acabamos de firmar se iniciará este año con un gran componente de apoyo técnico del Programa de Salud Animal del IICA. Es grato también comprobar el gran interés que mantienen el Banco Interamericano de Desarrollo y el Banco Internacional de Reconstrucción y Fomento, en considerar solicitudes de crédito para la promoción pecuaria, incluyendo la Salud Animal.

Esperamos en esta Reunión un amplio debate sobre el tema del Control de la Brucelosis, problema Hemisférico que no sólo afecta la producción ganadera sino que también constituye problema de Salud Pública. Contaremos con la versada opinión de distinguidos investigadores de las Américas que nos presentarán el progreso alcanzado en las actividades de Control, Investigación y Evaluación Epidemiológica de esta enfermedad.

Conoceremos, a través de la presentación que hará el Sr. Representante de la FAO, los importantes progresos que han ocurrido en el proceso de la erradicación de la Peste porcina Africana en las Américas, así como la factibilidad de su eventual desaparición de este continente donde infortunadamente fue introducida en años recientes.

Hemos querido especialmente incluir en esta oportunidad el tema de "Producción de Vacuna Antiaftosa por Ingeniería Genética". Este descubrimiento constituye sin lugar a dudas un hecho trascendental en la lucha contra las enfermedades de los animales y también de las del hombre. Las posibilidades futuras que ofrece esta tecnología son incommensurables y hay quien a dicho que la ingeniería genética en la década de los 80, producirá muchas más transformaciones en nuestras vidas que lo que significó la ingeniería electrónica en la década pasada.

El Instituto ha estimulado un proceso de capacitación de personal en la metodología epidemiológica y planificación en salud animal. El propósito es de apoyar a los países a contar con personal calificado, capaz de traducir las políticas nacionales de salud animal en objetivos concretos para el control

de las enfermedades prevalentes y el aumento de la producción pecuaria. La planificación produce un lenguaje común, canaliza recursos para la solución de problemas prioritarios, justifica la asignación de fondos nacionales, atrae capitales externos y establece las bases para la asistencia internacional y su coordinación. Siguiendo vuestras recomendaciones se han iniciado estudios para establecer un Centro Regional de Capacitación en estas disciplinas y las autoridades argentinas, por intermedio de la Universidad de La Plata han expresado interés por servir de sede a esta empresa.

Conforme lo expresé el año pasado estamos estableciendo en la Sede del Instituto una unidad a cargo de la cooperación en servicios de información en Salud Animal, que tendrá como función prioritaria el desarrollo de un Banco de Datos. Podremos en esta forma orientar y sistematizar mejor nuestra cooperación en problemas, que por su naturaleza y sus consecuencias figuran entre los esenciales. Tomará algún tiempo alcanzar la meta que nos hemos señalado en este campo de la información, pero ya estamos dando los primeros pasos en la coordinación internacional. Recientemente hemos firmado un Convenio de cooperación general con la Oficina Internacional de Epizootias, la OIE, Organismo Mundial responsable de la informática zoonosanitaria. Esperamos lograr una estrecha colaboración de trabajo con la OIE y precisamente en cumplimiento de una de las cláusulas del Convenio mencionado, se celebra en

esta oportunidad la Va. Conferencia de la Comisión Regional de la OIE para las Américas, conjuntamente con la REDISA III del IICA, siendo el tema principal de la Agenda: Servicios de Información en Salud Animal.

Todos los problemas que he mencionado, aún cuando se refieren a una enfermedad en particular, a la política básica o la infraestructura esencial, reflejan necesidades apremiantes en las Américas que claman por soluciones regionales que estén de acuerdo con nuestra realidad. Una de estas necesidades es el conocimiento de los procesos patológicos que obstaculizan el desarrollo ganadero por falta de medios de diagnóstico e investigación, de infraestructuras avanzadas de laboratorio, unidas a recursos humanos altamente capacitados. Es así, que el Instituto, haciendo un gran esfuerzo y cumpliendo con lo recomendado en la REDISA II, designó una Comisión de Especialistas, que ha realizado un estudio evaluativo y de calificación de los servicios de laboratorio de diagnóstico e investigación de salud animal en el hemisferio. El resultado de este estudio será presentado en esta Reunión y estoy seguro que pondrá en evidencia la necesidad de la coordinación de los Institutos y laboratorios veterinarios en el continente a través del establecimiento de una verdadera cadena de centros de referencia, que sirvan a los países para mejorar sus sistemas de prevención y vigilancia, proporcionen reagentes diagnósticos específicos, superen la producción de biológicos y contribuyan a la capacitación de personal de laboratorio y a la investigación. Existen proyectos para

iniciar el establecimiento de estos centros de referencia en Argentina y Brasil.

Oiremos así mismo en esta Reunión los avances que se han hecho en la región respecto a la coordinación en salud animal en las diversas áreas geográficas en que presta cooperación técnica el IICA. Apreciaremos los progresos logrados por las diversas instituciones de los Gobiernos que trabajan en este campo y la colaboración que prestan otros organismos internacionales y regionales principalmente la OPS/OMS, la FAO, la OIE, el OIRSA, el BID y el BIRF. Esta coordinación es una larga empresa, que constituye uno de los pilares del progreso y del bienestar social. Ha llegado el momento de identificar y reconocer en su real magnitud lo que nos asola y retarda. Por sobre el pluralismo político, lo que es vital debe tener prioridad. De lo contrario nuestros esfuerzos no lograrán interrumpir, ni siquiera reducir, todo lo que interfiere con el bienestar social. La promoción de la salud y la producción animal implica una responsabilidad de las sociedades en su integralidad, así como de cada uno de sus miembros.

René Dubos lo expresa muy bien al decir que "La elección que una persona hace concerniente a sus actividades y ambiente afectan no sólo su propio futuro, sino también el desarrollo de los jóvenes expuestos durante sus años de formación a las condiciones resultantes de estas elecciones. Cada decisión individual influencia así al grupo social como un todo. En este sentido el hombre se hace a sí mismo, individual y socialmente, a través de una serie continua de actos voluntarios que

son gobernados por sus juicios de valor y sus anticipaciones del futuro".*

* René Dubos. A God Within. Nueva York, Charles Scribner's Sons, 1972, pág. 79



INSTITUTO INTERAMERICANO DE COOPERACION PARA LA AGRICULTURA OEA

III REUNION INTERAMERICANA DE DIRECTORES DE SALUD ANIMAL
Buenos Aires, Argentina, Agosto 5-8 1981

REDISA III/C

Agosto 5, 1981.

Original: Castellano

PRESENTACION DEL SR. MINISTRO DE AGRICULTURA

Y GANADERIA DR. JORGE AGUADO

IIIa. REUNION INTERAMERICANA DE DIRECTORES DE SALUD ANIMAL

PRESENTACION DEL SR. MINISTRO DE AGRICULTURA

Y GANADERIA DR. JORGE AGUADO

IIIa. REUNION INTERAMERICANA DE DIRECTORES DE SALUD ANIMAL

BUENOS AIRES, 5 - 8 AGOSTO DE 1981

Señores:

Sean estas breves palabras de bienvenida a todos los destacados delegados extranjeros e invitados nacionales e internacionales a la III Reunión de Directores de Sanidad Animal y nuestra expresión de reconocimiento al Instituto Interamericano de Cooperación para la Agricultura por el esfuerzo realizado en la organización de este tan importante evento, que pone de relieve una vez más, el sentido americanista de nuestros países, nada menos que para trabajar al servicio de una causa tan noble, como es la protección de la Salud Animal, tan vinculada a la producción de los alimentos de nuestros pueblos.

Es un alto honor para la República Argentina servir de sede para esta Reunión donde los técnicos de la Sanidad Animal de nuestros países de América, se acercan para estudiar los problemas de la región, considerándolos más como una verdadera integración geográfica, que como una resultante de las divisiones políticas.

En ese sentido quisiera hacer a ustedes, los técnicos, una exhortación desde mi ámbito económico y político como Ministro de Agricultura y Ganadería de la República Argentina.

Es un hecho reconocido universalmente que no podrá el mundo avanzar en la producción de alimentos ni tecnificarse con eficiencia mientras los problemas sanitarios existan, no sólo como factores que deterioran las economías pecuarias, sino también como causales de barreras infranqueables para el logro del más amplio intercambio entre los países. Sin este intercambio fluido, las naciones consumidoras nunca tendrán alimentos con precios más accesibles a sus pueblos y los países vendedores mal podrán desarrollar y ampliar eficientemente su caudal productivo, en beneficio de todo el mercado agropecuario mundial.

El continente Americano es una importante región en buena parte consumidora, pero donde al mismo tiempo se dan las más privilegiadas áreas por sus condiciones ecológicas, para producir en gran escala y en forma económica, alimentos -principalmente de orden animal- destinados para un mundo necesitado de los mismos, cada vez en mayor cantidad.

Poco podremos lograr si los técnicos antes que los políticos, no actúan con un verdadero sentido humanista y desinteresado de cooperación e integración; donde los conocimientos técnicos, los avances científicos y las medidas de control puedan ser compartidas y participadas con un amplio y generoso sentido de colaboración, entre todos y con cada uno de los países, de nuestra América, con el sentimiento de hermandad que los caracteriza desde los orígenes de su historia.

Se hace necesario cada vez más este criterio y en ese sentido mi exhortación se dirige a todos ustedes para que esta Reunión sea un verdadero ejemplo de integración, concebida bajo el signo de la organización de los Estados Americanos, con la activa participación de las Instituciones Internacionales como el I.I.C.A., OPS/OMS, la FAO, a las que también invito a integrar y coordinar sus esfuerzos en los diversos programas, con un sentido de suma y no de división, con un criterio de participación y no de partición y dominador por la decisión de unidad en la acción para el logro de los objetivos que se determinen.

La Argentina en ese sentido está dispuesta a poner toda su capacidad técnica, sus recursos humanos y materiales para aportarlos en beneficio de la región con su mayor entusiasmo. Ejemplo de ello, son algunos proyectos de programas conjuntos que se están preparando con la cooperación del IICA, como son el del Laboratorio Regional de Referencia y Diagnóstico de Enfermedades Exóticas con sede en el INTA y el del Centro de Capacitación en Salud Animal por convenio entre SENASA y la Universidad Nacional de La Plata: así como el ya concretado y largamente anhelado logro de los nuevos laboratorios para el Centro Panamericano de Zoonosis de la Organización Panamericana de la Salud. Estos hechos los menciono con pequeños aportes, pero que sirven de ejemplo a inquietudes que deben multiplicarse y expandirse cada vez más.

Sólo me resta desearles a todos ustedes una feliz estadía en nuestro país, augurarles un feliz éxito en todos los temas de esta importante Reunión, lo que desde ya des-cuento y además expresarles a todos ustedes con satisfac-ción, que el Ministerio de Agricultura y Ganadería de la República Argentina está a vuestras órdenes, para facilitar todo lo que sea necesario para un mejor desarrollo de vuestro trabajo.

Señores Delegados muchas gracias y mucho éxito.

REDISA III/1
July 31, 1981
Original: Span. Engl.

PROVISIONAL AGENDA

- Item 1. Activities Report on the Animal Health and Production Program of IICA.
Projected Activities for 1982.
- Item 2. Panel discussion on the Control of Bovine Brucellosis:
 - 2.1 Present status of Bovine Brucellosis in the Americas.
 - 2.2 Bovine Brucellosis Control Program in the United States of America.
 - 2.3 Bovine Brucellosis Control Program in Uruguay.
 - 2.4 Using vaccination to control Bovine Brucellosis.
 - 2.5 Evaluation process for control and/or eradication programs of animal diseases: factors to be considered.
- Item 3. Status of African Swine Fever in the Americas.
- Item 4. Report on the Evaluation of the Status of Animal Health Diagnostic Laboratories in the Americas.
- Item 5. Reports from the Regional Animal health Meetings:
 - 5.1 Northern Area (RESANORTE).
 - 5.2 Southern Area (RESASUR).
 - 5.3 Andean Area (RESANDINA).
 - 5.4 Antillean Area (RESANTILLAS).
- Item 6. Country-level planning and coordination meetings.
- Item 7. An FMD Vaccine by genetic engineering.
- Item 8. Other business. Agenda, date and place for REDISA IV, 1982.

REDISA III/1
July 24, 1981
Original: Spanish

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| 1. | Provisional Agenda | REDISA III/1 |
| 2. | Working Program | REDISA III/2 |
| 3. | Activities Report on the Animal Health
and Production Program of IICA
Projected Activities of the Program
for 1982 | REDISA III/3
REDISA III/3.1 |
| 4. | Provisional list of participants | REDISA III/4 |
| 5. | The present Situation of Bovine Brucellosis
in the Americas | REDISA III/5 |
| 6. | The control Program of Bovine Brucellosis
in the United States of America | REDISA III/6 |
| 7. | The Control Program of Bovine Brucellosis
in Uruguay | REDISA III/8 |
| 8. | Vaccination in the Control of Bovine
Brucellosis | REDISA III/8 |
| 9. | Evaluation of Control Programs and/or
Eradication of Animal Diseases | REDISA III/9 |

10. The Situation of African Swine Fever
in the Americas REDISA III/10
11. Report of the Commission on the Evaluation
Study of the situation of Animal Health
Diagnostic Laboratories in the Americas REDISA III/11
12. Report of the Animal health Meeting
Northern Area (RESANORTE I) REDISA III/12
13. Report of the Animal health Meeting
Southern Area (RESASUR I) REDISA III/13
14. Report of the Animal Health Meeting
Andean Area (RESANDINA I) REDISA III/14
15. Report of the Animal Health Meeting
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16. Foot-and-Mouth Disease Vaccine
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17. Presentation of the Director General
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18. Final Report of IV Conference of the
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19. Final Report of the XLIX General Session
of the International OIE Committee REDISA III/19
OIE/CRA V/4
20. General Agreement between OIE and IICA REDISA III/20
OIE/CRA V/4

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| 21. | Animal health Information: Planning and Economy | REDIS A III/21
OIE/CRA V/5 |
| 22. | Animal Health: Information, Programming and Economy. Report summaries of several countries | REDIS A III/22
OIE/CRA V/6 |
| 23. | Final Report of the Second Interamerican Meeting of Directors of Animal Health | REDIS A III/23 |
| 24. | Recommendations of the Meeting: on Programming and Coordination | REDIS A III/24 |
| 25. | Final List of the Participants | REDIS A III/25 |
| 26. | Special Presentations | REDIS A III/26 |
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| 28. | Final Report, O.I.E. | REDIS A III/28
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| 29. | Country Reports | REDIS A III/29 |
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REDISA III/2
July 31, 1981
Original: Spanish

WORKING PROGRAM

Wednesday, August 5

- 8:30 am Registration and distribution of documents
- 9:00 am Election of President, Vice-President and Rapporteur
Approval of the Agenda
- 9:30 am Inaugural Session
- Address by Dr. José Emilio Araujo
Director General of IICA
 - Address by Dr. Jorge Aguado
Minister of Agriculture and Animal Husbandry,
of Argentina
- 10:00 am Coffee break
- 10:30 am Item 1 of Agenda
- "Activities Report on the Animal Health
and Production Program of IICA Doc. REDISA III/3
"Projected Activities for the Animal
Health and Production Program of
IICA, 1982" Doc. REDISA III/3.1
- Dr. Francis Mulhern
Dr. Pedro N. Acha
- 11:00 am Discussion of Item 1 of the Agenda
- 11:30 am Item 3 of the Agenda
- "The Situation of African Swine Fever
in the Americas" Doc. REDISA III/10
- Dr. Y. Ozawa

Wednesday, August 5 (cont.)

- 12:00 am Discussion of Item 3 of the Agenda
- 12:30 pm Lunch
- 2:30 pm Item 2 of the Agenda
 "Panel on the Control of bovine Brucellosis":
- 2.1 "Present situation of Bovine
 Brucellosis in the Americas" Doc. REDISA III/5
Dr. Casimiro Carcia Carrilo
- 2.2 "The Control Program of the
 Bovine Brucellosis in the United
 States of America" Doc. REDISA III/6
Dr. Paul Becton
- 2.3 "The control Program of Bovine
 Brucellosis in Uruguay" Doc. REDISA III/7
Dr. Nelson Magallanes
- 4:00 pm Coffee Break
- 4:15 pm 2.4 "Vaccination in the Control of
 Bovine Brucellosis" Doc. REDISA III/8
Dr. Paul Nicoletti
- 2.5 "Evaluation of Control and/or
 Eradication Programs of National
 Diseases" Doc. REDISA III/8
Dr. Robert K. Anderson
- 5:00 pm Discussion of item 2 of the Agenda
 to
- 6:00 pm

Thursday, August 6

- 9:00 am Topic 7 of the Agenda
 "Foot-and-Mouth Disease Vaccine
 Based on Genetic Engineering
 Techniques" Doc. REDISA III/16
Dr. Jerry Callis

Thursday, August 6 (cont.)

- 9:30 am Discussion of Item 7 of Agenda
- 10:15 am Coffee break
- 10:30 am Item 4 of the Agenda
 "Report of the Commission on the Evaluation Study of the Situation of Animal Health Laboratories in the Americas"
Dr. Carlos Arellano Doc. REDISA III/11
- 11:15 am Comments and Observations by the Representatives
- 12:00 am General Discussion of Item 4 of the Agenda
- 12:30 pm Lunch
- 2:30 pm V CONFERENCE OF THE O.I.E.
 COMMISSION FOR THE AMERICAS
- Address by Dr. Pedro Acha, President of the Commission Doc. REDISA III/18
OIE/CRA V/2
 - Address by Dr. Louis Blaján, Director General of the O.I.E Docs. REDISA III/17
OIE/CRA V/1
REDISIA III/19
OIE/CRA V/3
REDISIA III/20
OIE/CRA V/4
 - Recommendations of the Regional Commission
 - Information Systems on Animal Health Programs Docs. REDISA III/2
OIE/CRA V/2
REDISIA III/22
OIE/CRA V/6
 - Dr. Raúl Casas
 - Other Matters, Topics, Place and Date of the VI Regional conference, 1982.

Thursday, August 6 (cont.)

- 4:30 pm Coffee break
- 4:45 pm Visit to the National Livestock
Show Palermo, Park
- 6:30 pm Conference under the auspices of the
Argentine Rural society in the Auditorium
of the Livestock Exhibition (Special Program)

Friday, August 7

- 9:00 am Topic 5 of the Agenda
"Reports of the Regional Meeting
on Animal Health":
- 5.1 Northern Area (RESANORTE I) Doc. REDISA III/12
Dr. thomas Murnane
- 5.2 Southern Area (RESASUR I) Doc. REDISA III/13
Dr. Ruben Lombardo
- 5.3 Andean Area (RESANDINA I) Doc. REDISA III/14
Dr. German Gomez
- 10:15 am Coffee break
- 10:30 am Antilles Area (RESANTILLAS I) Doc. REDISA III/15
Dr. Frank Alexander
- 11:00 am Discussion of Item 5 of the Agenda
- 11:30 am Item 6 of the Agenda
"Programming and Coordination Meetings
of the Countries"
- 12:30 Lunch
- 2:30 pm Item 5 (Continued)
- 4:15 pm Coffee break
- 4:30 pm Draft Recommendations and Resolutions
to
6:00 pm Plenary Session

Saturday, August 8

9:00 am Item 8 of the Agenda

- Other Matters
- Topics, date and plase of REDISA IV, 1982

10:00 am Closing Session

- Adoption of the Final Report
- Address by a Representative of IICA
- Address by the President of REDISA III



INTER-AMERICAN INSTITUTE FOR COOPERATION ON AGRICULTURE

**III INTERAMERICAN MEETING OF DIRECTORS OF ANIMAL HEALTH
Buenos Aires, Argentina, August 5-8, 1981**

**REDISA III/3
31 July, 1981
Original: English**

**REPORT ON THE ACTIVITIES OF THE ANIMAL HEALTH
AND PRODUCTION
PROGRAM OF IICA**

REPORT ON THE ACTIVITIES OF THE ANIMAL HEALTH AND PRODUCTION PROGRAM

Introduction

The Animal Health Program was established at the request of the Ministers of Agriculture of the Americas. It was initiated in 1979 during the REDISA I, in answer to the need felt by all the countries in the Hemisphere to deal with the problem of animal health. Since that date and until the present we have forged ahead with the greatest possible speed as much still remains to be done, and we hope to maintain the same rate of progress in future if we can continue to count with the firm and decided support of all the countries.

Within the scope of our Program, our greatest concern is to attain technical cooperation in the sphere of animal health, coherent with the needs and priorities of the countries in Latin America and the Caribbean.

The present and future activities connected with animal diseases are based on the study and analysis of this problem on the level of each country, by identifying the main problems that affect, directly or indirectly, the development of the livestock sector and slow down production. Furthermore, it is possible in this way to determine which of these health problems are characteristic in the region and to establish priorities and action methods that will produce the most desirable effects and facilitate the most profitable development of the existing resources.

In 1981 we have incorporated Animal Production into the Animal Health Program. This will make possible coordinated efforts in these two sectors, the main purpose of which is to increase livestock production and productivity in all the countries.

It should be borne in mind that the true significance of animal health programs is not to profit the animal industry per se, but to seek through this sector the benefit of mankind, the primary aim pursued by all the national and international institutions active in this sector. Animal Health should be considered an important factor, so closely linked with production that they are interdependent and neither can exist without the other when maximum effectiveness is sought in livestock development.

As regards animal production, the above facts lead to the conclusion that greater emphasis should be placed in the livestock breeding programs in some countries to the development of the smaller species of animals and of other, non-conventional species that constitute a sound source of animal proteins as well as providing greater economic benefits to the poorer countries in Latin America and the Caribbean. Such countries as México, for example, have obtained very good results through a program of basic consumer products ("paquetes familiares") connected with small farms program.

The problems that affect the animal population in our

Region are numerous and varied but, but acting on the decisions and recommendations adopted until the present in the Meetings of Regional and Area Directors of Animal Health, we have established an order of priorities for ongoing activities. One of the aims of our planning is to avoid a division of efforts and to seek to concentrate them, whenever necessary through multinational programs financed by the countries involved and/or with outside assistance that will make possible the establishment or improvement of national infrastructures. An example of this is the swine development program in Haiti to be implemented together with the eradication program of African Swine Fever.

We shall now refer to the main activities carried out within the framework of the Animal Health Program during the last year or, more precisely, in the last ten or eleven months. It should be borne in mind that three of the four Area Specialists have initiated their work in September and October 1980 and that another official, who resides in Costa Rica, has been appointed in January 1981.

REGIONAL ACTIVITIES

Concerning matters of interest common to all, or most of the countries in the Americas, the following should be mentioned:

(a) Evaluation of the Diagnostic Laboratories

One of the greatest problems confronting the

development of animal disease prevention control and eradication programs is, admittedly, the shortage of capable and qualified diagnostic laboratories in most of the countries. In accordance with a decision adopted by REDISA II, a commission has been established to assess the animal health laboratories in countries in the Americas. This Evaluation Commission held its first meeting in Mexico (November, 1980) to establish the bases and methods of evaluation, so that they should be similar in all the countries. The six members of the Evaluation Commission visited all the countries and prepared a report which will be presented at this meeting.

This study will be the starting point for the establishment of conditions that will make possible the development of national systems of animal health diagnostic and reference service laboratories and their coordination on a continental scale.

(b) Hog Cholera and African Swine Fever

The different aspects of regional activities related to the African Swine Fever shall be presented during this meeting by the FAO representative who has been requested by the countries to speak on this matter.

As regards the eradication program in Haiti, this item is referred to in the description of activities carried

out in the Area of the Antilles.

In relation with Hog Cholera, it should be noted that this topic has been discussed recently in some of the Area meetings of Directors of Animal Health during which once again interest has been shown in developing national control and eradication programs coordinated from the epidemiological standpoint among neighbouring countries of countries forming part of a geographical area.

National projects have been initiated in Chile, Parauay, Brazil and Peru with the assistance of the IICA animal health program.

A course held in Guatemala on the differential diagnosis of Hog Cholera and African Swine Fever and other red swine diseases has been of interest to the Central American countries and Panama. These activities have been carried out with the assistance of the IICA veterinary advisors, and of special consultants engaged for this purpose. Likewise, assistance was provided for individual training and for the abovementioned course through scholarships awarded by the Program. In some cases, bibliographical information and other materials on the topic has been supplied.

(c) Control of ticks, babesiosis and anaplasmosis

From the hemispherical, or regional point of view,

tick, babesiosis and anaplasmosis are causing great economic losses and considerable reducing the supply of meat and milk in these countries.

The IICA Animal Health Program has placed special emphasis on collaborating with the countries affected by this problem, and their control programs have been recently reviewed and discussed in the meetings of Directors of Animal Health for the Southern, Andean and Northern Areas. IICA consultants have provided advisory services to Argentina, Brazil, Colombia and Ecuador, Uruguay and Peru on the epidemiology diagnosis and control de these diseases.

Training courses have been established and we wish to report, in this connection that the Ministry of Agriculture and Water Resources on México, has offered to cooperate with all the countries through its new laboratory for the study of ticks, the "National Parasitology Centre" (CENAPA), located in Cuernavaca.

Training courses on control programs will be given at CENAPA for personnel from the different countries with the collaboration of the IICA.

Plans have also been made for a course on diagnosis ob babesiosis and anaplasmosis, to be given toward the end of 1981 at the Instituto de Pesquisas Veterinarias Desiderio Finamor in Porto Alegre, Rio Grande do Sul, Brazil, for Brazilian personnel and for tick

infested countries in the Southern Area.

(d) Training of Human Resources

Training of personnel for the animal health programs is a permanent need in the countries and in many cases is the main factor that limits the effective implementation of prevention, control and eradication programs. For this reason, training of human resources has been and will continue to be taken particularly into account in our Program and special care will be given to provide all possible collaboration both for the training itself and to ensure that the training given is used whenever necessary and in the respective programs.

It can be seen from the description given in the four Area reports, that activities have been initiated in training of personnel in epidemiology and planning and in laboratory work, the sponsoring of seminars and national and international meetings on different topics and, obviously through scholarships.

(e) Coordination among countries

There can be no doubt of the increasing need for cooperation and coordination of animal health programs, especially among neighbouring countries or countries that form part of the same area, that are closely linked by geographical, trade and epidemiological bonds.

As agreed during the REDISA II and the IICA Areas meeting of Directors and Animal health that have been held respectively in Mexico City, México (April, 1981), Bogota, Colombia (May, 1981), Bridgetown, Barbados (April-May, 1981) and in Buenos Aires, Argentina (April, 1981). During these meeting an assesment was made of the compliance with the recommendations made by REDISA II, the topics of interest for each Area were studied and the respective recommendations made. The reports of these meetings shall be presented at this REDISA III, by the IICA Area Veterinarian's and the recommendations submitted to the meeting, for consideration.

Perhaps the most significant aspect during this period has been the cooperation between Haiti, The United States, Mexico and Canada in the effort to eradicate African Swine Fever in Haiti and a subsequent program for the development of their swine industry. The objectives planned for this program have been reached through agreement, between these countries and the IICA.

(f) Data Bank

The lack of an adequate Inter-American system for gathering, ordering and distributing data on animal health has been felt for many years. As a result, and

in accordance with a recommendation made by REDISA II, preparations have been made to put in operation a Data Bank located in the headquarters of the IICA. The development of this Data Bank will obviously depend on the growth and effectiveness of the national information systems and their collaboration in supplying data that will be available to all the countries. We have recently signed a cooperation agreement with the Office International des Epizooties (OIE) which is included in the documents of this meeting. It shows that the Institute will be able to cooperate more actively in the programs of the OIE planned for the different regions of the world. Precisely in accordance with this Agreement, REDISA III is being held jointly with the Fifth Regional Conference of the OIE Commission for the Americas, whose main topic of debate will deal with Information Services on Animal Health.

In accordance with a resolution adopted by RIMSA 2, held in Washington, D.C. in March of this year, the activities of the Data Bank and information services will be coordinated with the Special Program of Animal Health of the Pan American Health Organization (PAHO).

(g) National and International Congresses and Meetings

The advisors of the Animal Health Program have attended and participated in different national and international events of importance in the area of animal health and production. On different occasions, they have collaborated with conferences, talks, and papers submitted by the permanent staff of the Program and through consultants.

In this way, the Program has helped to disseminate among large groups of professionals in this field, different aspects related to the field of animal health.

AREA ACTIVITIES

The main tasks carried out in the four working areas of the IICA in the hemisphere, with the assistance of the Specialists in Animal Health, attached to each one of these areas are described below.

(a) Antille Area (Barbados, Dominican Republic, Grenada, Guyana, Haiti, Jamaica, Trinidad and Tobago, Surinam).

One of the most important activities in this area was the intensive work to develop a program for the eradication of African Swine Fever in Haiti. The planning and preparatory actions were entrusted to the Director of the Animal health Program, and to high level officials at IICA Headquarters at San José and in

Washington D.C., financial assistance has been pledge by the United States, Mexico and Canada, who have recently signed the corresponding agreements. A swine depopulation stage has been programmed, to be followed by repopulation. The cost of these two stages, which will be completed between 1981 and 1983, is estimated at U\$S 23 million for the first stage and at approximately U\$S 14 million for the second.

A study on the animal health situation in the Antille, area was started this year and a monthly report on the prevalence of the principal animal diseases has been prepared and distributed to the countries of the Area. In June a bilingual seminar was held on Kingston, Jamaica on the training of laboratory personnel in the operation and maintenance of laboratory equipment. Several specialists in the field from the caribbean region and the US were engaged by IICA for the lectures and practical demonstrations. A regional seminar on epidemiology was also held in July in Santo Domingo with the assistance of specialists from the Division of Tropical Animal Health of the University of Florida and of the U.S. Department of Agriculture.

Complying with a request made by the countries, the IICA has initiated a study of the prevalence of Blue

Tongue in the Antilles Area will shortly carry out a serological survey planned for this purpose.

Taking advantage of the Resantillas I Meeting in Bridgetown, Barbados, a seminar was held on "Project Identification and Design", which placed special emphasis on the relationship between the animal health and animal production, using as an example the development of the poultry industry in Barbados.

The Area Specialist collaborated in the seminar on "Cattle Reproduction", held in Guyana and formed part of the team of veterinarians from the Caribbean who cooperated with the Pan American Foot and Mouth Disease Centre of preparation of a manual on emergency measures to be adopted for the eradication of exotic diseases, with special emphasis on foot-and-mouth disease.

During the first three months of this year, three veterinarians from the Caribbean areas (Guyana, Trinidad and Tobago and Jamaica) received training in the techniques of diagnosis and control of the screwworm in different facilities of the National Screwworm eradication Program in Mexico.

- (b) Andean Area (Bolivia, Colombia, Ecuador, Peru and Venezuela)

A study on the status of animal health programs was completed and presented at the Resandina I meeting

held in May in Bogota, Colombia. The study shows the need to conduct related activities in the countries of the Area, such as projects on Hog Cholera, control of tick, babesiosis, anaplasmosis and bovine paralytical rabies.

At the request of the Ministries of Agriculture and Health, the services of a Consultant specialized in the control of bovine paralytical rabies were provided to collaborate in the planning and execution of a control program of this disease in the Choco, area of Colombia.

Officials from the IICA Animal Health Program held consultative meetings with Venezuelan Animal Health Authorities in order to prepare a technical cooperation program to be initiated in the course of this year.

The services of a specialist in the different aspects of research and control of babesiosis and anaplasmosis have been provided to Colombia, Ecuador and Peru.

The Area Specialist and consultants engaged by IICA for this purpose collaborated in the seminar on diseases and cattle reproduction problems, sponsored by the Instituto Colombiano Agropecuario (ICA) and other Colombian institutions which was held in the last month of June.

Assistance has been provided to the Veterinary Research Division of the ICA and the National University of Colombia in the organization and implementation of a

course on epidemiology and preventive medicine for field veterinarians.

A training program in control of ticks and the diagnosis of babesiosis and anaplasmosis will be carried out this year. The training program in which all the countries in the Andean Area would participate, will be conducted at the National Parasitology Centre (CENAPA) in Cuernavaca, Mexico, with the collaboration of the authorities of that country. Assistance has been provided to Bolivia, Ecuador and Peru for the planning and preparation of their national Hog Cholera control programs.

Assistance and advisory services have been provided to the Colombian Veterinary Products Laboratories, VECOL, which will initiate and develop this year the program on the antirabies vaccine for veterinary use.

(c) Northern Area (Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Mexico, Panama)

The meeting of animal health officials from the Northern Area (RESANORTE I) was preceded by a seminar on "Animal Health Planning" organized by the IICA Area specialists with the assistance of the School of Veterinary Medicine of the U.N.A.M., the PAHO Area Veterinarians and the Animal Health Department of the S.A.R.H. of Mexico. Fourteen representatives from the countries of Central

America, Mexico and Panama attended the meeting, in the course of which the different aspects of animal health programming and administration were reviewed, as well as the political and social factors that affect the animal control campaigns.

Studies have been initiated in Central America and Panama aimed at integrating this Area into the Screw-worm eradication program currently implemented by Mexico and the United States, so that the control barrier might be extended from the Tehuantepec, Isthmus, to the Darien region in the boundary zone between Panama and Colombia. To this end, two professionals from each Central American country and from Panama have been trained in the program facilities in Mexico.

The veterinarians assigned to each country by the Regional International Organization of Animal health and Plant Protection (OIRSA) who have collaborated in the control of "Torsalo" (Dermatobia Hominis) and who will play a decisive role in screwworm eradication activities were incorporated into this group of professionals. A one month training course was given in the National Screw-worm Eradication Program Headquarters in Mexico City, in the sterile fly production plant in Tuxtla, Gutierrez and in the distribution centres in Guadalajara and Tampico.

These professionals are collaborating in the study carried out in Central America and Panama by IICA personnel and specialized consultants that will serve as a basis for preparing a technical and economic feasibility project to be submitted to national and international financial organizations for consideration and help to obtain the funds needed to begin the extension of this eradication campaign in 1983. The estimated cost of a four-year program will amount to 110 million dollars, approximately.

The area Specialist was appointed to the Commission for the Evaluation of Veterinary Laboratory Diagnostic Services and in this capacity formed part of the group that evaluated and classified laboratories in Central America and Panama.

One of the actions taken to correct the faults noted in some of the veterinary laboratories of this Area, was the organization and implementation of a training course in differential diagnostic of African Swine Fever, and Hoř Cholera, which was given in Guatemala City in June. Diagnosticians from Honduras, Nicaragua and El Salvador participated in the course given by consultants engaged by the IICA.

The evaluation of laboratories in these countries showed that there are serious defects for the diagnostic

of babesiosis and anaplasmosis. Only Mexico and Costa Rica have laboratories suitable for diagnostic and for supervising the epidemiological evolution of these diseases. To remedy this situation, a course in the diagnostic of haematozoarios with emphasis on serological methods has been planned for countries in the Area, which will be given jointly with the Instituto de Investigaciones Pecuarias of Palo Alto, Mexico. Technical assistance agreement is being negotiated with the animal health authorities of Honduras for the elaboration and preparation of a control program for Torsalo (*Dermatobia hominis*) and tick borne diseases. Financial support for this technical assistance will be provided by the Inter-American Development Bank.

- (d) Southern Area (Argentina, Brazil, Chile, Paraguay and Uruguay). Reference shall be made initially to those activities carried in the Southern Area that are of common interest to countries in this Area.

Drafting of a document on the feasibility of a project for the Technological on Animal Health Development Program of the Veterinary Science Research Centre, of the Instituto Nacional de Tecnologia Agropecuaria (INTA) of Argentina, has been completed. This document was recently submitted to the Argentine authorities for approval and implementation.

Countries in the Southern Area have shown interest in this project that, can lead to the qualitative and quantitative improvement of the veterinary diagnostic capacity, from a regional standpoint. IICA personnel and a project analyst consultant engaged for this purpose participated in this task. In compliance with the respective recommendation of REDISA II, assistance was provided in Argentina in preparing the project for the establishment of a subregional Training Centre in Animal Health, which will be located at the Faculty of Veterinary Sciences of the National University of La Plata. The Area Specialist collaborated in this project together with two IICA short term consultants and officials of the National Animal Health Service (SENASA). It should be noted, in connection with this aspect of regional coordination in the training of personnel in prevention, control and eradication of animal diseases, that eight assistant directors from the Dominican Republic are presently in Argentina attending a one month course conducted at the University of La Plata for the field staff of the Servicios de Luchas Sanitarias Argentinas (SELSA) that has kindly granted the corresponding fellowships. At the end of the course the Dominican Veterinarians will be able to obtain

field experience at the different disease control programs in the interior of the country Assistance has been also provided in Argentina for a course for 120 veterinarians on health and other problems affecting the reproductive efficiency in cattle. This course, which is sponsored by different national and provincial institutions will be conducted at the Faculty of Veterinary Sciences of the Universidad Nacional del Centro de la Provincia de Buenos Aires from 15 October to 21 November.

IICA staff collaborated, together with a specialist in eradication programs and a laboratory specialist, in the elaboration and commencement of the Hog Cholera eradication program in Chile.

Similar assistance was provided to Paraguay in preparing a project for the control of Hog Cholera equine infectious anemia and Newcastle disease with the help of the Southern Area specialist and of two short-term consultants.

Negotiations with the Brazilian animal health authorities, connected with the signing of a technical assistance agreement, for the elaboration of a project to strengthen the National Animal Health Diagnostic Laboratories (LANARA) are in an advanced stage, and plans have been

made to commence these activities in August. IICA staff will collaborate in this project and several consultants will be engaged by the Institute for this purpose. Activities connected with other animal health programs, such as Hog Cholera and African Swine Fever contemplated in this Agreement.

Assistance has been provided to Brazil in connection with control of ticks, babesiosis and anaplasmosis. A specialist in this field collaborated with the animal health authorities of the Department of Agriculture of Rio Grande do Sul. Similar assistance was provided in Uruguay through the services of a specialist in the different aspects of the study and control of ticks, babesiosis and anaplasmosis. Assistance in this field was also given to Argentina through the services of a consultant who studied the present status of the tick control program and the different aspects of laboratory and research work related to these diseases.

Two fellows from Brazil and one from Uruguay will visit Mexico at the end of the year to study the tick eradication program of that country.

A course on the diagnostic of babesiosis and anaplasmosis will be conducted in October at the Instituto de Pesquisas Veterinarias Desiderio Finamor in Porto Alegre, Rio Grande do Sul. Nine laboratory specialists of the

Brazilian Ministry of Agriculture and 3 specialists from neighbouring countries will participate in the course. Assistance has been provided to the Ministry of Agriculture in Brazilia in the elaboration of an animal health program that may serve as reference for other areas of Brazil.

The services of a Consultant on bovine leukosis were provided to Argentina, Brazil and Uruguay.

A specialist in bovine brucellosis will visit Chile in August as advisor to the Veterinary Shools in Santiago and Valdivia and a second specialist will act as consultant to SENASA in Argentina on procedures and indicators for evaluating the brucellosis control program.

A fellowship was provided to a paraguayan veterinarian who received training in the preparation of antigen for equine infectious anemia at the Instituto de Zoonosis e Investigaciones Pecuarias in Lima, Peru. Two veterinarians of the Minsitry of Agriculture will visit Chile in October for training in the laboratory and field aspects of Hog Cholera. Another fellow will visit ICA, in Colombia for training in communications on animal health.

In September, the chief of vaccines control of SAC, Chile will receive advanced training on quality control of Hog Cholera vaccines, at the Maisons d'Alfort Laboratories of the French Ministry of Agriculture.

In March, an agreement was signed between the Argentine National Animal Health Service (SENASA) and the IICA, for the provision of technical assistance in Animal Health. This project is financed with national funds and at present there are three specialists collaborating in planning, epidemiology and laboratory activities with SENASA.

Finally, an Agreement on technical assistance and training for Hog Cholera, equine infectious anemia and Newcastle disease control programs is being negotiated between IICA and with the Ministry of Agriculture and Animal Husbandry of Paraguay. It is expected that this Agreement will be signed in August or September.



INTER-AMERICAN INSTITUTE FOR COOPERATION ON AGRICULTURE

III INTERAMERICAN MEETING OF DIRECTORS OF ANIMAL HEALTH
Buenos Aires, Argentina, August 5-8, 1981

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31 July, 1981

PLANNED ACTIVITIES FOR 1982

ANIMAL HEALTH PROGRAM

PLANNED ACTIVITIES FOR 1982

ANIMAL HEALTH PROGRAM

As you are informed, the I.I.C.A.'s biennial budget for 1982-83 will be revised next week at the Meeting of the American Board of Agriculture to take place in this City of Buenos Aires.

If the budget proposal for the Animal Health Program, with a small increment for the period, is approved, activities currently in progress will be extended and some others will be initiated as, for example, strengthening the diagnostic animal health laboratories.

Some of the activities included in the program are:

African Swine Fever

As part of the program for the eradication of African Swine Fever (ASF) in Haiti, we hope to be able to begin the depopulation phase with a voluntary reduction of the swine population through the normal marketing channels.

In addition, a feasibility study will be done to define the plan of action for the repopulation phase and for swine improvement, as well as for developing the veterinary infrastructure required for the care and health surveillance of the replacement animals.

The first phase will begin towards the end of 1981, and repopulation is expected to start at the beginning of 1983. Funds are available for those activities.

Ticks

In the area of tick control we expect an intensification of personnel training in laboratory and field work, including methods of control of tick populations over and above the traditional bi-weekly aspersion or immersion bathings. We shall also help to carry out field tests in different countries, to find more effective methods for the diagnosis and control of tick-borne diseases.

Screwworm (*Cocchlomyia hominivorax*)

We intend to submit a proposal to the international financial agencies in 1982, in order to obtain the fund needed for the eradication of screwworm in Central America and Panama. This would move the barrier back from the Tehuantepec Isthmus in Mexico to the Panama-Colombia border. The evaluation studies commenced in 1981 and will continue during 1982, in the expectation that funds will be forthcoming for starting the program in 1983.

Hog cholera

Many countries, including Brazil, Colombia, Chile, Perú and Venezuela, appear to be interested in the control and possible eradication of hog cholera. This growing interest is

due in large part to the appearance in the hemisphere of African Swine Fever, and to the great difficulty in differentiating one disease from the other in countries where hog cholera is endemic. In such cases, ASF may be appear in one country and behave like hog cholera; it may remain unidentified until the infection is wide spread. It has been demonstrated by Canada, the United States, some countries in the Caribbean, and by countries on other Continents that hog cholera can be eradicated.

Training

Training in Epidemiology will continue in 1982, with emphasis on cost-benefit analysis. This type of training will be offered at the Universidad Nacional de Mexico and the Universidad Nacional de La Plata in Argentina, as well as at other universities in interested countries. The participants will be veterinary doctors from different countries, whose work is connected with the control and eradication of infectious animal diseases and where the outbreak of such diseases must be reported.

IICA will continue to encourage training on laboratory methods and organization and collaborate with these activities and with disease prevention and control programs.

Data Bank

We expect to improve the data bank on animal health in 1982, so that it can serve the whole Hemisphere during 1982.

To this end we are preparing a data collection system that will require the cooperation of all the animal health units in the countries both in gathering the data and updating it. All the data will be incorporated into the computer in the headquarters in San José, and will be available to the countries whenever they ask for information.

Animal Health Diagnostic Laboratories

In the coming year, a program will be established to faster the development of national diagnostic laboratory systems and their coordination on an inter-American scale. To that end, use will be made of the information contained in the evaluation of the present status of the laboratories, made in 1981 by the Evaluation Committee specially established by the IICA Animal Health Program. We shall also try to obtain funds from the international financing agencies now providing financial assistance to the countries for the eradication of animal diseases, a goal that can only be met by improving the diagnostic capacity in the countries. It is our task to establish the highest priorities for 1982, in order to make the diagnostic systems in the countries a reality as soon as possible and for all countries in this Hemisphere.

Animal Production

IICA's Animal Production activities will become part of the Animal Health Program as of 1982. First priority will be

assigned to the development of smaller species, that serve as a source of protein for low-income groups in Latin America and the Caribbean. During 1982 we shall try to obtain funds for field studies in the interested countries to see whether this program can live up to our hopes of helping all developing countries to improve their diet with animal products.



INSTITUTO INTERAMERICANO DE COOPERACION PARA LA AGRICULTURA—OEA

III REUNION INTERAMERICANA DE DIRECTORES DE SALUD ANIMAL
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III INTERAMERICAN MEETING OF ANIMAL HEALTH DIRECTORS

REDISA III

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PRESENT STATUS OF BOVINE BRUCELLOSIS
IN THE AMERICAS

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PRESENT STATUS OF BOVINE BRUCELLOSIS IN THE AMERICAS

by Casimiro García-Carrillo*

Brucellosis is an infection of worldwide distribution. It is perhaps the most important zoonosis in the Americas, not only because of its implications for human health, but also because of the serious losses it causes to the livestock industry, with the consequent diminution of much needed foodstuffs, especially animal proteins.

All the known species of the genus Brucella and most of the biotypes of each species are found in the Region. However, their distribution is uneven and in most instances it coincides with the most numerous domestic species in each area.

The present paper examines the status of bovine brucellosis in the countries of the Americas. We are convinced that the knowledge of past and present facts related to this zoonosis is the main prerequisite for any program aimed at its control and eventual eradication.

ARGENTINA

Very high rates of reactors have been obtained in all the studies on the prevalence of brucellosis in cattle. Rossi in 1947 (52) calculated that over 20% of the milk cows were infected. Jurado and Cedro estimated the prevalence to be between 23 and 25% in 1954 (33). According to research conducted by the Instituto Nacional de Tecnología Agropecuaria (INTA), it would amount to 27%, and in some municipalities, it would be as high as 46,6% (8).

In 1955, Maubecín estimated that 75% of the dairy farms of the milk sheds of the province of Córdoba were infected (37).

According to Cedro et al., the overall prevalence in the country in 1960 was 20% for beef cattle and 25% for dairy cattle. Other authors agreed with these estimates (3).

More alarming still are the concepts expressed by Doldan and Sabbione (16) who in 1956 stated that "there is no cattle-breeding establishment in Argentina, whatever its type of operation, free from brucellosis". That same year, Morán and Maubecín (42) based on the milk ring test, found that infected farms rates in the milk sheds of the provinces of Buenos Aires and Córdoba ranged

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between 61 and 99%, and that in the province of Buenos Aires was 88,8% (43). Ten years later, Darlan and Cabezali (15) established that 86,5% of the farms of Bahía Blanca covered in their study were infected. In the milk supply area of the city of La Plata, Morales found 75,48% of the farms to be infected (39).

It is estimated that the prevalence has not changed in 1980. According to conservative estimates, in the province with high cattle population densities, it ranges between 10,76% in Entre Ríos and 13,86% in Buenos Aires.

Control campaigns

Due to the constant increase in the number of human cases, the national government appointed in 1932 a committee to study undulant fever.

In 1947 several plans were proposed to control brucellosis. In view of the seriousness of the infection in the province of Córdoba, Goobar and Oulton suggested a control program based on vaccination and on the implementation of sanitary measures (25).

In 1957, the Ministry of Education and Justice appointed a group of experts to draft the bases for a "National Law for the Compulsory Control of Human and Animal Brucellosis".

B. abortus strain 19 vaccine was used on a small scale during the late thirties and the beginning of the forties. In keeping with a ministerial resolution of 1947, an official register of breeders who vaccinate their calves on a voluntary basis was established. In 1965 vaccination was made compulsory in certain areas of the provinces of Córdoba and Santa Fe. At the end of 1980, vaccination was declared to be mandatory throughout the country.

In 1966, under an agreement between the Ministry of Agriculture and the Pan American Zoonoses Center (PAHO/WHO), the strict control of vaccines was established and at present (1981) the official laboratory assures the regular control of each series of vaccines produced in the country before they are placed in the market.

Economic losses

In 1966, Bacigalupo et al. (2) estimated the country's total losses due to brucellosis on the basis of the prevalence of infection in each species. Losses in cattle amounted to over 126 million dollars. Recent studies conducted by the INTA indicate that current losses exceed that figure, not only because the prevalence has not declined, but also because the value of the international currency has decreased since 1966.

BARBADOS

Brucellosis is known to be present in Barbados since 1948 (27). On that year, it was believed that the infection rate could be as high as 40%; in 1950 the estimates of the Commission for the study of animal diseases in the Caribbean placed it at 88%. In 1975 a program for the eradication of the disease was established. A total of 5142 animals (94% of the population) was tested in 1977; 0,9% of them reacted to the card test and only six (0,1%) gave positive reaction to the tube agglutination test. The reactors were eliminated.

BELIZE

In 1975, a total of 2180 cattle were tested, with reactors amounting to 0,69%. In subsequent years this percentage declined to approximately 0,1.

In 1979, two bovine reactors were found among 8133 tested; the same number was found in 1980. In both instances, reactions may have been non specific, since there were no history of abortions. (Dr. Gamble, personal communication).

BOLIVIA

The percentage of reactors to the serologic tests conducted between 1965 and 1972 ranged between 7 and 52 for the dairy cattle, and between 3 and 33, for beef cattle (5).

In a study carried out in 1978 at the milk shed of the department of Santa Cruz, 37 of the 121 herds tested were found to be positive (Cruz Patiño, unpublished paper). In another study conducted in Cochabamba in 1978, 1,06% of the 8456 animals tested was positive. Infected animals were found in 2,6% of the herds (Vargas Alcorta, thesis, University of Santa Cruz).

According to the available information, the isolation of Brucella has not been achieved in Bolivia.

In 1967, Muñoz made 1443 tests in cattle from 30 farms of the department of Santa Cruz; 216 of these tests gave positive results (14,97%) and 167, were suspect (11,57%). The same author also informed that abortions had occurred in some of the farms (44).

Saucedo Bravo submitted a thesis on the dairy farms of Santa Cruz in 1969. Of the 400 cattle he tested, results showed 34 (8,5%) to be positive and 18 (4,5%), suspect.

Approximately 2000 sera per year were tested at the INBA II laboratory of Santa Cruz between 1971 and 1979. Reactors to the routine tests were between 5 to 13%, with an almost equal number of suspect cases.

In 1976 Bolivia obtained a loan from the Inter-American Development Bank (IDB) (IDB-464/SF-80 loan) and established the National Service for the Control of Foot-and-Mouth Disease, Rabies and Brucellosis (SENARB), which initiated its activities in 1977.

The first reports of the national program (SENARB) in the area of Santa Cruz showed positive reactors in 30% of the 125 herds tested by the milk ring test.

BRAZIL

According to Thiago de Mello (38) in 1950 bovine brucellosis had already spread throughout the country, with prevalences ranging between 10 and 20%. Rates were highest in the states with greater cattle population densities, such as Rio Grande do Sul, Sao Paulo, Minas Gerais and Rio de Janeiro.

In 1972, Giorgi, Castro and Portugal (24) typed 23 strains isolated from cattle, hogs and horses. One of the strains isolated from cattle was B. suis, seven were B. abortus biotype 1, and nine B. abortus biotype 2. All the isolates from hogs were B. suis and one from horses corresponded to B. abortus.

In 1965, Schlogel (54) tested 1609 milk samples from cows of Paraná and found 54,7% of reactors.

Studies carried out in some of the municipalities of Bahia in 1971 showed that the prevalence of reactors in hogs was over 10%, with titers higher than 1/100 and that about 84% of the farms were infected (11). In other studies conducted between 1972 and 1974, infection rates were also close to 10% in the 14 842 cows tested; reactors were detected in approximately 90% of the farms (12).

In studies they carried out in Sao Paulo during 1972, other authors found 19% reacting cows (10).

In 1968, Almeida submitted the figures on the prevalence of brucellosis in Brazil between 1962 and 1968 at the National Veterinary Science Congress. This information is summarized in Table 1 (1).

Control campaigns

The Brazilian legislation has not been very strict as regards brucellosis. The Decree-Act N°6922 of 1944 provides for the identification of vaccinated cattle. Subsequent decrees have dealt with the same subject, although none of them resulted in significant progress in the field of prophylaxis.

In compliance with the provisions of Resolution N°438 of 1958, regulations on the importation and exportation of animals were established, whereby animals imported for reproduction must be certified to be negative to the agglutination tests for brucellosis. Tests are repeated at the ports of entry and the animals found to be positive are slaughtered with no inndemity for the owner.

In 1965, the Ministry of Agriculture designed a control program based on vaccination, but it was never carried out due mainly to the lack of sufficient funds. In 1970, the Federal contributions for brucellosis control amounted to 647 330 cruzeiros (130 000 USA dollars) (6).

Economic losses

Taking into account only the number of abortions and the decrease in milk production, the Ministry of Agriculture estimated in 1971 the annual loss to the country at 160 million cruzeiros (32 million dollars) (6).

Vaccination

Under the supervision of the Ministry of Agriculture, 1 332 782 calves were vaccinated from 1966 to 1979. There is no information on the number of cattle vaccinated privately by the owners, but it is believed to be higher.

According to the results of the national survey on animal health, 675 253 female and 47 016 male cattle were vaccinated during 1975 in the states covered by the survey, including 76 370 female and 22 770 male cattle over 10 months old.

National survey

A survey on the prevalence of brucellosis was conducted during 1975 in the states with the highest cattle populations, excluding Rio Grande do Sul, which had its own control program. The Northeastern states were not included either, with the exception of the territory of Roraima.

Table 2 shows the prevalence of brucellosis in Brazil, by states, as determined on the basis of the results of the survey. With few exceptions, the prevalence was always below that estimated previously.

The highest rates of farms with positive animals were observed in Goias (32%) and Minas Gerais (17,7%), thus indicating that the infection is localized to a great extent. This fact is highly favorable for a brucellosis control program in Brazil and for the eventual eradication of the disease.

Campaign in Rio Grande do Sul

Since 1949, the Sanitation Division of the Animal Production Office became increasingly aware of the need to take action with respect to the problem of brucellosis. The Bovine Brucellosis Eradication Service (SEBB) was established in 1953, and in 1963 a vaccination program was put into effect in five municipalities in the border area with Uruguay. The studies conducted during 1963 showed a prevalence of 5,2%; a total of 194 452 animals was vaccinated.

In 1964, the state was divided into three areas where control actions were initiated in the course of the three subsequent years. The campaign was based on the vaccination of heifer calves aged 4 to 10 months and on serologic testing, as a supplementary measure. Also in 1964, under the provisions of the State Act N°4890 the control of animal brucellosis became mandatory. In 1965, the Decree N°17 217 establishing the pertinent regulations was approved. On that same year vaccination was made compulsory in several areas.

CANADA

In Canada, as in many other countries, the first data on the prevalence of brucellosis showed considerable disparity. The tests carried out in the area of Ontario during 1934 gave 30,5% of positive reactors with titers of 1/100 or higher, whereas according to other studies that percentage was 6,5, or no reactors were found (29).

Control programs

The first committee against contagious abortion, formed by physicians, veterinarians and stockowners, was established in 1929. In 1931 the first area was declared to be free from brucellosis.

Control programs, significantly different since the establishment of the committee, were unified in 1948. From that year on, a farm is declared to be free from brucellosis after three negative tests, performed at three months' intervals.

Vaccination with B. abortus strain 19 (the only authorized vaccine) was the most important measure to be implemented in the majority of the provinces since 1947 (29,45).

The first actions aimed at eradication were adopted in 1950, when the prevalence of bovine brucellosis was estimated at 9%. As a result of vaccination, the prevalence decreased to 4,5% in 1956.

In 1957, a program based on serological testing and the elimination of reactors was introduced, without discontinuing vaccination. Cattle owners were compensated in an amount subject

to periodic revision, which in 1976 amounted to a maximum of 450 dollars for purebreds and to 200 dollars for grade cattle.

When the infection rate was reduced to below 1% of the cattle population and 5% of the herds, the area was certified for a period of three years. When the infection rate was below 0,2% of the cattle in the area and 1% of the herds, the area was designated as brucellosis-free and certified for a period of five years (36).

About 1960, the Health of Animals Branch introduced two surveillance procedures, namely, the brucellosis milk ring testing and the market cattle testing (MCT) programs. In both programs, if a reaction is encountered, the whole herd is tested. Since some years back, all herds adjacent to infected herds are also tested.

McKeown (36) considers it advisable to perform the agglutination test and the complement fixation test in parallel. In some instances, however, the only solution is the total elimination of the herd.

In 1976, when the prevalence of brucellosis in Canada was below 2%, the question of the disadvantages of vaccination was thoroughly discussed and considered. At present, conditions in Canada allow for the supposition that the country will be free from brucellosis in the near future.

THE CARIBBEAN

According to official reports of recent years, there are no cases of brucellosis in human beings nor in animals in the islands of Anguilla, Antigua, Bahama, Bermuda, Curacao, Dominica, Grenada, British Virgin Islands, Martinique, Montserrat, and Saint Martin.

The situation is the same in French Guiana and Guyana, where no research on brucellosis has been carried out because both are believed to be free from brucellosis.

Several thousands of tests have been performed during recent years in Trinidad and Tobago; a very small amount of animals with doubtful reaction has been found.

CHILE

In the Ten-Year Animal Health Plan, it was estimated that the prevalence of bovine brucellosis in 1974 was 5% in the Northern Region, 15% in the Central Region, and 3% in the Southern Region.

An animal health project, which included foot-and-mouth disease and brucellosis, was prepared in 1976. It was financed by the IDB (48,6%), the Chilean Agriculture and Livestock Service (40,6%) and by those benefiting directly from the project (10,8%).

The following are the project's main objectives in the field of brucellosis control:

Central-Southern Region (from Coquimbo to Llanquihué): control of bovine brucellosis with a view to its subsequent eradication.

Northern and Southern Regions: eradication of the disease in a period of not more than five years.

The strategy adopted for the Central-Southern Region consisted in the mass vaccination with B. abortus strain 19 of calves 3 to 8 months' old, and for the remaining two regions, in the performance of tests and the elimination of reactors.

Economic losses

In 1963, Cornejo Marino estimated that Chile, with a cattle population of less than 3 million head, lost 13 332 400 dollars a year due to brucellosis.

In the animal health project, in which brucellosis and foot-and-mouth disease have been included, the benefit/cost ratio was estimated at 1,67. Although this ratio is quite favorable, it was calculated for the duration of the IDB investment period, i.e., four years. The economic evaluation of a brucellosis control program is usually made for a period of 10, 15 or more years. The benefit/cost ratio for such periods is very high.

COLOMBIA

After the first isolations of B. abortus made by Escobar, Plata Guerrero in 1944 and Bohórquez on several occasions informed on the isolation of B. abortus from placentas or bovine fetuses.

In 1964, Nieto and Zaraza found 40,4% of the herds of the Cauca Valley to be positive to the milk ring test.

In a study performed in slaughterhouses, Vaughn et al. (1968) found 3,5% reactors and 9,5% of suspects in the 454 specimens tested. The Cauca Valley area had the highest rate of infection (58).

During the years 1970 and 1971, a sampling survey, which included the testing of 230 469 cattle representing all the political divisions of the country, was carried out as the first stage of the brucellosis control campaign. The overall prevalence for the country was 6,6% of positive animals and 16,5% suspects. Significant differences were observed: whereas in the Meta River area the percentage of positive cases amounted to 0,9, the departments of Boyacá, Cesar and Magdalena Medio had 11% of reactors and a higher percentage of suspects.

From 1971 through 1978 approximately 300 000 serological tests were performed annually on samples from the country's 23 departments. The existence of brucellosis was confirmed in all the departments, with a prevalence of positive animals ranging from 0,4 to 11,4%. The overall current prevalence for the country is calculated at 4,22% of positive reactors and a similar percentage of suspect animals.

Economic aspects

In 1967, it was estimated that Colombia, with a cattle population of 16 million head, lost 177 557 000 pesos a year (approximately 9 million USA dollars) due to brucellosis infection (9).

Control campaigns and quarantine measures

In 1934, the Government of Colombia passed the first regulations aimed at controlling the disease, which included vaccination with B. abortus strain 19.

Resolution N°125 of 1964 provided for the administration of strain 19 vaccine to female cattle of all ages. The owner was responsible for vaccinating his animals and the sale of the vaccine was unrestricted. This resolution was modified in 1969, in keeping with the pertinent international regulations.

COSTA RICA

In 1975, a probability sampling survey showed an overall national prevalence of 6,45%. The highest rate corresponded to the areas of the Central Eastern Valley and the Eastern Pacific, with 12,9%, whereas the Northern Region had the lowest (4,7%).

An animal health program, which included brucellosis, was designed in 1976. The strategy of the program consisted in the vaccination of calves until the prevalence of infection declined to levels compatible with the eradication programs (13).

Economic losses

In 1958, Pérez Ch. (48) calculated in 8 786 135 colons (1 549 583 dollars) the losses caused by bovine brucellosis. In the animal health project prepared in 1976, they had been estimated at 18 380 000 colons (2 150 000 dollars).

CUBA

Brucella abortus was isolated from bovine placenta in 1937 by Lage(47).

Since 1963, the use of the slow tube agglutination test and the elimination of reactors have been increased. Table 3 summarizes the results of the diagnostic tests carried out from 1963 through 1976.

Although the prevalence of individual cattle infection was below 5%, the rate of infected farms was very high: up to 76-77% in the province of Oriente.

The table reveals a gradual decrease in the number of reactors up to recent years, when the rate remained at approximately 0,4%, a fact which shows the extraordinary success of the program.

From 1963, emphasis was given to a program for animal brucellosis eradication consisting in the serological testing of animals and the elimination of reactors to the slow tube agglutination and/or complement fixation tests. At the same time, regulations on the movement of animals and quarantine measures for imported animals were put into effect.

DOMINICAN REPUBLIC

During the period 1966-1971, almost 100 000 serological tests were performed with very variable results: reactors ranged between 4,1 and 12,2% a year. The average overall prevalence was estimated at approximately 10%.

In 1972, a national animal health program which included brucellosis, was prepared. Control of this zoonosis was based mainly on the overall vaccination of calves with strain 19 vaccine. The program contemplated the performance of serologic tests and the elimination of reactors in the farms where this measure was found to be financially practicable.

ECUADOR

In 1952, Uriguen Bravo and Gómez Lince (56) isolated Brucella abortus from the vaginal discharge of a cow that had aborted in a farm in the province of Cotopaxi, where there was a significant number of imported cattle and a history of many abortions.

In the last studies which have come to our knowledge, the percentage of reactors was estimated at approximately 6% for the period 1975-1979.

Campaigns

In 1979, the Ministry of Agriculture prepared the guidelines for the national program of animal health, based on the official vaccination of calves and the voluntary elimination of reactors.

EL SALVADOR

The prevalence of bovine brucellosis in El Salvador is very low with an average estimated at 2%, although in some departments it may be as high as 4 and even 9% (17).

Approximately 30 000 animals a year were tested between 1969 and 1973; reactor rates ranged from 1,36 to 2,10% (Ruano, Matamoros, and Escalante, 1973, unpublished paper).

Over the last few years, the prevalence of the disease has remained practically the same: 1975, 32 094 animals tested with 1,08% positive reactors; 1976, 27 306 animals and 2,38% reactors, and 1977, 48 038 tested with 1,95% positive cases.

Campaigns

In 1976, the Republic of El Salvador and the Regional International Plan and Animal Sanitation Organization (OIRSA) prepared an animal health project in which brucellosis had been included.

The overall prevalence is estimated at approximately 2%. However, the officers responsible for the animal health project considered it advisable to conduct a general survey with a view to obtaining more accurate knowledge of information.

The main strategy of the program would be the attainment of free areas through the certification of free herds.

Vaccination of improved herds or of dairy herds with high reactor and abortion rates is contemplated in the program.

FRENCH GUIANA AND TERRITORY OF ININI

Mention is made in Floch's paper (20) of the isolation of Brucella melitensis in 1941 from a human case of brucellosis which ended in death. When examining 1965 sera sent to the laboratory for the diagnosis of syphilis, the author found 27 brucella reactors.

The only reference to bovine brucellosis is also found in Floch (20), who in 1947 tested 2167 bovine sera imported from Brazil, 303 of which were positive.

Official information of recent years states that no type of tests for brucellosis have been conducted and that according to the health authorities the disease does not exist at present or is of little importance.

GUATEMALA

It is considered that the disease is present throughout the country. However, the prevalence varies considerably in the different regions while in some it is less than 1%, in others it could be as high as 20%.

Up to 1959, the Ministry of Agriculture recorded in its files 53 810 serological tests, with 1948 positive samples.

In 1978, the overall national prevalence was estimated at 6,1% (26).

In the course of a study on the milk consumed in the capital city, positive reactions to the milk ring test were found in 17,7% of the herds. Of the 979 samples tested by the Ministry of Agriculture during 1976, 11,5% were positive.

Up to the present, there is no information on the isolation of Brucella from animals in Guatemala; however, isolations have been made from man.

Economic losses

In 1978, it was estimated that economic losses in Guatemala due to bovine brucellosis could be close to 2,5 million dollars and that they would continue to rise, in keeping with the increasing prevalence.

The analysis of the evolution of the disease led to a very unfavorable forecast. The national prevalence, estimated at 6,1% in 1977, could be as high as 11,9% in 1988. Economic losses would increase in consequence and amount to over 7 million dollars.

Control campaigns

In 1978, an animal health program (PRODESA), which included brucellosis, was prepared and submitted to the Inter-American Development Bank for funding. The implementation of the program showed that brucellosis control was a financially sound and profitable investment.

HAITI

Up to 1964, 50 000 serologic tests had been conducted on cattle samples, with reactors ranging from 3 to 5% (14).

The routine tests performed in Haiti's slaughterhouse, showed the highest reactor rates in sera in animals from the central plain. However, abortions in that area were an exception and it has not been possible to correlate them with brucella infection. All the cow milk samples tested by Laroche et al.(35) were negative.

In surveys carried out by Hayward (cited by Laroche et al.(35)), the infection rates in cattle were found to be over 10%. However, the author was not able to find any information on cases in man during the same period.

Official information over the last few years states that no data are available because no studies on brucellosis have been made.

HONDURAS

In isolated studies carried out during the period 1952-1955, the existence of brucellosis was serologically confirmed in various departments. The prevalence rate was found to be very low: 1% reactors out of 17 466 cattle tested.

On the basis of the information available for 1972, it was interpreted that infection was on the rise. That year, high prevalences were reported from the following departments: Choluteca (8,7%), Morozán (7,7%), Comayague and La Paz (5,9%), and Santa Bárbara (4,1%).

Brucella abortus biotype 1 was bacteriologically confirmed in cattle from Honduras at the Pan American Zoonoses Center in 1977, when the national program was already in progress (23).

Economic losses

Estimates made in 1971 revealed that Honduras, with a cattle population of 1,6 million head, lost 1,5 million dollars a year due to brucellosis infection (30).

The strategy used for the national program consisted in serological tests and the elimination of reactors, with the option of vaccinating calves when the prevalence was found to be 5% or higher. The country was divided into various areas and in 1977, the program began to be implemented in Area I, which comprised San Pedro de Sula and Choloma. During the first year it was established that the prevalence, in accordance with previous estimates, was low in one of the sectors of that area, but that it was high in others, where farms of considerable size were located. Prevalences of 25 and 48% were found in farms with 1000 cattle head.

JAMAICA

It is believed that in 1912 brucellosis already existed in Jamaica. In 1943, the infection rate in government herds was 28% (27).

During a sampling survey carried out in the years 1944-1945, the reactor rate for 7899 cattle tested was 9,66%.

The tests conducted by the Department of Agriculture between 1946 and 1951 showed 3 to 8% positive reactors and a similar rate of suspects. The results of the tests performed during the last years for which information is available are listed in Table 6. The island has a total cattle population of 326 000 head and a very large proportion of them are tested. According to the latest reports, the infection may be limited to 20 farms.

Calves have been vaccinated with B. abortus strain 19 since 1945, but over the last years only a few farms continue with this practice.

MEXICO

Judging by the small number of papers published on the subject, bovine brucellosis has been a matter of little concern in Mexico.

In 1969, Rodríguez Heres (51) tested 160 cows with a history of abortion and found 32,7% reactors to the diagnostic tests for brucellosis and 16,2%, to those for leptospirosis.

Estimates made in 1970 placed the national prevalence at 14%.

Economic losses

In 1970, economic losses caused by brucellosis were calculated at 800 million pesos (64 million dollars) (7). Other authors gave lower figures: for example, del Rfo, who placed them at 26 million dollars (49).

Campaigns

Although many brucellosis control programs have been proposed in Mexico (55), it was not until 1971 that a national campaign was implemented.

NICARAGUA

The information on the serological tests performed by the Ministry of Agriculture is incomplete. Data are available only for some years, in which the reactor rate was approximately 2%.

Up to 1977, there was no information on the species of Brucella existing in the country. In that year, Brucella abortus biotype 1 and biotype 4 were isolated for the first time (22).

Campaigns

In 1976, the Ministry of Agriculture and the Pan American Health Organization prepared a prefeasibility project for the eradication of bovine brucellosis and tuberculosis.

The strategy proposed in the project consisted in the serological testing of cattle and the elimination of positive reactors throughout the country, excepting the herds of a great number of animals and with active foci of infection. In these, in addition to eliminating the positive reactors, it was considered advisable to vaccinate the calves aged 3 to 6 months.

PANAMA

Panama is one of the countries that has shown greater concern with respect to the problem of brucellosis. Control measures have been adopted in the different provinces since 1957.

In a survey of the animals killed at the municipal slaughterhouse in 1970, the reactor rate was found to be 2%.

It is considered that in the areas that have been under control measures for many years, the prevalence may be placed at 2%, whereas in the areas where control has not been implemented yet, it is estimated at 4,7%.

National program

In 1976, a prefeasibility project for the animal health program was prepared in which priority was given to brucellosis eradication.

Economic losses

The annual economic losses caused by bovine brucellosis were estimated at 631 145 dollars in the animal health project of 1976. This figure does not include the indirect losses on the improvement of stock nor the socio-economic and public health repercussions of this zoonosis.

PARAGUAY

In 1974, Ibáñez, Nicolls and King (31,32) carried out a probability survey covering the eastern area of the country. They tested 6360 samples and found an overall individual prevalence of 3,87% and reactors in 25% of the farms.

Up to 1976, all the work carried out in Paraguay in relation to brucellosis was limited to serology. That year, Brucella abortus biotype 1 was isolated from cow milk and typed (46).

There is little information on the western area. In a sampling survey conducted in several farms on the western border of the Paraguay River, the reactor rate was 7,5%, whereas in other tests it had been 25%.

In the area where the Mennonite colonies, there are approximately 200 000 dairy cattle. Brucellosis is known to exist, but current prevalence is relatively low.

In 1976, the Ministry of Agriculture and the Pan American Zoonoses Center (PAHO/WHO) prepared a national project of animal health aimed at controlling brucellosis, as well as tuberculosis and rabies.

Strategy of the campaign

The strategy adopted for the campaign consisted in the mass vaccination of calves for a period of eight years and the voluntary slaughter of reactors.

Pilot program in the Mennonite settlements

Special mention should be made of the eradication program implemented in the Mennonite settlements, in the central area of the Paraguayan Chaco where, according to 1980 estimates, there were over 200 000 dairy cattle of acceptable productivity.

Because of the low prevalence rate of brucellosis, estimated at approximately 2% in 1978, the relatively limited area of infection, and the type of cattle management, it was considered advisable to adopt an eradication program.

PERU

In 1967 it was found that 9,5% of the 5463 dairy farms were infected. Although brucellosis is known to be present in all the dairy districts of the country, in the departments of Arequipa and Cajamarca, the prevalence was as high as 14% and in Lima, where the dairy cattle population is concentrated, it reached 5,6% (18).

A study conducted in eleven provinces in 1973 by the Zoonoses and Livestock Research Institute which included 10 411 animals, resulted in 1,33% positive reactors to the plate agglutination test.

Over 100 000 cattle were tested between 1972 and 1975; the resulting prevalence ranged from 2 to 4% positive reactors and approximately the same percentages of suspects.

PUERTO RICO

According to Morales Otero (40), brucellosis did not exist in the island until 1923, when it was introduced through cattle imported from USA.

In the survey conducted in 1947 covering the whole island, 9770 samples from 54 municipalities were tested; results showed the positive reactor rate to be 13,6%. That same year, 89 reactors were found among 1885 blood donors tested (41).

Campaigns

Vaccination with strain 19 was introduced by cattle owners in 1942. By 1948, routine use of the vaccine was required by the health authorities.

In 1949, studies were begun in areas with an estimated infection rate below 1%, with the purpose of testing cattle, eliminating the positive reactors, and certifying the areas that had attained the status of brucellosis free.

The tests carried out in 1977, 1978, and 1979 resulted in reactor rates of 0,77, 0,59 and 0,61%, respectively.

SURINAME

Information cited by Kooy (34) refers to a 6,4% reactor rate in cattle at a titer of 1/80.

In recent years, the health authorities have reported that there are no cases of bovine brucellosis. It is therefore considered that the 25 000 cattle are free from this zoonosis and, consequently, no type of vaccine is used.

UNITED STATES OF AMERICA

Evidence of the presence of the microorganism in the United States was submitted for the first time in 1910 by McNeal and Kerr. This was followed by the bacteriological and serological confirmation in different regions of the country.

The first attempt to eradicate brucellosis was initiated in 1934. A serum agglutination at a titer of 1/100 was used as the criterion for positive reactors.

The percentages of positive reactors found in 1934 and 1935 were 11,5%; in 1937, 5%, and in 1941, 2.4%. During the first ten years of the program 65 million adult cattle were examined for brucellosis; 2,5 million were classified as reactors (19).

Several vaccination trials with Brucella abortus strain 19 vaccine were made between 1934 and 1941, both in laboratory and field experiments. By 1941, vaccination had been adopted in 39 states of the Union.

In 1946, estimates indicated that the prevalence of brucellosis was again on the rise and that it would be over 5%.

Control activities were reactivated in 1946. The following year, the Bureau of Animal Industry approved the different plans to be implemented in the campaign. Briefly, the plans consisted in the following activities:

Plan A: Serologic tests and slaughter of reactors, with or without vaccination.

Plan B: Tests and calfhood vaccination, with the temporary retention of reactors.

Plan C: Calfhood vaccination only.

Plan D: Vaccination of adult cattle.

The program had its ups and downs through the years. In 1954, interest in eradicating the disease was revived and a new attack was launched. Without interrupting vaccination, activities related with serological tests and the elimination of reactors were strengthened.

By 1960, as many states had achieved modified certified status, greater emphasis was given to surveillance activities. In addition to the milk ring test, a sampling procedure was developed for the beef cattle industry to identify cattle being marketed for slaughter (market cattle identification or MCI), with which it was possible to trace positive animals to the herd of origin. A variation of this procedure was the market cattle testing program (MCT) which has been very useful in finding infection foci in areas where the prevalence is very low. There are some weaknesses, however, in the MCT system, mainly in that it only provides information on the areas where the infection is present, but gives no indication as to what the situation is in the other areas. The MCT provides no basis to confirm the absence of infection, since reactors are disclosed at the slaughterhouse and their detection is therefore contingent upon the existence of sales.

During the late 1950's and early 1960's the complement fixation, rivanol, mercaptoethanol and heat inactivated tube tests were developed as supplemental techniques to aid the campaign in the differential diagnosis of brucellosis. The use of the card test was also helpful in this respect.

The following factors which made possible progress of the campaign should be emphasized and fully taken into account, even though they may seem unimportant:

- 1) The formation of the National Commission and of committees in the different states, which included representatives of the agricultural and livestock sectors, the food-producing industries, scientific and educational institutions, industry associations, physicians, etc.
- 2) The active participation of the oral and written press.
- 3) The distribution of folders and other printed matter.
- 4) The preparation of such films as "The Triple Threat" and others, which were seen by cattle owners.
- 5) Free selection of the plan at the beginning of the program and later, the obligation to follow that adopted by the majority of the owners of the area.
- 6) The adoption of standard diagnostic techniques, always the simplest and less expensive.
- 7) The availability of funds to compensate in part the owners of infected animals.

8) Means to depopulate problem-herds and to pay total indemnity to owners to avoid resistance to the program.

Brucella abortus strain 19 was the only vaccine officially adopted by all states and was used for over forty years with satisfactory results. Though it did not confer a hundred percent protection, when used in conjunction with other sanitary measures, it was a very effective weapon.

During the mid-1960's, it was decided to deemphasize calfhood vaccination with strain 19. Even though much credit had been given to this vaccine in reducing the prevalence, it was thought that it was no longer absolutely necessary and that the cost of continued vaccination at a high level was not justified, since the probability of infection was small in view of the very low prevalence.

In 1975, it was concluded that the reduction of vaccination had been premature and its use was recommended once more, even though in most states the prevalence was below 1% (Table 4).

From 1964 to 1974, calf vaccination decreased from 7 to 3,8 millions and reached a minimum in 1975. From that year on, it began to increase once more, up to 5 million animals in 1979. At present, there is a tendency to make a greater use of the vaccines and to study new ways and methods for their administration.

Present status

The declining tendency of infection rates was reversed in 1972. According to Schilf (53), there were 12 000 infected farms in 1971, which by 1975 had increased to 16 000.

Table 5 shows that there was no variation in the number of farms with reactor animals between 1974 and 1979 (approximately 30 000). The number of positive reactors in slaughterhouse surveys also showed small variations.

Economic aspects

In 1949, conservative estimates of the Special Committee of the Animal Health Association of the USA placed the economic losses due to brucellosis at more than 100 million dollars a year, on the basis of a 5% prevalence. Without the implementation of a control program, prevalence would have continued to rise. Taking into account the current value of currency, annual losses from bovine brucellosis in the USA would be very near the total cost of the campaign. In other words, the 866 524 579 dollars invested between 1956 and 1975 in brucellosis control were almost totally saved in one year, in spite of the fact that the disease is still present in several states.

As regards the cost of brucellosis control programs, it is essential to emphasize that it is not so much a matter of spending money, but of making adequate investments bearing in mind the particular circumstances of each case. Tables 6 and 7 furnish an eloquent example of what is meant by this. When comparing expenses per cow between 1954 and 1976 in six brucellosis free states, and in six modified certified states, expenses are shown to be higher in the latter.

URUGUAY

The studies undertaken in 1943 in the milk shed of Montevideo showed a positive reactor rate in cattle of 20,3%, with 51,7% of the dairy farms infected. Similar studies carried out by CIVET in 1959 based on the milk ring test showed that 66% of the dairy farms were infected.

On January 2, 1964, vaccination of all calves of 4 to 8 months of age was made compulsory under a decree of the Executive Power prescribing the pertinent regulations of Act 12 937. The vaccine used was B. abortus strain 19, administered under the direct responsibility of a veterinarian practitioner (57). Owners who did not vaccinate their cattle were penalized in accordance with the provisions of the law. The fees charged were assigned to the control of brucellosis (57).

In 1973, nine years after the initiation of the compulsory vaccination campaign, the national infection prevalence was estimated at 3,3% for beef cattle and at 1,4% for dairy cattle.

In 1976, an animal health project was devised; one of its goals was the attainment of the full control of brucellosis through the certification of free areas until the disease is totally eradicated.

Economic losses

Economic losses due to brucellosis were estimated in 1956 at 2,5 million dollars.

VENEZUELA

In 1940, the rate of brucellosis infection of the cattle located in the outskirts of Caracas was estimated to range from 25 to 46% (50).

According to Villegas Delgado (59), Venezuela's annual loss from this zoonosis amounted to 21 521 600 bolivars (5 million dollars). In 1972, losses were estimated at 15 million dollars.

Campaigns

Venezuela was one of the first countries to devise a campaign for the control of brucellosis. The Veterinary Research Institute, which was established in 1942, prepared antigens for diagnostic purposes and for the production of strain 19 vaccine.

In 1946, a regional control campaign was implemented in the central states of the country (28); it was interrupted, however, to devote efforts to the control of bovine tuberculosis. That same year it was necessary to introduce mass vaccination in the State of Zulia because of the high number of abortions and in some farms, owners revaccinated their cattle.

The vaccination program was reactivated in 1958 and extended to a campaign in the strict sense in 1961. That same year, the results of 15 372 tests showed the rates of positive reactors and of suspect animals to be 8,7% and 3,1%, respectively.

Vaccination is compulsory in all states. Doses of strain 19 vaccine administered during 1975 totalled 131 573. Coverage amounted to 35,1% and 13,2% in the eradication and control areas, respectively.

Studies performed up to 1975 showed 16% of the farms in the eradication area to be infected and a positive reactor rate of 1%. The corresponding percentages in the control area were 33,4% and 3,4%, respectively.

GENERAL COMMENTS

More than twenty years ago, Szyfres, Blood and Moya observed that it was practically impossible to compare the results of the diagnostic tests performed in different countries. The significant advances made to date in this respect are satisfactory. The Pan American Zoonoses Center (PAHO/WHO) has established standard antigens and techniques for the diagnosis of animal brucellosis that have been officially adopted by all the countries of the Americas. It should be noted, however, that much remains to be done as regards the diagnosis of the disease in man.

As far as bovine brucellosis is concerned, it may be stated that at present in most instances, the differences observed among the various regions are real and that any anomalous discrepancies are due to nothing but subjective errors.

The significant advances made in the control of bovine brucellosis are evident; so is the fact that some countries are very near attaining final victory over the disease. Nonetheless, it is also true that when infection declines to low levels, there is a tendency to forget the problem and to devote resources to other priorities. The logical consequence is that in a few years

infection rates start rising once again. Schilf (53) has pointed to the increasing number of infected herds in the United States after 1972 and suggests, quite rightly, that this fact should be taken as a warning. However, it would appear that it was not been needed judging by the information reported from some countries which, after tremendous efforts to fight brucellosis seem to have fallen into complacency just before attaining the final goal of total eradication.

Figure 1 shows the approximate percentage distribution of bovine brucellosis in the Americas. According to the information available, South America is the most affected part of the hemisphere. Nevertheless, there are still some areas free from the disease and others with a very low prevalence.

The strains of Brucella abortus typed at the Pan American Zoonoses Center (PAHO/WHO) have been located in a hemispheric map. Because bovines are considered to be the main reservoir of this zoonosis, the role of cattle in the infection of other animal species including man, should be thoroughly studied.

Most of the countries that have estimated their economic losses due to brucellosis have concluded that they always amount to millions of dollars. When the savings resulting from the control or eradication of brucellosis have been calculated, the benefit/cost ratios have been very favorable (21). In 1976, Beale, Kryder, and McCallon analyzed different program alternatives and their benefit/cost ratios from the time when brucellosis had declined to a minimum prevalence in the USA (Table 9).

It is concluded that the benefits derived from an eradication program always rank higher than any possible alternative of opportunity cost.

Table 1. BOVINE BRUCELLOSIS IN BRAZIL. REACTORS TO THE
AGGLUTINATION TEST IN THE PERIOD 1962 - 1968

Region	Animals tested	Positive %
North	12 108	1,6
Northeast	44 342	10,5
East	251 620	35,4
Middle West	87 674	15,4
South	167 662	38,5

Source: Almeida, C.R.T. de Congr. Bras. de Med. Vet.
(XI) 229-239, 1969

Table 2. INFECTED HERDS AND PREVALENCE OF BOVINE BRUCELLOSIS
IN BRAZIL, 1975*

State	Herds tested	% with positive reactors	Prevalence	
			expected** (%)	observed (%)
Sta. Catarina	1 885	0,4	3 0,1 P	0,3
Parana	2 390	21,2	10 8,9 P	10,3
Sao Paulo	1 550	22,7	20 6,7 P	8,1
Minas Gerais	3 383	17,7	15 5,9 P	6,7
Rio de Janeiro	907	16,9	10 3,9 P	5,2
Goiás	1 429	32,0	12 10,8 P	12,4
Matto Grosso	772	22,9	8 5,6 P	7,2
Distrito Federal	310	7,4	4 1,8 P	2,9
Bahia	1 213	13,6	10 5,3 P	6,7
Alagoas	647	3,8	10 0,9 P	2,1
Pernambuco	927	4,4	7 1,2 P	2,1
Parsiba	544	2,7	10 0,4 P	1,4
Rio Grande do Norte	784	2,6	5 0,5 P	1,3
Ceará	1 195	2,3	10 0,5 P	1,1
Piauí	888	1,1	10 0,1 P	0,5
Maranhao	821	3,5	6 0,9 P	1,9
Roraima	140	13,5	20 1,5 P	3,5
	19 855	13,2		

* Source:

** Individual prevalence estimated before the survey

Table 3. BOVINE BRUCELLOSIS IN CUBA. REACTORS TO
SEROLOGIC TESTS, 1963 - 1976

Year	Animals tested	% positive	% suspect
1963	114 038	4,33	6,77
1964	809 483	2,61	3,67
1965	807 057	1,02	1,03
1966	1 226 492	2,12	1,32
1967	1 994 675	1,62	0,73
1968	4 137 157	1,12	0,48
1969	4 961 968	0,88	0,66
1970	3 165 719	0,75	0,49
1971	6 000 000	0,39	
1973	4 500 000	0,3	-
1974	4 692 302	0,5	-
1976	3 974 000	0,4	0,9

Table 4. VACCINATION OF CALVES WITH BRUCELLA ABORTUS
STRAIN 19 IN THE USA, 1974 - 1979

Year	Calves vaccinated (in thousands)	Vaccination coverage* %
1974	3 815	15,7
1975	3 698	20,0
1976	3 841	20,4
1977	3 758	20,2
1978	4 063	22,9
1979	5 091	30,2

* Ratio calves vaccinated/calf population

Table 5. BOVINE BRUCELLOSIS IN THE USA. SUSPECT HERDS AND REACTING ANIMALS IN SLAUGHTERHOUSES, 1974 - 1979

Year	Farms with reactors		Reactors at slaughterhouses	
	Positives	%	Positives	%
1974	29 891	13,3	62 586	0,7
1976	37 616	14,9	77 398	0,7
1977	33 276	12,7	51 508	0,5
1978	29 750	10,9	52 341	0,6
1979	27 689	10,4	36 605	0,6

Source: U.S. Animal and Plant Health Inspection Service.

Communication sent to the Pan American Zoonoses Center (PAHO/WHO)

Table 6. AMOUNT SPENT PER COW (IN DOLLARS) OF THE BRUCELLOSIS CAMPAIGN IN SIX MODIFIED STATES AND IN SIX FREE STATES, 1954 - 1976

Modified states	Dollars spent/ cow		Free states	Dollars spent/ cow	
	\bar{X}	S		\bar{X}	S
Alabama	1,50	0,47	California	1,27	0,59
Florida	1,89	0,79	Minnesota	1,36	0,61
Georgia	2,36	0,74	New York	1,31	0,34
Louisiana	2,44	0,86	North Carolina	1,41	0,45
Missouri	1,23	0,44	North Dakota	0,86	0,22
Texas	0,58	0,33	Wisconsin	1,49	0,75

Source: Report of the National Brucellosis Technical Commission, 1978.

Table 7. COMPARISON OF THE COSTS OF THE BRUCELLOSIS
CAMPAIGN IN THE USA WITH THE INCOME DERIVED FROM
CATTLE, 1954 - 1976

	Gross income from cattle (in million \$)	Campaign costs (in million \$)	Amount spent per hundred dollars of gross income
<u>Free states</u>			
Utah	3 771	12	0,30
North Carolina	6 211	18	0,28
North Dakota	8 254	22	0,27
Wisconsin	41 249	80	0,19
Minnesota	32 290	56	0,17
New York	26 298	41	0,15
California	45 123	55	0,12
<u>Modified states</u>			
Louisiana	6 485	63	0,98
Florida	8 343	63	0,62
Georgia	6 413	50	0,77
Alabama	6 790	37	0,54
Missouri	21 257	61	0,29
Texas	43 355	76	0,17

Source: Report of the National Brucellosis Technical Commission, 1978

Table 8. BOVINE BRUCELLOSIS IN JAMAICA
AGGLUTINATION TEST RESULTS, 1971 - 1979

Year	Animals tested	Positive %
1971	12 537	1,5
1972	11 482	0,6
1973	9 886	0,4
1974	18 687	0,7
1975	43 000	0,5
1976
1977
1978	27 738	0,3
1979	22 738	1,2

... Information not available

Table 9. BENEFIT/COST RATIO OF VARIOUS ALTERNATIVE PROGRAMS
AGAINST BOVINE BRUCELLOSIS IN THE USA FROM 1976

Alternative program	Benefit/cost ratio
1. 10 years eradication vs. no program	10,67
2. 10 years eradication vs. voluntary vaccination by owners	8,65
3. 10 years vaccination vs. reduced federal program	3,39
4. 10 years eradication vs. program underway in 1975	1,68
5. Program under way vs. no program	8,15
6. Program under way vs. reduced federal program	3,36
7. Reduced federal program vs. no program	7,34

Source: Beale, Kryder and McCallon "Brucellosis Program
Analysis", APHIS, USDA. 1977

BOVINE BRUCELLOSIS

1980

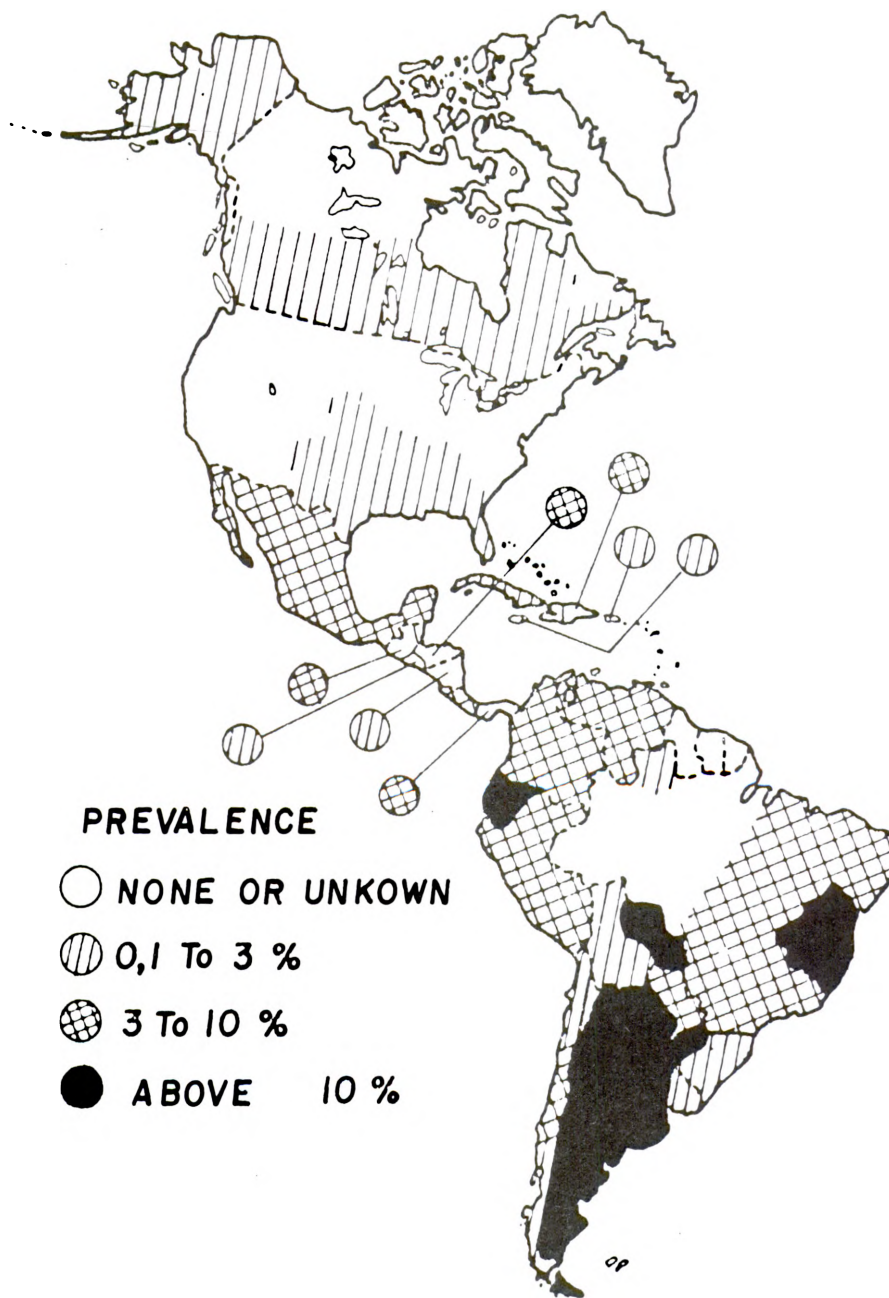


Figure 1. Prevalence of bovine brucellosis in the Americas, based on the information sent by the countries to the Pan American Zoonoses Center (PAHO/WHO)

BIOTYPES OF B. ABORTUS TYPED UP TO 1980.

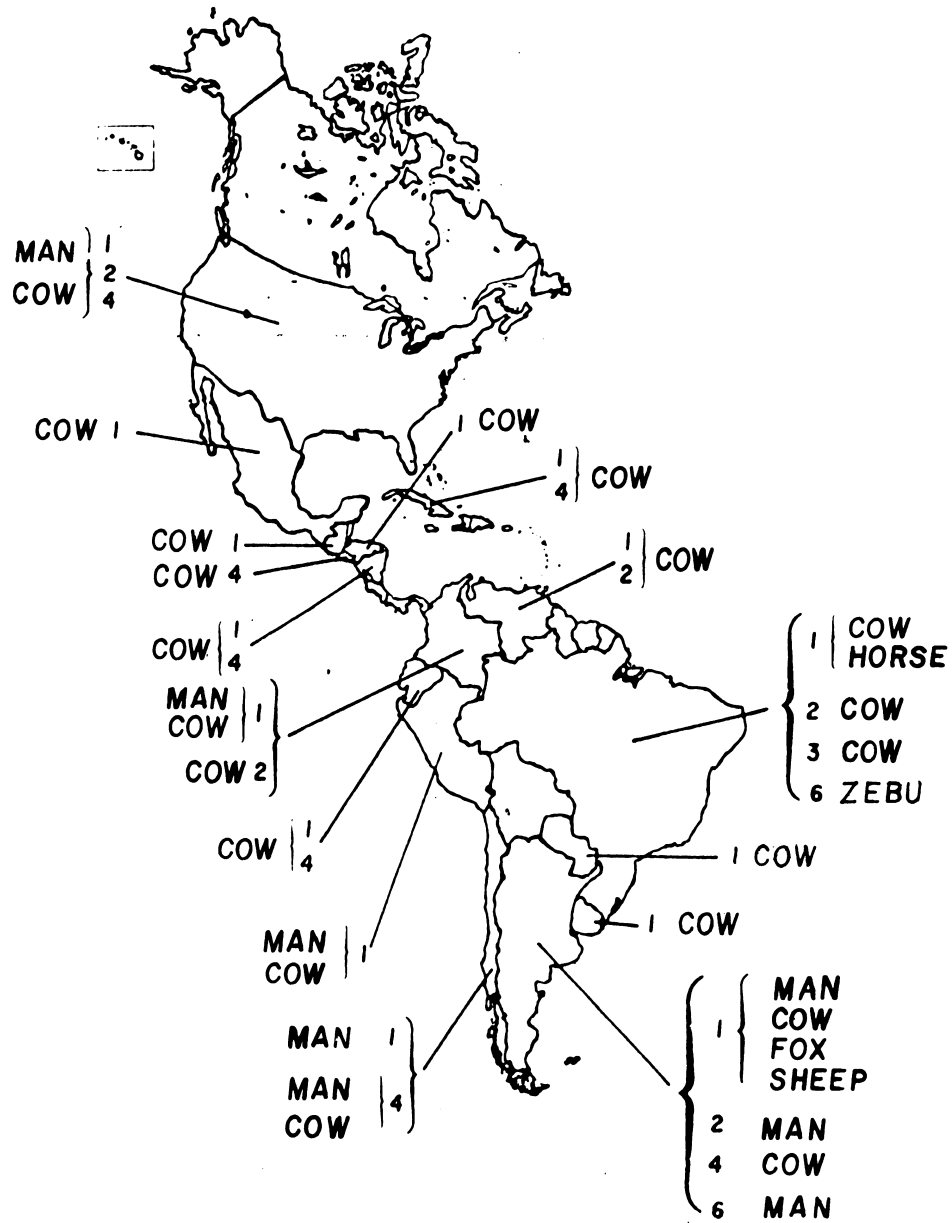


Figure 2. Biotypes of Brucella abortus typed at the Pan American Zoonoses Center, by place of origin and species affected

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THE BRUCELLOSIS ERADICATION PROGRAM
IN THE UNITED STATES

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THE BRUCELLOSIS ERADICATION PROGRAM
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Presented by Dr. Paul Becton
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SUMMARY

Brucellosis is a specific, infectious, bacterial disease of animals and man. Infection in the cow tends to localize in the pregnant uterus, udder, and lymph glands and the infected cow may shed brucella the rest of its life. Brucellosis is generally spread by infected farm animals and only rarely by the aberrant hosts. No treatments are effective in animals because of the intracellular location of the brucella in some lymphocytes, macrophages, and other body cells.

The brucellosis eradication program in the United States was started in 1934 as part of a drought relief program. After approximately 20 years of control procedures, the United States Congress appropriated funds in 1954 for an accelerated brucellosis eradication program. This program consisted of enhancing immunity with the use of Strain 19 vaccine in heifer calves and a test-and-slaughter program. Initially, most areas were surveyed through the use of the brucellosis ring test in dairies and area testing in beef cattle. The market cattle testing program, where all cattle are tested at slaughter, was added during the 1960's as an additional surveillance tool. All States were modified certified by 1971 and the incidence in cattle had been lowered from a reactor rate of over 11 percent of all cattle tested when the program first began to 0.51 percent. With less emphasis on the program during the early 1970's, the incidence began to increase reaching a peak in 1975.

The incidence of brucellosis has been reduced each year since 1975 and is now at 0.47 percent. Thirty-one States are classified as certified free, 10 of which have no herds under quarantine. Over 90 percent of all infected herds are located in 10 Southeast and South Central States. Five of those States have intensified their programs which will lead to rapid reduction of the disease. Testing of cattle at the first point of concentration, increased area testing, increased use of indemnities for herd depopulation of badly infected herds are being implemented in these States. Increased emphasis is being placed on calfhood and whole herd vaccination with Strain 19 vaccine in all high incidence States. In addition, emphasis is being placed on development of individual eradication herd plans for all infected herds, additional testing prior to release of quarantines, and post-movement tests of breeding cattle moving from high incidence areas. Losses due to brucellosis are now estimated at approximately \$44.5 million per year.

INTRODUCTION

The Cooperative State-Federal Brucellosis Eradication Program has been in existence in the United States since 1934. This program has always been based on the belief that brucellosis can and should be eradicated from the livestock population. This position has been reconfirmed by the livestock producer, regulatory officials, and the scientific community on numerous occasions over the years.

NATURE OF BRUCELLOSIS

To better understand the subject under discussion, the nature of the disease needs to be understood. Brucellosis is a specific, infectious bacterial disease of animals and man. There are three classical species in

the genus brucella and each has a preferential host; thus, Brucella abortus is associated with brucellosis of cattle, Brucella suis with brucellosis in swine, and Brucella melitensis with brucellosis in sheep and goats. However, each species can infect a wide range of hosts.

The severity of brucellosis tends to vary according to the animal species, the individual affected, and the brucella species. This can vary from a mild and transient febrile attack to a severe infection with abortion in the female cow, and to a lesser extent, orchitis in the male, particularly in swine.

ACTION OF BRUCELLOSIS IN ANIMALS

Calves up to 8 months of age are usually resistant to infection. Resistance in unvaccinated heifers gradually decreases as they reach sexual maturity. Unbred, unvaccinated heifers are quite susceptible to infection, however, susceptibility is greatest during pregnancy. About 50 percent of unvaccinated cows abort following initial infection and, subsequently, some of these cows are sterile. Infection in the cow tends to localize in the pregnant uterus, udder, and lymph glands. The establishment of this carrier state in a large proportion of animals is an important factor in the perpetuation of the disease. The typical animal aborts only once after becoming infected and subsequent calvings may be normal. At least 85 percent of such animals remain reactors to the standard agglutination test and may shed brucella from the uterus at later, apparently normal parturitions, thus serving as foci of infection. The time from exposure to detection of brucella antibodies in the serum is defined as the incubation period. The incubation period is variable, but a positive agglutination test usually

develops within 30 days, although it may take 8 months or longer. Abortion usually occurs 1 to 4 months after exposure, depending on the state of gestation at the time of exposure. In an uncomplicated abortion, there usually is no impairment to the general health. Usually, infected bulls show no physical evidence of the disease. However, occasionally an orchitis is present and brucella can be isolated from various tissues in the reproduction tract. Antibodies may be demonstrated in the semen of such bulls. Abscesses of the testicles occur. The organism has been isolated from arthritic joints in cattle.

TRANSMISSION OF BRUCELLOSIS

Brucellosis is generally spread by infected farm animals and only rarely by the aberrant hosts. It is most frequently introduced into a herd by the addition of infected replacement stock. Brucella organisms are expelled by the infected animals in the vaginal and uterine discharge and fetal membranes at parturition and by milk, feces, and urine. Natural service is not a principal means of spreading infection in cattle. Transmission of infection by artificial insemination with semen of infected bulls has been demonstrated. Probably the most common mode of entry for brucella in cattle is by ingestion of contaminated feed and water, but infection is also possible through the mucous membrane of the eye and through the intact skin.

VIABILITY OF BRUCELLA

The survival of Brucella abortus outside the host may occur under favorable conditions. Experimentally, under a variety of temperatures, moisture and nutrient conditions, brucella retains viability from 4 1/2 hours in direct sunlight to 121 days when dried in the presence of nutrient

material. Under farm conditions, however, it is doubtful that the organism can successfully compete with the normal microflora because of unfavorable environmental conditions and it is soon overgrown and crowded out. The organism may persist in the environment for longer periods if protected by moisture, shade, and cold temperatures (freezing or below).

TREATMENT

There are no treatments effective in curing brucellosis in animals. Many antibiotics have a bacteriocidal effect on the brucella circulating in the blood stream, but they do not eliminate generalization or localization of infection because of the intracellular location of the brucella in some lymphocytes, macrophages, and other body cells.

PROGRAM HISTORY

In the United States, the program has not always been operated at a level that could achieve eradication. In the early days, it was part of an effort to selectively reduce the cattle population because of drought conditions in the United States. However, several States saw this as an opportunity to reduce the losses due to brucellosis by increasing their efforts and did make progress toward eradication. By 1940, 209 counties in 17 States had achieved modified accredited (certified) status in recognition of progress made in reducing the level of brucellosis. To qualify, they reduced their infection rates to less than 5 percent of the herds and to less than 1 percent of the cattle. In 1942, North Carolina became the first State to achieve modified certified status. In 1934 and 1935, the reactor rate in the adult cattle population tested was 11.5 percent. By 1937, the reactor rate had decreased to 5 percent and it reached a low of 2.4 percent of cattle tested in 1941. It is now at 0.47 percent.

The U.S. Department of Agriculture began supplying a standardized brucella antigen to the State laboratories in 1939. This was a significant change. Each State previously had been producing their own antigen, which resulted in test discrepancies.

IMMUNIZATION HISTORY

As early as 1906, Bernard Bang reported that protection against brucellosis in cattle was attained following the injection of living cultures of brucellae, but no protection was acquired with killed organisms. Since it had been pretty well demonstrated that viable cultures of Brucella abortus would offer protection to cattle against brucellosis, intensive investigations were undertaken in various areas to find the most nearly ideal immunizing agent.

Early investigations in the United States appeared so promising that by 1919 the Bureau of Animal Industry licensed biological concerns to produce and distribute viable immunizing preparations. However, it became apparent that persistent infections were being established by some of these vaccines and the immunized animals were a dangerous source of disease. In the search for a more reliable vaccine, workers in the Bureau of Animal Industry took the lead. Their efforts were rewarded by the discovery of an unusual strain of brucellae that appeared suitable for immunizing purposes on a large scale. This culture, known as Strain 19, Brucella abortus, was first isolated by Buck in 1923 from bovine milk. The culture was originally very virulent, but after remaining on an agar slant at room temperature for a year (quite by accident), the virulence of the strain became attenuated and has remained so upon subculture and animal passage.

STRAIN 19 VACCINE

Strain 19 has never been known to cause human disease either through direct association with vaccinated animals or through the ingestion of milk from such animals, although its accidental inoculation into veterinarians has resulted in authenticated cases of human brucellosis. Almost all investigators now agree that, under both natural and experimental conditions, Strain 19 causes a relative immunity against bovine brucellosis.

A single injection of vaccine into each animal is used in immunizing programs. While Strain 19 does offer protection against infection with Brucella abortus, it does not similarly protect cattle against infection with Brucella suis.

In the search for a reliable vaccine against bovine brucellosis, Strain 19 has been found to possess a continued state of attenuated virulence, and relative protection is offered to young animals and to adults. However, it has not been claimed, nor can anyone assert, that vaccination programs alone with Strain 19 will eradicate brucellosis from cattle. Strain 19 vaccine was introduced into the program in 1941.

SEROLOGY AND STRAIN 19 VACCINE

The detection of infected animals is based primarily upon the agglutination test, and this immediately brings to light one of the problems of immunizing with Strain 19. The vaccine does cause the appearance of brucella agglutinins, and in a certain percentage of animals, agglutinins persist for a long time. Agglutinins, however, are not an indicator of immunity as once believed. Vaccinating cattle, unless this is considered, can interfere with control programs. This is particularly true when adult animals have been immunized indiscriminately and particularly with dosages

exceeding 3 billion live organisms. Doses between 300 million and 3 billion live organisms are now recommended for use in female calves between 4 to 12 months of age and in females over this age in selected infected herds and areas. Relative immunity appears to be comparable to the former standard doses that contained 25 billion to 125 billion live organisms. Persistence of agglutinins is remarkably shortened, particularly in animals of younger ages.

Strain 19, Brucella abortus, does not offer protection of any significance to swine. There are no practical methods of immunization available in the control of swine brucellosis.

PROGRAM DEVELOPMENT

During and following World War II, eradication efforts were reduced considerably and in some States very little was done other than supporting the efforts of individual owners whose herds had become infected. There was also some increase in the use of Strain 19 vaccine.

Due to decreased resources and efforts in the program, the number of reactors among cattle tested increased to 5 percent by 1946.

There was an increase in cattle numbers in the United States during this time, which contributed to the increased incidence of brucellosis as more cattle were being moved and introduced into existing and new herds.

In 1947, the United States Livestock Sanitary Association, a national organization of industry and regulatory representatives, recognized that brucellosis should be treated as a national problem and recommended the adoption of the first Uniform Methods and Rules (UM&R) for the eradication of bovine brucellosis. These rules were approved by the Department of Agriculture and serve as a guideline for the eradication of the disease on a

herd, area, State, and national basis. The rules have been revised from time to time to meet the changing needs of the program.

ECONOMICS OF BRUCELLOSIS

In 1949, under the heading of "Importance of the Disease to the Livestock Industry," the following statement appeared in the booklet "What is Known about Brucellosis."

"L. As already pointed out, any figure for losses caused by brucellosis in cattle must, of necessity, be a broad estimation. Thus, in arriving at a final estimate of around \$90 million for the yearly losses suffered by the cattle industry because of brucellosis, every effort has been made to lean heavily toward the conservative side. It will be noted that a number of important elements have not been considered at all due to a lack of suitable data upon which satisfactory determinations could be made. No reliable data are available to form a basis for accurate estimates of the heavy economic losses to the swine industry; however, it would seem that the economic loss to the livestock industry caused by brucellosis can be conservatively estimated to be more than \$100 million yearly."

Current losses to the industry from brucellosis are about \$44.5 million per year. This 1979 loss figure is based on owner losses due to reduced milk production, abortions, sterility, reduced weight gain, and increased replacement costs from the estimated 260,159 infected beef cattle and 11,267 infected dairy cattle. For comparison, today's dollar is worth approximately 37 cents of the purchasing value of 1949 dollars. That makes the \$100 million losses in 1949 about \$370 million in today's market.

ACCELERATED PROGRAM

By 1954, livestock producers throughout the country had become extremely concerned over the losses due to brucellosis because of the increased incidence of this disease. In the fall of 1954, additional funds were made available and plans developed for an all-out accelerated effort to eradicate brucellosis. This involved State-by-State planning and support of the program to find and eliminate this disease. The basic thrust at that time was down-the-road area testing with quarantine and retest of herds found to be infected. Reactors were identified and removed for slaughter. Calfhood vaccination with Strain 19 was encouraged and in some States vaccine was administered at a very high effective level and did contribute to the eradication effort. Some States moved ahead faster than others but all were modified certified by 1971. Included in the front runners were some States that initially had a very high level of infection. By the time area testing had been completed and all of the States had attained a modified certified status, approximately 30 States had also achieved certified free status. These were the States that started early and never stopped working. Some of these States were certified free by the time other States were just starting a program.

BRT SURVEILLANCE

In 1952, the milk ring test (BRT) was adopted for use in the national program. The procedure provided means for a frequent screening of dairy herds at a low cost. In fiscal year 1980, 0.38 of 1 percent of herd milk samples were positive compared to 26 percent in 1954. Thus, in 1980, dairy cattle blood testing activities were concentrated on the 0.38 percent suspicious herds; thereby, almost eliminating the testing of negative herds.

MARKET CATTLE SURVEILLANCE

During the early and mid-1960's, changes were taking place in the overall approach to finding the disease. As States became modified certified, area testing every 3 years gave way to a continuous surveillance program. In addition to the brucellosis ring test, a sampling procedure for the beef cattle industry was developed (Market Cattle Identification (MCI) program) which involves the collection of a blood sample from animals being marketed for slaughter. The cow is identified with a backtag and a blood sample collected at slaughter. The purpose of this program is to identify positive animals and trace them back to the herd of origin so that the infection may be eliminated at that point. It also furnishes information regarding the prevalence of the disease within the population.

MCI includes all tests on breeding cattle moving in unrestricted marketing channels. Another dimension has been added to this surveillance program in some States by testing all eligible animals in the livestock market including those being sold for slaughter. It is referred to as the "first point of concentration testing" procedure.

This procedure has increased the coverage and effectiveness of the market cattle testing program. The procedure has identified infected animals earlier in the marketing process at a time when exposed animals can also be identified and removed from the marketing channels before being sold as breeding animals. This procedure is desirable in the more heavily infected States where it is necessary to increase the capability of finding the disease. The market cattle testing program has been very effective in monitoring the total population for brucellosis in areas where the number of

infected herds is low. It has done this without requiring the assembling of negative herds of cattle for testing.

PROBLEMS WITH MCI SURVEILLANCE

There are some weaknesses, however, in this procedure. The major weakness is that a livestock producer must sell a diseased animal before the herd is located. Also, the identification system is not infallible; for example, there are livestock dealers who purchase animals from several different farms and the animals are subsequently taken to a market for sale. It is entirely possible that all of the animals at the time of sale will be identified to the dealer rather than to the herd of origin. Consequently, if an infected animal is located by use of samples collected at slaughter, it is difficult if not impossible to determine the exact herd from which the animal originated. Recently, requirements for dealer registration and recordkeeping have been added to the program standards. It is expected improvement in traceback will occur.

Another problem with this procedure is that owners who wish to do so can give inaccurate information concerning the herd of origin in cases where they own more than one farm or if they have cattle located on more than one premises.

EPIDEMIOLOGICAL SURVEILLANCE

To overcome the effects of the weaknesses just described, more emphasis is now being placed on another aspect of surveillance, referred to as epidemiological surveillance. This requires testing of all units operated by the owner of the infected herd, testing of both adjacent and contact herds, testing of herds to which cattle from infected herds have been added,

and testing herds from which cattle have been moved into the infected herd. This sometimes results in what is called "mini-area" testing. In other words, the outer boundaries of the pocket of infected herds is established, then all herds within this area are systematically tested.

HERD DEPOPULATION WITH INDEMNITY

Another facet of these efforts to eradicate a foci of infection, is the judicious use of "herd depopulation with indemnity" of herds having a chronic infection that does not respond to management with test-and-slaughter procedures or herds experiencing fulminating infection. This tool has been used effectively in areas of low incidence and in areas where intensified programs are being conducted.

COMMUNITY NOTIFICATION

Another concern is that this procedure allowed dealing with and communicating only with the producer whose animals are found to be reactors. As a result of this, information efforts decreased with the negative herd owners. This created a serious lack of information concerning the status of the disease and information needed by cattle owners concerning the threat of this disease entering their clean herds. A requirement for community notification has recently been added to program standards to overcome that problem. During the past few years, renewed efforts have been made to inform cattle owners concerning brucellosis and certainly much progress has been made in this direction.

REEVALUATION OF STRAIN 19 ROLE

Another change in the program which occurred during the mid-1960's was a decision to deemphasize calfhood vaccination with Strain 19 vaccine even though much credit had been given to Strain 19 vaccine for the progress that

had been made. One primary factor in this decision was that lingering titers were causing diagnostic problems in the cleaner States. It was also thought by program planners at that time that the opportunity for exposure to brucellosis had been diminished to the point that the cost for continued vaccination at a high level was not justified.

The role of Strain 19 vaccine in the eradication program has been reevaluated by the U.S. Animal Health Association and the U.S. Department of Agriculture. Calfhood vaccination is encouraged with the reduced dosage in high incidence areas and in other areas that may sell cattle into high incidence areas. Federal funds have been requested to support vaccination in States where there is a need. In the high incidence areas we are also encouraging whole herd vaccination with the reduced dose under closely controlled conditions. The goal is to have a high degree of resistance to the exposure that happens in high incidence areas. To achieve this goal, the herd is tested, reactors removed, and all remaining cattle vaccinated with the reduced dosage. Testing begins in 60 to 120 days using complement fixation (CF) and rivanol tests interpreted by trained epidemiologists.

DIFFERENTIAL TESTS

During the late 1950's and early 1960's, the CF and several supplemental tests were developed to aid in the differential diagnosis of brucellosis. These supplemental tests included the acidified plate antigen test (APA), rivanol, Mercaptoethanol (ME), and Heat Inactivation Test (HIT), which destroy or inhibit certain classes of antibody which may be present in the

serum and are used by veterinary epidemiologists to identify the primary class of antibody in the serum as an aid in interpreting the probable status of an animal.

ROLE OF EPIDEMIOLOGISTS

Epidemiologic studies were initiated in 1958 on brucellosis problem herds. In order to effectively work with these problem herds, veterinarians were selected for additional academic and field training. This training has helped them better understand the host-parasite relationship, the application of newer serologic tests, immunologic mechanisms in bacterial infections, bacteriologic procedures and become familiar with the technical factors influencing the persistence and spread of brucella infections.

At first emphasis was placed on providing technical expertise in evaluating significant factors affecting brucella infections in problem or unusual herds. Gradually all suspicious or reactor herds in low incidence areas have become considered to be problems requiring a complete evaluation. The recent change in the Uniform Methods and Rules requires the development of an individual herd plan designed by the program veterinarian and the owner to eliminate the disease as expeditiously as possible while observing sound eradication procedures. The epidemiologists have a general responsibility to oversee these plans to evaluate the soundness of the procedures. They also have a general responsibility to monitor the routine program procedures and identify deficiencies which will adversely affect the detection of infected herds or animals. The surveillance programs such as market cattle testing, brucellosis ring testing, and epidemiologic tracing are of particular interest because of their impact on the ability to find new cases of

disease. The geographic distribution of infection and the prevalence of disease within the population are major concerns of the epidemiologists. They must also oversee the technical reliability of bacteriologic and serologic tests and their interpretations and the adequacy of investigations conducted by others. Conducting education and training programs in the natural course of the disease, its detection, and other technical aspects of the program for veterinarians and animal health technicians are also part of the role.

While the above activities are vital in a successful program, the major areas of activity for an epidemiologist must be in monitoring and evaluating data from numerous sources to identify the impact of changes in the livestock industry, animal husbandry practices and other factors on the occurrence and distribution of brucellosis. The epidemiologist is the technical resource for evaluating program procedures as to their soundness and for identifying emerging problems as environmental conditions or industry practices help modify the prevalence or spread of brucellosis. Their recommendations, based upon documented evidence, are often the basis for improving program procedures under the Uniform Methods and Rules.

CONTROL OF EXPOSED ANIMALS

Quarantine periods have been extended as the program developed. The 30-day period, once required for release of quarantine, has now been extended to 120 days following the removal of the last reactor. Additionally, herds are now required to be tested 6 months following release of the quarantine. As the rate of infection has decreased, the importance of locating long incubating animals has increased.

Many areas are free but are subject to introduced foci of infection. To minimize this risk, inherent in the movement of negative, incubating animals, requirements for a quarantine and retest in 45 to 120 days are being implemented. In a number of States, a high percent of "newly infected herds" are found as a result of the quarantine and retest requirements.

ROLE OF CARD TEST

In 1963, the brucellosis card test was adopted as an official brucellosis test for swine. The card test was modified for use in testing cattle and was adopted as an official test in 1966 but recently was changed to a primarily supplemental test. Reported abuses or misuse of this simple and effective test were the reason for its loss of favor.

FIELD STUDIES

In the past decade, a number of field studies have been initiated. Among these are: Brucella melitensis H-38 killed vaccine trial; adult vaccination of dairy cattle in Florida using Strain 19; Brucella abortus 45/20 bacterin; cell mediated immune systems; lymphocyte stimulation studies; transfer factor; brucellosis research by Texas A & M in problem herds; brucellosis research project by Louisiana State University; investigations on differential diagnostic tests by University of Wisconsin; and the role of calves in the transmission of brucellosis at Auburn University and Montana State University.

CONTROL OR ERADICATE

Looking ahead to completing this task of eradicating brucellosis in the United States, owners' acceptance of program procedures is becoming increasingly important. This is due to larger herds, increased labor costs,

and inconveniencies caused by the program. It is the responsibility of the scientific community and the regulatory agencies to furnish the cattle owners with enough information to make the correct choice regarding what is best for the industry. Given this kind of information, the industry in the United States will choose to eradicate brucellosis rather than to control or live with it and pass the problem on to future generations.



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THE BOVINE BRUCELLOSIS CONTROL PROGRAM
OF URUGUAY

Dr. NELSON MAGALLANES

THE BOVINE BRUCELLOSIS CONTROL PROGRAM OF URUGUAY

Dr. Nelson Magallanes

The compulsory control program of bovine brucellosis was established in Uruguay in 1961 and implemented in 1964.

The control of brucellosis since its recognition in 1926 was on voluntary basis.

The cattle owner was free to choose any of the control plans that the government proposed in 1930 and 1932, with the objective principally to recognize infected herds or animals. The acceptance of one of the plans implied a series of measures, such as the identification of the animals and their testing, as well as the isolation or slaughter of the reactors; the heat-treating of the milk was also required together with other measures.

When the first ruler were dictated the prevalence of bovine brucellosis was not well known, and acceptance of the control measures by the cattle-owners was not sufficiently explored. As can be expected the control plans didn't meet with the acceptance of the cattle industry and the program was abandoned.

The rules in reference to import and export of animals, however, were strictly enforced, as well as to cattle shows and fairs, where certificated of a brucellosis negative was required for dairy cattle and herd book registered bovines and swine.

These measure of course were not sufficient to have any impact on the overall prevalence of the brucellosis infection in the country.

The data accumulated till the initial years of 1960 have allowed to a better evaluation of the situation, which put in evidence that bovine brucellosis was widespread in Uruguay and that a test and slaughter policy was impacticable.

A change in policy was needed, especially as payment by the government of compensation for slaughtered animals was not possible. The choice was calfhood vaccination with Brucella Abortus strain 19 vaccine. This vaccine was used experimentally by the animal health agency since 1946 and its use was authorized in the field as an important and voluntary control measure in 1953.

The coverage however of the voluntary vaccination program was poor. Only about 10% of the calves born annually were vaccinated. This limited vaccination could be of benefit for the herds, where vaccination was used but could not change the epizootiological situation of the disease in the country.

As said formerly a law was passed of compulsory calfhood vaccination (Law 12.937 of november 9, 1961), which principal goal was to protect the national herd against brucellosis by systematic vaccination of calves, and by this mean obtain brucellosis resistant herd which would substitute in about 8-10 years the infected ones.

Before giving details of the program it is convenient to give some data on the apizotiological situation, in order to be able to visualize the results obtained by the compulsory program.

A. Bovine Brucellosis

1. Infection in dairy cattle.

During 1932-33, a survey in dairy herds of Montevideo showed that 51.7% were infected, and that 20.3% of the cows tested, were positive reactors and 14.7% were suspects.

In 1951, a survey made by the ring test showed that of 1.200 dairy herds that provided milk to the capital city, 42% gave positive reactions and 14% dubious ones.

Tests performed from 1952 to 1960 on 42.500 blood samples, showed that 4.34% of the females were reactors and 6.21% suspects, while 0.37% and 2.24% of the males were reactors and suspects respectively.

In another ring test survey done in 1959, the milk samples of 65.1% and 7.9% gave positive and suspicious reactions respectively of the 2.030 dairy herds providing milk to the pasteurization plants of Montevideo.

A survey made in about the same time on 3.025 blood samples of dairy animals from a milk shed 500 kms from Montevideo gave 9.1% reactors and 2.7% suspects.

2. Infection in beef animals.

In 1932-1933, tests made on 113,645 blood samples of 1,161 beef herds distributed throughout the country showed that 371 of the herds (32%) harboured reactors and that 5.2% of the animals tested were reactors and 3% suspects.

In 1945, more than 10 years later, the prevalence of infected herds was about the same (31.3%), though the number of samples and herds tested were twice as many.

From 1955 to 1960, serologic examination of 33,500 samples gave the following results: 0.33% of the males were reactors and 1.28% suspicious; 5.29% of the females were reactors and 4.62% suspicious.

B. Brucellosis in other animal species

1. Swine

The first isolation of Brucella suis in Uruguay was made in 1943.

An investigation made at this occasion allowed to find out that five herds were infected (4 in the department of Canelones and one in Soriano). The infected herds were destroyed and indemnity was paid to the owners.

The swine industry has not been greatly developed at that time, and has not yet reached now a high level of development, in Uruguay. It seems from the records that the outbreaks of swine brucellosis was due to the introduction of swine from outside the country. (Data indicated that at the time 39% of the imported swine were positive to the serologic tests).

Investigations done after the outbreak mentioned confirm the impression that Uruguay is free from swine brucellosis. There are no clinical indications of the disease, and all the serologic tests made at the slaughter houses were found to be negative. Brucella suis has not been isolated from human patients.

2. Sheep

Brucella ovis infection was diagnosed for the first time in 1961. A survey made three years after in 1937 rams showed infection in 8.9% of the animals.

It is not known the importance and prevalence of Brucella ovis infection, it is admitted however, that epididymitis is the principal cause of rejection for reproduction. Studies on this matter are complicated by the fact that epididymitis in rams is also caused by other gram negative microorganisms, and the pathology is similar to that of Brucella ovis infection.

3. Goats

There are only about 20.000 goats in Uruguay, and blood samples of these species are seldom examined.

No serologic reactors were found to far.

According to the data presented at the beginning of the sixties only bovine brucellosis was established in Uruguay, and the infection was present in about 50% of the dairy herds and in a third of the beef cattle herds, with a global prevalence of more than 20% reactors between dairy animals and 8 to 10% in beef animals.

C. Human Brucellosis

The first human cases were studied in 1931 and the first isolation of Brucella abortus from the blood of a human patient was obtained in 1932. More extensive apidemiological investigations were performed after the Brucellosis Study Centre at the Insurance Bank was established in 1940.

Different human communities were studied by the intra-cutaneous test in 1942 to 1947, comprisin 12.459 persons, and results obtained were as follows:

Slaughter house workers _____	9-25%
Milk processing workers _____	16%
Workers at dairy and beef establishments _____	8%
Textil workers _____	4%
Inhabitants of towship _____	1-2%

Though the proportion of persons reacting to the test was great in several social groups, the number of clinical cases was low and mortality low, as is generally found in Brucella abortus infections.

Table 1 gives a more detailed information about the spread of brucellosis in the groups examined from 1942 to 1947.

Table 2 gives a summary of the same information.

Investigations made in 1958 in another town with an important slaughterhouse, 7% of the 1.018 inhabitants examined reacted to the test.

This was the situation of human and animal brucellosis when the Law 12.937 of November 1961 was passed.

In essence, the program established compulsory strain 19 vaccination of all calves between 3 and 8 months old and the banishment of movement of animals more than 3 months old if not provided with the corresponding certificate. Since August 15, 1974 the age of vaccination was restricted from 3 to 6 months.

The vaccine is presently produced by 5 commercial laboratories, and every batch is controlled by the official laboratory of the Ministry of Fishing and Agriculture, according with the international requirements. Annually 3 to 10% of the vaccine batches are rejected.

The vaccine is applied by or under supervision of officially registered private veterinary practitioners. So far 706 veterinarians have registered.

The cost of vaccination per calf is u\$s 1.25 for beef cattle and u\$s 1.70 for dairy cattle.

The vaccinated calves are identified by tattoo in the right ear and marked with a signal shaped as a V in the upper part of the left ear.

The rule 233/971 of April 30, 1971 establishes that this site of the ear is for exclusive use of the program. The tattoo in the right ear includes a sign that individualizes the acting veterinarian and the month and year of vaccination.

Calves of beef cattle herds are vaccinated from May to August and dairy calves through the year.

Within 30 days post vaccination the acting veterinarian has to extend the corresponding certificate to the owner, with copies to Regional Veterinary Office and to the Central Office. The fourth copy is retained by the acting veterinarian.

Penalties are established for the infringement of the law, that may imply in extrema cases the quarantine of the herd. Irregularities by veterinarians with ethical implications may lead to a temporary or definitive elimination from the Register.

Since January 2, 1964 the coverage of calves vaccinated each year was between 65 and 92%.

Table 3 contains the data of 25 years, 8 of them before compulsory vaccination was imposed. During this period the stock of cattle varied from 7.433.000 in 1956 to 11.530.000 in 1975. The number of calves varied from 728.548 in 1966 to 1.241.797 in 1974.

The variations of the stock of cattle as well as the number of calves vaccinated that is observed in the Table, are due to different economic expectations of the cattle owners.

The data of columns 2, 3 and 4 are from different sources and don't correspond exactly to the same time period. The data that refer to livestock number are taken from information obtained from Dirección Nacional de Contralor de Semovientes (DINACOSE) and Dirección de Investigaciones Económicas Agropecuarias, and correspond to census and livestock surveys that are made generally up to the 30th. of June each year.

The data of vaccine production, control and amount of doses sold, belong to the registrations done by the Dirección de Sanidad Animal and Centro de Investigaciones Veterinarias, in time periods different from the former ones (December 1 - November 30, or January 1 to December 31 of each year).

It is evident that since compulsory calf-vaccination was imposed the proportion of protected herds has increased

and reached levels that are in accord with the goals established by the program.

To evaluate the benefits of the program a serologic survey was undertaken in 1973 in beef and dairy cattle after 9 years of compulsory vaccination in order to determine the decrease in the prevalence of brucellosis.

With the assistance of the Pan American Zoonoses Centre a survey designed, that comprised the selection of conglomerates constituted by 261 Secciones Policiales (countries), from which 35 beef cattle and 20 dairy cattle areas were selected; afterwards the herds to be included in the sampling (500 in the beef cattle area and 320 in dairy cattle area) and finally the selection of animals in proportion to the five classes included in the survey, i.e. heifers with bull service over 30 months old, cows with offspring culled cows, steers and bulls. The agglutination test was done on 4.306 blood samples of beef cattle and 3.257 of dairy cattle.

Table 4 shows the results obtained. The higher proportion of suspects compared with former surveys, performed before the compulsory vaccination program, may be explained by residual titers in animals vaccinated over the established age of vaccination.

Assuming that 1/3 of the suspects are probably infected, then the total number of reactors would be 132 in the beef cattle and 46 in dairy cattle categories. The rate of reactors prevalence would be in this case 3.3% and 1.4% respectively, that even so would indicate a reduction in prevalence

in comparison with data registered before the beginning of the program. (1)

From 1975 to 1980, the Centro de Investigaciones Veterinarias (CIV) examined 49.666 bovine blood samples. The results are shown in Table 5.

The results obtained in bulls, by the same Institute, during the same period, are shown in Table 6.

If the same criteria is applied to the suspects of Table 5 and 6 as was done for those of Table 4, the reactor rates would be 2.85% for the animals (Sexes not discriminated) of Table 5 and 0,91% for the bulls (2)

The indications are that the prevalence of brucellosis continues to diminish and that the program reached a level where eradication of the infection is possible.

The Ministry of Agriculture and Fisheries has projected a second stage of the program which is oriented to eradicate the infection on the basis of areas that will be freed from brucellosis.

This project was part of an animal health program for which the financial assistance of the Special Operation Fund of the Interamerican Bank of Development was sought, but final arrangements were not done.

The second stage of the program is thought to begin in the milk shed of Montevideo, and later to comprise the other

(1) According to data of the Centro de Investigaciones Veterinarias only one of 5 suspects in the plate agglutination test is positive in C.F.

If an adjustment is made according to this information the reactor rate would be 2.32% for beef cattle and 1.06% for dairy cattle.

(2) If the criteria of food-rote 1, the reactor rate would be 2.03% and 0.61%.

milk shed of the country, and finally the areas of beef cattle.

Tables 7, 8, 9 and 10 indicate the plan of action to be developed from year 1 to 12.

The project emphasizes to reach a coverage of calfhood vaccination as near as possible to 100% of the calf population.

In the milk shed of Montevideo a survey will be made by the ring test in the milk processing plants every 3 months and the eradication program will be started in the areas which have the lowest infection rate and will be extended to contiguous area.

The task will be performed by registered private veterinary practitioners supervised by the Regional Veterinary Services. The following animals will be serologically examined: 1) bovine females over 30 months old, vaccinated during calfhood, 2) females not vaccinated over 1 year old, and 3) males over 1 year old.

The animals to be examined will be identified and the blood samples examined at official laboratories. The reactor will be fire branded and sent to slaughter as soon as possible.

The movement of animals that enter the eradication areas will be controlled.

According to the goals of the program it is thought that during the first year it will possible to free from the infection about 60% of the dairy herds of the Montevideo milk shed; during the second year 80% and the third year the remainder, including the beef cattle herds of the area.

During the third year eradication will be started in the other dairy cattle areas of the country. Eradication activities will also be started in beef cattle herds through trace back from the slaughterhouses where serological tests will be performed.

The certification of brucellosis free herds in the different areas would be based on the following:

- a) Three negative ABR tests with a 90 days interval followed by a blood test of the cattle of the herd.
- b) Two negative serological tests of all the animals of the herd, no less than 6 months apart and not more than 18 months.

The validity of the certificates will be for one year and recertification will depend upon a new serological test of the entire herd.

Brucellosis free areas will be established when all herds in a given area will be freed from the infection.

According to development of the eradication program, the animal health agency might discontinue vaccination, in area or department.

Estimates had been made in the project, of the probable decrease of the disease; estimated losses, investments, operating costs, benefits, etc.

The cost of the project for a period of 12 years during which it will be attempted to eradicate the disease completely, will total \$7.606.000.

The Government of Uruguay has not been able to obtain financial assistance from the inter-American Development Bank and until now it has been impossible to implement the project exclusively with local funds.

For the present, and until funds can be obtained, the incidence of brucellosis in Uruguayan cattle has remained static with a low indemicity.

A high percentage of the animal population, which had been vaccinated, now forms part of the protected group of animals.

The rate of useful births, which was estimated to be 60% in 1964, increased in very few years to 67% and more.

Abortions in herds in which positive reaction has been obtained, have not exceeded 2%, this percentage being similar to that observed on farms throughout the country where the reaction has been negative.

Studies of abortion cases in different animal species done at the Veterinary Research Centre in recent years failed to isolate the Brucella.

This interesting decrease in animal brucellosis has led to a rapid and substantial change in the incidence of this disease in human beings.

The Epidemiology Division of the Ministry of Public Health has found only very rare cases of this disease during

the 1970/80 decade. To be exact: 3 cases in 1971, one in 1972 and one in 1975.

Although these figures might be lower than the real figures, because notification of the disease is not obligatory, it is significant that the Medical Services in meat packing houses throughout the country and in the main milk pasteurizing plants have not recorded a single case in the last six years.

The clinical symptoms of brucellosis are known to persons working in this sector who are aware of the previous rate of this disease in these establishments. It is therefore reasonable to assume that the real figures are not much higher than those mentioned above.

Briefly speaking, the implementation since 1964 of a control program of brucellosis in cattle based on the mass vaccination of heifers has given favourable results in Uruguay. These are shown in the significant reduction in the number of infected establishments and animals and the almost total disappearance of brucellosis in humans. The system used is inexpensive and easy to implement; these two characteristics should recommend it to countries that are not in a position to carry out a systematic search of infected animals through serological research and the subsequent slaughter of the diseased animals.

TABLE 1
RATE OF POSITIVITY TO THE INTRACUTANEOUS TEST IN HUMAN BEINGS

	Men		Positive Reactions %		Women		Positive Reactions %	
Meat packing houses								
• Nacional	632	160	25	11	214	5		
• Artigas	1,174	235	20	23	493	4.6		
• Swift	694	91	13.1	24	637	3.6		
• Anglo (1942)	585	51	8.7	2	321	0.6		
• Anglo (1947)	434	80	18.4	21	226	9.7		
Milk pasteurization plants	955	130	13.6	60	218	27.5		
Workers of dairy and beefcattle herds	113	10	8.8	0	15	0		
Patients from rural areas, hospitalized for different causes (milkers, cowboys)	50	2	4	-	-	-		
Inhabitants of an interior town:								
1) 1942	1,460	21	1.4	7	1,230	0.6		
2) 1947	1,338	40	2.98	11	1,080	1.02		
Textile workers supposedly not exposed	232	12	5.1	10	358	2.8		

m/c

TABLE 2
 REACTIVITY TO THE INTRACUTANEOUS TEST IN HUMAN BEINGS

Year	Positive reactions		Women	Positive reactions	Totals		
	Men	Women			Number examined	Positive reactions	%
1942	5.895	712	3.486	137	9.381	849	9.05
1947	1.772	120	1.306	32	3.078	152	4.94
Ambo períodos	7.667	832	4.792	169	12.459	1.001	8.03

mlc

TABLE 3
BRUCELLOSIS. DOSES OF VACCINE SOLD

Year	Cattle Stock	Calves 1 year	Number of vaccine sold (doses)	Vaccination coverage			
1956	7:433.000	747.017	28.044	3.75			
1957			43.211				
1958			48.931				
1959			57.135				
1960			104.609				
1961			119.917				
1962			140.661				
1963	8:792.428	901.274	122.347	13.3			
1964	8:187.676	728.548	701.744	74.7			
1965			547.445				
1966			544.272				
1967			618.223				
1968			500.010				
1969			562.540				
1970			8:563.747		923.893	631.545	68.4
1971			951.833		729.309	76.4	
1972			9:272.651		979.774	901.480	92.0
1973			9:860.187		1:035.559	948.850	91.6
1974			10:790.430		1:241.797	1:022.370	82.3
1975			11:530.324		1:137.641	804.090	70.7
1976			10:383.000		1:036.000	855.430	82.5
1977			10:111.103		901.360	689.040	76.4
1978	10:000.896	997.470	765.130	76.7			
1979	10:299.551	1:081.235	952.300	88.0			
1980	10:952.000	1:093.010	1:043.610	95.5			
1981 (1er semestre)			611.070				

TABLE 4
RESULTS OF THE SEROLOGICAL SURVEY. 1973

Beef Cattle

N° samples examined	Positives %		Suspects %		Negatives %	
4.306	52	1.2	242	5.6	4.012	93.1

DAIRY CATTLE

N°. samples examined	Positives %		Suspects %		Negatives %	
3.257	14	0.5	94	2.8	3.148	96.6

TABLE 5

ROUTINE SEROLOGICAL TESTING. URUGUAY 1965-1980

Year	Samples	Positives %		Suspects %		Negatives %	
1975	12.540	114	0.91	643	5.13	11.783	93.96
1976	16.325	157	0.96	836	5.12	15.332	92.92
1977	8.144	73	0.90	370	4.54	7.701	94.56
1978	2.695	36	1.34	196	7.27	2.463	91.39
1979	5.930	69	1.16	323	5.45	5.538	93.30
1980	4.032	42	1.04	221	5.48	3.769	93.48
Totales	<u>49.666</u>	<u>491</u>	<u>0.99</u>	<u>2.589</u>	<u>5.21</u>	<u>46.586</u>	<u>93.80</u>

TABLE 6

RESULTS OF SEROLOGICAL TESTING OF BULLS. URUGUAY 1975-80

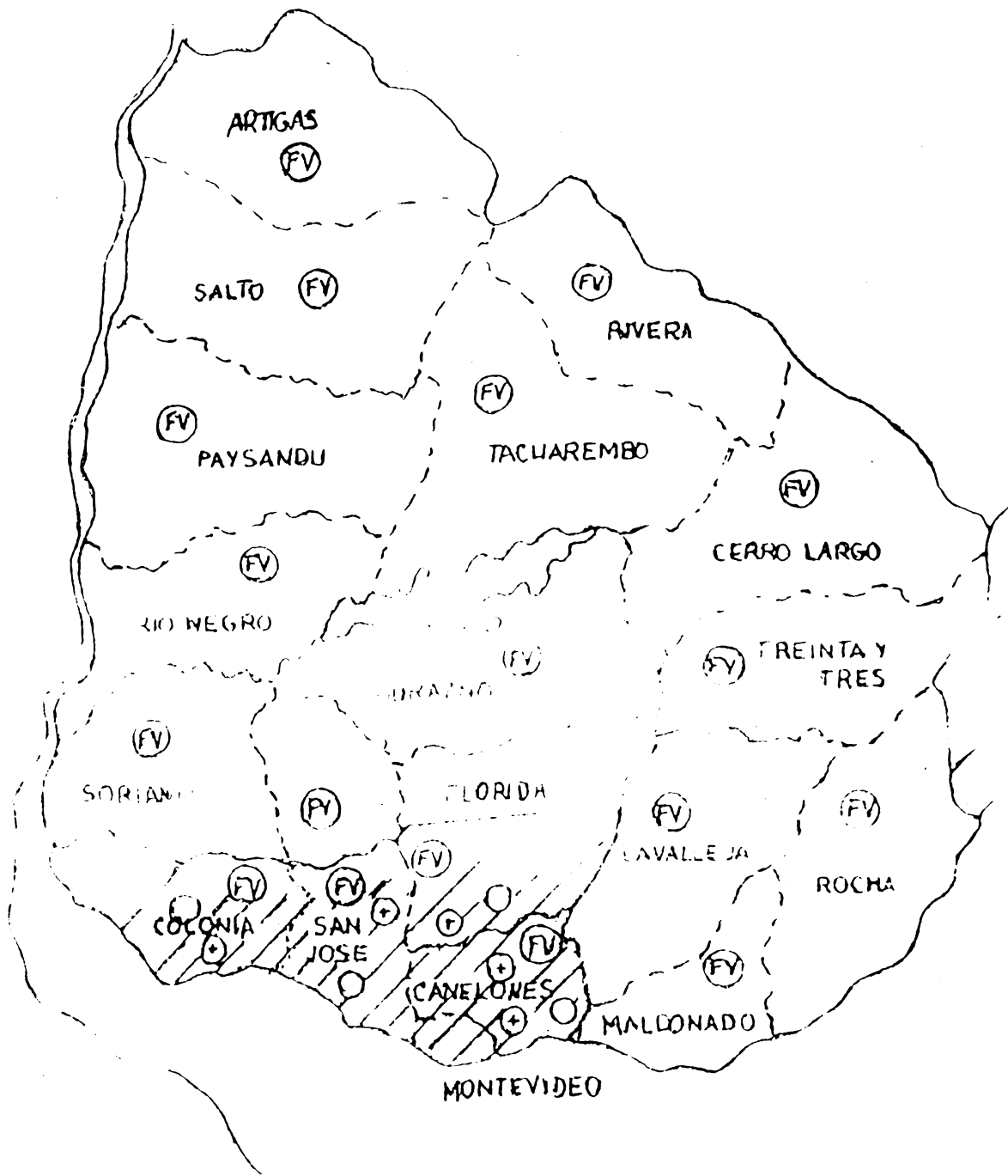
Bulls		Period 1975-1980					
Number examined	Positives %		Suspects %		Negatives %		
5.475	8	0.15	129	2.3	5.338	97.5	

TABLE 7.

BRUCELLOSIS PROJECT

PLAN OF ACTION

YEARS 1 and 2



Eradication activities



Ring Test



Control of animal movement



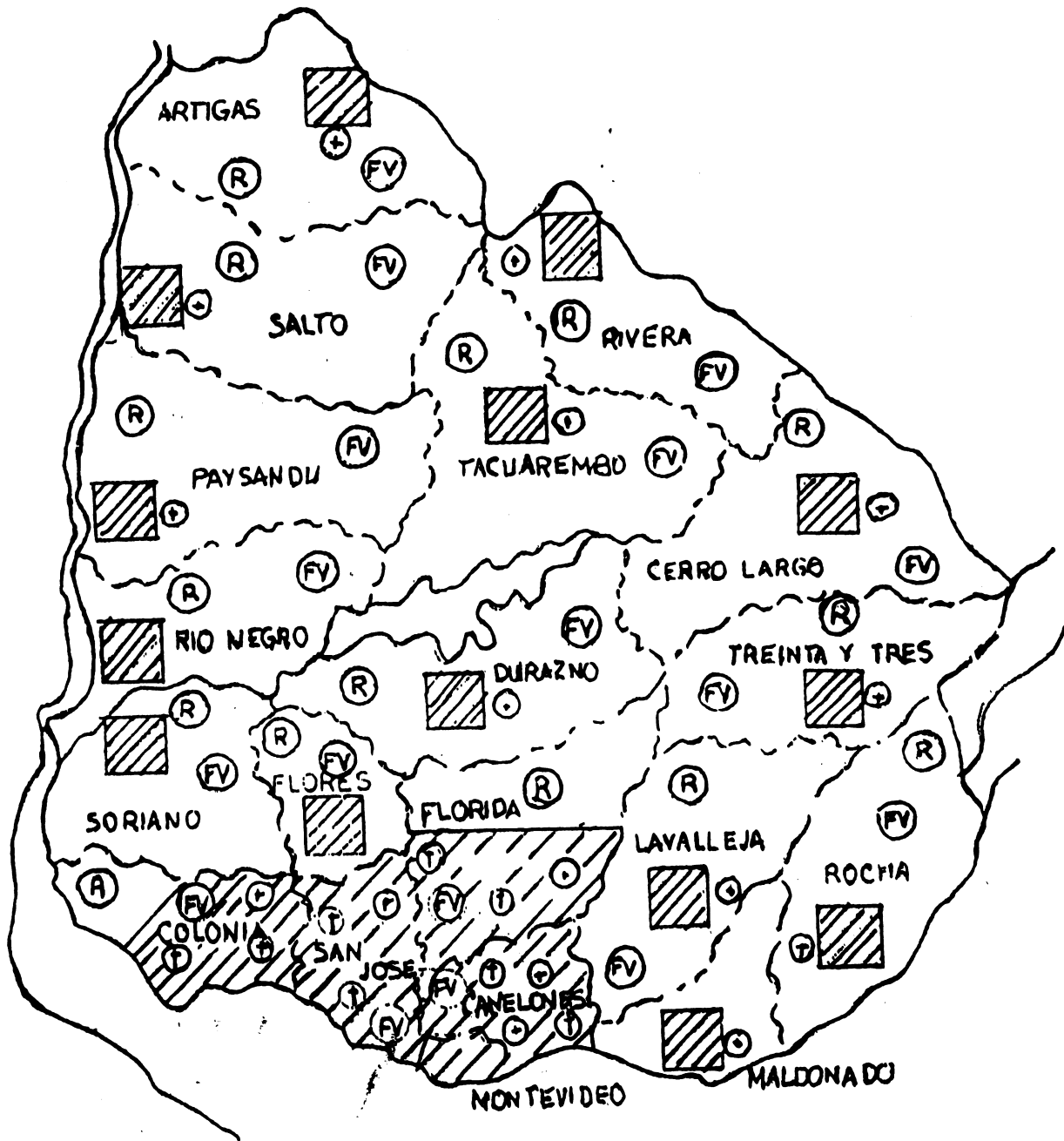
Supervision of vaccination






TABLE 8

BRUCELLOSIS PROJECT

PLAN OF ACTION

YEAR 3



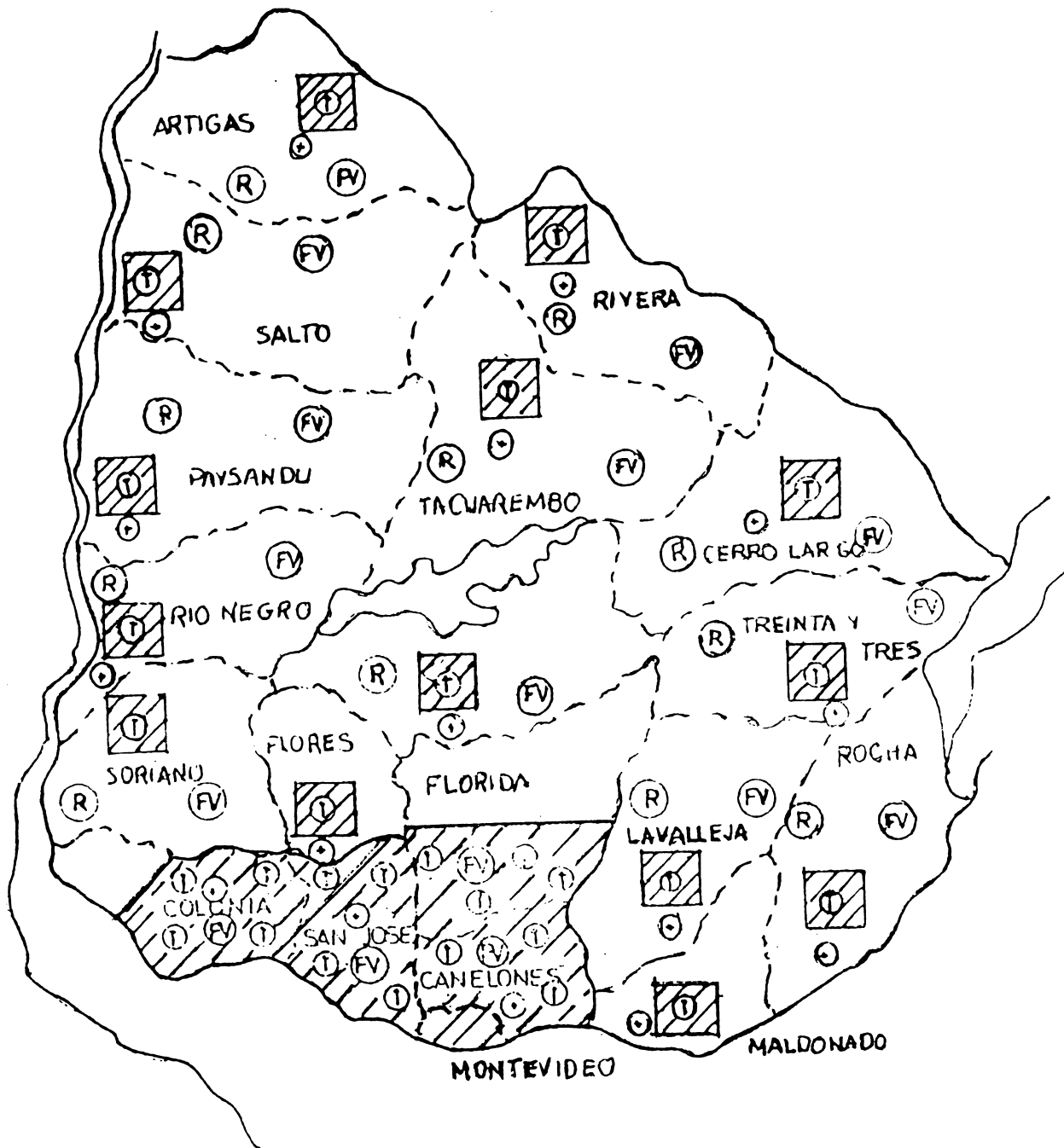
-  Eradication Activities
-  Control of animal movement
-  Supervision of vaccination
-  Trace back activities
-  Certification of Brucellosis Free Herds

BRUCELLOSIS PROJECT

TABLE 9

PLAN OF ACTION

YEAR 4- 10








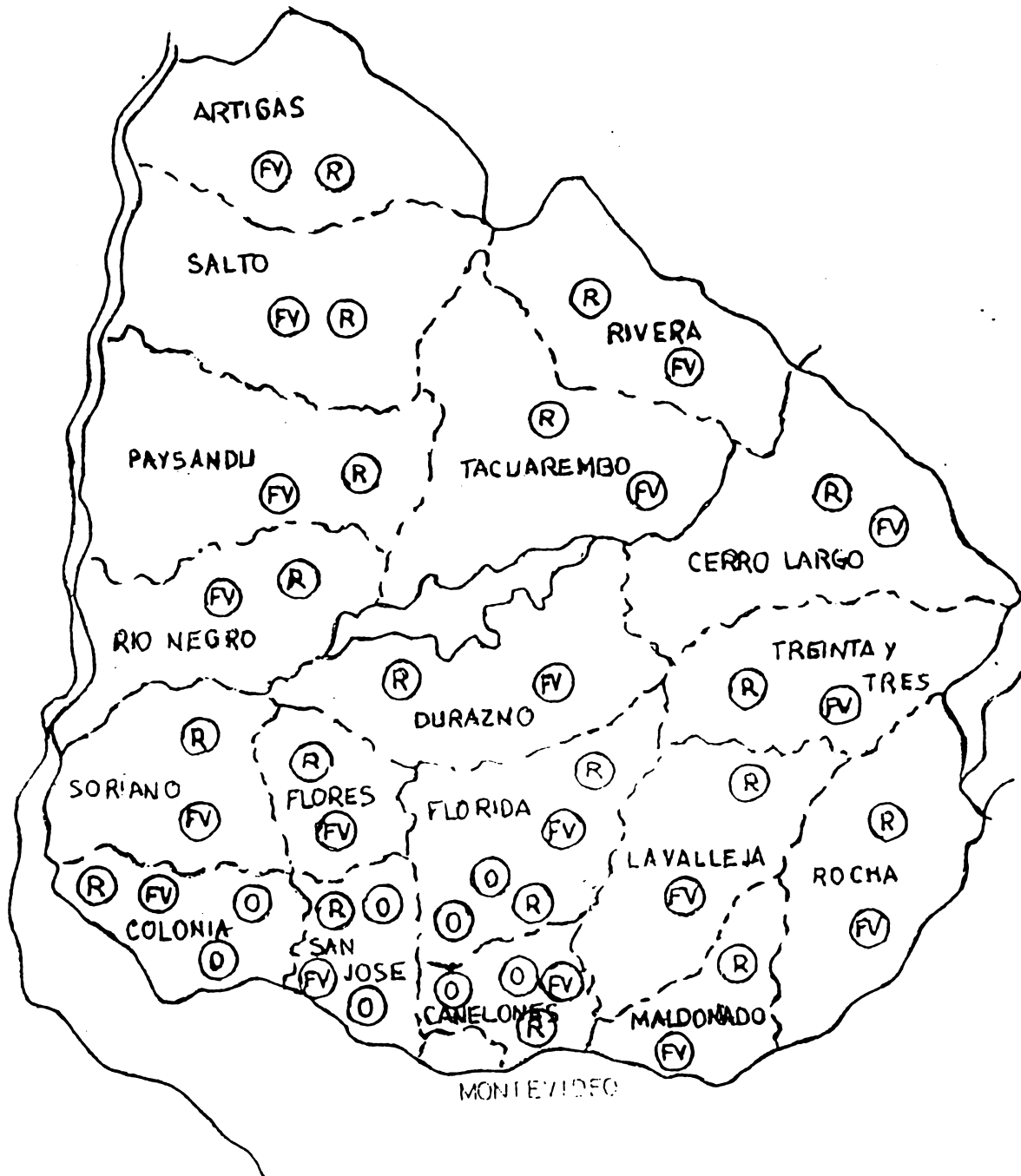
-  Eradication Activities
-  Control of animal movement
-  Supervision of vaccination
-  Trace back activities
-  Certification of Brucellosis Free Herds

TABLE 10

BRUCELLOSIS PROJECT

PLAN OF ACTION

YEAR 11 TO 12



- O** Ring Test
- R** Control of animal movement
- FV** Supervision of vaccination

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VACCINATION IN THE CONTROL OF BOVINE BRUCELLOSIS

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Vaccination in the Control of Bovine Brucellosis

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The control of diseases of animals must have two major objectives: to more efficiently produce food and to prevent zoonotic diseases. This control usually includes one or more of the following procedures: vaccination, elimination of diseased animals, and hygienic practices to reduce exposure of susceptible animals to disease producing agents.

A discussion of brucellosis often results in a debate about control and eradication. Everyone agrees that eradication of any disease is a worthy goal. But, it must be concluded that only a few diseases can be eradicated and many conditions affect the success of efforts. Most countries cannot consider a program designed to eradicate brucellosis. Valuable animals are needed for food production and replacement cattle are not available at costs which the country and cattle owners can afford. Therefore, control of any disease must consider national and local conditions. These include size of herds, agricultural practices, availability of animals, expertise, and laboratory and other facilities.

The evolution of agriculture towards larger herds and greater concentration of cattle has created serious difficulties in control of diseases such as brucellosis. These large herds often import replacement cattle which increases the opportunity for introduction of diseased cattle, some in the incubatory stage. Test and slaughter methods are frequently not successful and may be enormously expensive. It is necessary to design programs to effectively control infectious diseases.

It is impossible to review all the reports on the use of vaccines in the control of bovine brucellosis. There is general agreement that several products will reduce clinical symptoms and the incidence of infection within herds. It is also impossible to review the research which has been conducted on various methods for immunization. While there has been much effort to discover a superior immunogen, there are currently only 2 major products: Strain 19 and 45/20.

A General Comparison of Strains 19 and 45/20 Vaccines

Strain 19	Strain 45/20
Agglutinogenic	Nonagglutinogenic
Easily produced	Production difficult
Inexpensive	Expensive
No local reactions	Local reactions
Single inoculation	Multiple inoculation
Refrigeration critical	Refrigeration less important
Occasional persistent infection	Inactivated
Rapid immunity	Slow immunity
Physiological effects	No adverse effects
Human pathogen	Inactivated

Despite decades of research on *Brucella* vaccines, Strain 19 remains superior to all other products when all factors are considered. The production and sometimes persistence of serum agglutinins following Strain 19 administration combined with the limitations of diagnostic tests resulted in recommendations for restricting usage to sexually immature cattle.

Comparison of Strain 19 Usage in Sexually Mature Cattle and in Calves

Adults	Calves
Rapid herd immunity	Slow herd immunity
Relatively inexpensive	Relatively expensive
Easy administration	May be difficult
Diagnostic problems	Titer problems minimal
May cause abortions	Sexually immature
May be physiological effects	Physiological effects less
Ring test may be positive	No ring test problems

In 1975, field studies were initiated to re-examine the use of Strain 19 in adult cattle. Several methods of administration were used and different doses were evaluated:

1. Vaccination with a standard dose (min. 50×10^9 cells)
2. Comparison of standard and intradermal (0.1 ml) doses
3. Comparison of standard and reduced (3×10^9 cells) doses
4. Comparison of standard and conjunctival (5×10^9) doses and unvaccinated controls.

The serologic tests used were the tube agglutination, card, mercapto-ethanol, rivanol, and complement fixation. Bacteriologic studies were made on cattle with titers on one or more of the tests. The following results were obtained:

1. There was a large reduction of infection in the herds regardless of vaccine dose or method of administration.
2. There was no significant difference in protection between vaccinal methods within the same herd.
3. There were large differences in the effects of vaccinal methods and dose on the serologic tests. Postvaccinal titers were lowest following conjunctival inoculation. The complement fixation test was superior to all others in correctly diagnosing infected cattle.

4. Postvaccinal abortions were less than 1% of vaccinated cattle. Udder infections of Strain 19 persisted in approximately 0.5% of the cattle. About 80% of these cattle recovered from the infection if permitted to remain in the herds.
5. The physiological effects were dose related and severe only with the standard dose.
6. The tube and mercaptoethanol tests were of limited usefulness and were later discontinued.

The use of a reduced dose of Strain 19 (approx. 3×10^9) was adopted into the brucellosis eradication program in the United States in 1977. Subsequent controlled studies by USDA have confirmed that approximately 5×10^8 to 3×10^9 cells are an acceptable dosage of Strain 19 and produce comparable immunity to larger doses. The length of immunity is unknown, but it is certain that re-vaccination is necessary in some herds.

There are several ways to evaluate the efficacy of vaccines:

1. Use the product in laboratory animals
2. Use the product in natural hosts and under controlled conditions
3. Use the product in field studies and compare prevaccinal and post-vaccinal infection rates.

There are, of course, many variables in any experiment which influence results and conclusions. Owners of cattle are generally most convinced by results of field studies.

Comparisons have been made of reactor cattle removed from herds in Florida and Puerto Rico prior to adult cattle vaccination and on successive herd tests following Strain 19 administration (reduced dose).

Efficacy of Strain 19 in Adult Cattle in Dairy Herds in Florida and Puerto Rico

Number of Cows Vaccinated -	65247
Number of Herds	153
Average Cows per Herd	426
Reactors* per Month - Prevaccination (% of herd)	925 (1.4%)
Reactors** per Month - Postvaccination (% reduction)	
First test	628 (32%)
Second test	239 (74%)
Third test	120 (87%)
Fourth test	110 (89%)
Fifth test	86 (91%)

*Card test

**Complement fixation test

Some general conclusions are:

1. There was a greater than 90% reduction in infected cattle removed from dairy herds following Strain 19 (reduced dose) administration.
2. The card test is too sensitive to properly identify infected cows. The complement fixation test is superior to all others.
3. Strain 19 administered to adult cattle with a dose of 5×10^8 to 3×10^9 and combined with proper diagnostic tests and interpretations provide a very practical, economic, and often necessary means to control brucellosis. Revaccination may be necessary in some herds.
4. Strain 19 vaccination will not eradicate brucellosis in all herds. It is an effective control method and may make it possible to eradicate brucellosis from a herd when combined with test and slaughter and other practices.

Future research may develop a superior immunogen for protection against brucellosis. This may be live organisms, killed whole cells or cellular fractions. It is likely that Strain 19 will be the most widely accepted product for many years.

A satisfactory method to determine cell mediated immunity is needed. The mechanisms by which immunity is produced are poorly understood.

Research is active on chemotherapy and alternate methods of vaccine administration.

Brucellosis is a complex disease and its control is complicated by many technical and nontechnical factors. Vaccination is an extremely important element in its control.



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EVALUATION OF PROGRAMS FOR CONTROL AND/OR
ERADICATION OF ANIMAL DISEASES

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EVALUATION OF PROGRAMS FOR CONTROL AND/OR ERADICATION OF ANIMAL DISEASES

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The term "Evaluation" is defined in the dictionary as meaning "to examine and to judge." The process may be applied by individuals or groups, formally or informally, consciously or unconsciously, in-depth or superficially, periodically or continuously, to "examine and judge" people, animals, things, activities or programs.

At this meeting, we are interested in the more formal and scientific applications of evaluation. These applications have been increasing in number and quality as administrators of programs, planning agencies, legislative groups and lending agencies, national and international, have become more concerned about measuring the need, feasibility, impact, effectiveness, and efficiency of activities or programs. This trend has been influenced by the desire to establish priorities among a large number of perceived needs and to have improved guidance and data for making decisions to develop and implement new programs or to continue, modify or discontinue existing programs. This trend has been increased by the limited availability of money for funding programs and the demands for greater fiscal and program accountability.

International health and lending organizations such as the World Health Organization (WHO), Food and Agriculture Organization (FAO), World Bank, Pan American Health Organization (PAHO), InterAmerican Development Bank (IDB), and others, were among the first to utilize more scientific methods of evaluation. This trend for increasing evaluation of animal health programs has continued and accelerated as people recognized several purposes of evaluation and have attempted to establish a standardized definition. As an example, one definition states that "the purpose of evaluation is to provide information concerning the impact, effectiveness or efficiency of operating programs in achieving their stated objectives."¹ Definitions differ from one author to another. One author expressed the view that "standard or canned definitions may not be appropriate but rather the principles and elements should be adapted to the unique or different needs of different agencies or programs."²

Classification By Purpose

Evaluations are often multipurpose and should include opportunities to:

1. Establish the need for an activity or program of disease control and/or eradication in relation to defined objectives and goals.
2. Establish the feasibility of a program in relation to the defined objectives and goals.
3. Test alternative program strategies, methods and inputs.
4. Test alternative methods of design, collection of data and analysis.
5. Measure or estimate outcomes (impact) of proposed, continuing or completed programs in relation to the objectives and goals.
6. Measure or estimate effectiveness, efficiency and benefit/cost ratio of one or several programs, strategies, methods, procedures in relation to objectives and goals.

Evaluation studies for animal health programs may be classified in several ways. The above classification is related to the multipurpose nature of evaluation studies and identifies several purposes which may be applied individually or in combination to provide data for decision making.

Another classification may be based on the temporal nature of the activity or program to be evaluated e.g., proposed, current or completed.

Temporal Classification

- A. Evaluation of Proposed Programs (Predictive evaluation model using existing data or assumptions to estimate impact and benefit/cost ratios strategies or cost effectiveness in terms of selected objectives and several strategies and methods to assist in achieving clearly defined and measurable objectives).
- B. Evaluation of Current Programs (Periodic or Interim evaluation to monitor collection of data and whether program is following original design, to provide feedback for adjustments and to cope with unforeseen problems, to measure interim outcomes in terms of impact and progress toward achieving defined and measurable objectives.)
- C. Evaluation of Completed or Discontinued Programs (Final or Summative evaluation to analyze and interpret all available data, to measure if objectives were achieved partially or fully, to attempt to determine the reasons if any objectives were not met, to make judgements concerning the impact, benefit/cost ratio or cost effectiveness, to make recommendations based on purposes of the evaluation, and to make data available for designing any future programs.

Most of the formal evaluations of animal health activities and programs have been conducted on special national or multinational projects sponsored by the United Nations (UN), WHO, FAO, PAHO or the lending institutions, World Bank and IDB. However, during the last 15 years more individual countries also have been utilizing formal evaluation methods to provide data which will assist in making policy decisions and in managing and administering animal health programs of concern to the individual nation.

Examples of evaluation studies sponsored by one or more of the national or multinational organizations include:

1. Evaluation of proposed or current programs for the control and/or eradication of animal diseases such as aftosa, rabies, brucellosis, tuberculosis, Newcastle disease, hydatidosis, cysticercosis, African swine fever, etc.
2. Evaluation of proposed or current educational programs for Schools of Veterinary Medicine and continuing education.
3. Evaluation of proposed or current organizational patterns and manpower for animal health programs.

4. Evaluation of proposed or current programs to provide adequate laboratory diagnostic service to assist disease control and/or eradication programs and to facilitate movement of animals between countries.

As a result of these previous evaluation studies, particularly for proposed modifications or development of new programs, the infrastructure of animal health agencies has been greatly strengthened during the past 15 years. The organization, facilities, equipment, manpower, knowledge and skills developed to control and/or eradicate aftosa, for example, are generally transferable and applicable with some modifications and adaptations to control and prevention of other animal diseases and the general improvement of animal health in these countries. Thus, evaluation has been a valuable and important activity to aid in establishing the high priority of animal health programs in improving human health, increasing the protein content of peoples diets, and contributing to improved economic conditions through greater production and exports.

These worthy achievements were greatly assisted by evaluation studies which were based on the state of our epidemiologic and administrative knowledge and evaluation practices that were recommended during that developing period. However, accepted practices for evaluation studies are constantly improving and this requires:

- * A better knowledge of the epidemiologic factors and their influence on disease with alternative strategies for control and/or eradication of animal disease.
- * Improved design of evaluation studies.
- * Improved methods and implementation for collection of appropriate data.
- * Improved methods of analysis and interpretation of data.
- * Improved strategies of dealing with the political, legal, social, environmental, and other factors that greatly influence the adoption of recommendations of an evaluation study and the success, partial success or failure of animal health programs.

In the last five years, some evaluation studies of animal health programs have made significant progress and improvement in design, in the collection and analysis of data, and in utilizing more appropriate methods of benefit/cost analysis, including the supply and demand model of the Bureau of Agricultural Economics of the U.S. Department of Agriculture.

Selection Of Program Objectives - Outcomes

One would think that evaluation of a selected objective or outcome could be simple. It may be relatively simple if the outcome to be examined and judged is simple to define, measure objectively and determine definitively that the outcome has been achieved. However, many outcomes in disease control

and local eradication are not so simple and require clear definition of words and terms being used as well as a clear and measurable statement of the objectives of the disease control or eradication program.

For example, the National Brucellosis Technical Commission of the United States Department of Agriculture found that people have many different perceptions of the meaning of the term "eradication" and the term "control."⁴ To improve communication and clarify terms the Commission defined "control" as making progress (reducing prevalence of infected herds) toward local eradication. Since the herd is the essential unit of infection with bovine brucellosis, local eradication was defined as beginning with an individual herd, moving to local eradication of brucellosis in a group of herds and around the initial brucellosis-free herd, then expanding to several groups of herds and continuing on to local eradication of brucellosis in herds in a province, a country or a hemisphere. Eradication of a disease such as brucellosis from a country or a hemisphere is still defined as local eradication because there is a continuing need for surveillance to prevent reintroduction of brucellosis from other still infected areas of the world. Surveillance programs will continue to be needed to maintain local eradication until such time as B. abortus is eliminated with the achievement of global eradication of this agent. Once the words "control" and "local eradication" were clearly defined and understood, communication was greatly improved. Please note that these definitions may vary with the disease and other conditions, since the important aspect is to communicate clearly and have general acceptance.

Once words and terms, such as control and local eradication, are clarified it is essential to select objectives for proposed programs or review the objectives for current and recently completed programs of disease control and/or eradication. Objectives (outcomes) should be clearly stated and carefully limited in order that they may be appropriately measured for data collection and analysis. Outcomes may be defined for any parts or procedures of the disease control and eradication program as well as defining the desired outcomes for completion of the program. Objectives (outcomes) may also be defined for different points in an established timetable of progress toward the final outcomes and are often described as interim objectives. Objectives should be as specific as possible and include a proposed time of achievement for evaluation purposes.

In evaluating current programs it may be possible to make recommendations for further definition of objectives to assist with later evaluation. In completed programs evaluators can make recommendations concerning improvements in objectives that should be considered in proposing future programs.

Evaluating Need And Feasibility Of Programs

In evaluating proposals for new programs or reviewing current programs an early priority is to review the need and feasibility of programs of disease control and eradication as requested by the affected animal industry, concerned citizens, planners and administrators of an animal health agency. If need or feasibility or both are lacking, the program would not appear to be appropriate as proposed and further evaluation is unnecessary until the proposed program is modified to demonstrate both need and feasibility.

To evaluate "need", the evaluators should have acceptable data available to them regarding the prevalence and/or incidence of the disease, such as brucellosis, African swine fever, etc., and the economic and health costs of the disease to the industry and to society. These data should be evaluated in relation to the objectives of the proposed or current programs. All data should be reviewed in a critically constructive manner regarding their origin, methods and time of collection, representativeness for the real universe and generalizability. It is also necessary to periodically review the "need" for continuing current disease control programs because changing conditions may alter the degree of need for a program depending on the objectives.

Evaluation of "need" is often difficult because it is usually not a question of "yes" or "no" but rather the degree of need which leads to the question of need related to other societal goals. One suggestion or approach is to use all the objective criteria available and then to rank programs in order of perceived priority of need. This is another reason that administrators and legislators like to have benefit/cost estimates in addition to needs assessments.

To evaluate feasibility, the evaluators should have special knowledge, or consultants to advise them, regarding the factors that have been identified in Appendix A, "Principles and Factors Influencing Feasibility, Costs, Benefits and Outcomes of Control and Prevention Programs Leading Toward Local Eradication of Animal Disease."³ The question of "feasibility", particularly with respect to the biologic and epidemiologic characteristics of the disease, is the question asked most often by concerned individuals who may be affected by a proposed program of control and/or eradication.

Fortunately, with respect to biologic and epidemiologic feasibility for many diseases, the new developments in microbiology and recombinant DNA research provide new methods of producing larger quantities of more specific and effective immunizing agents to prevent more diseases in animals. There is also the exciting new knowledge for developing monoclonal specific antibodies to improve immunologic detection and treatment of infection and disease. Technologic developments in transplantation of embryos provide new and very powerful tools to apply in developing strains of animals with fewer metabolic and genetic defects. These advances, coupled with increasing knowledge of epidemiologic characteristics and patterns of disease, will greatly improve the feasibility of control toward eradication of many more diseases of importance for economic and health benefits to society.

Other important factors affecting feasibility for control and/or eradication programs include knowledge and motivation of livestock owners, the structure of the industry, the reward system, the acceptance of proposed strategies and programs, legal and political factors, public health aspects, environmental and financial factors. Some evaluations of proposed, current or completed programs have failed to consider these factors. However, the National Brucellosis Technical Commission⁴ spent a great deal of time and effort reviewing and considering these factors as constraints influencing the feasibility of the State-Federal Brucellosis Program of the United States

(see Appendix B and the full Report of the Commission). Additional epidemiologic research is needed to learn more about the roles of these factors and their association with varying degrees of success or failure and feasibility of programs for control and/or eradication of disease.

Test Alternative Program Strategies and Inputs

Use analytic and experimental epidemiologic methods to evaluate two or more program strategies, methods and inputs into disease control and/or eradication. Evaluators may have the opportunity to join with planners and administrators of programs to experimentally test several program strategies, methods and inputs as alternatives to be evaluated as aids in meeting the objectives of the program. These experiments may either be carried out in experimental field tests of varying strategies and inputs or, with the increasing use of the computer, evaluators and planners may simulate the use of alternate strategies, methods and inputs. Examples of such computer simulation for evaluation may be found in studies and reports on brucellosis control and eradication by several groups since 1975: Morris, et al. for programs in Australia⁶; Carpenter and Garcia-Carrillo for programs in California⁷; Hugh-Jones and Ellis for Programs in the United Kingdom⁸; Management Consulting Services for Programs in Canada⁹; Beal and Kryder for 5 regions in the United States¹⁰; and Dietrich and Amossen and the National Brucellosis Technical Commission for 8 regions in the United States¹¹; Shepherd et al for New Zealand¹²; Beal, evaluation procedures for cost/benefit analysis¹⁵. Computer simulation has advantages in being able to conduct many different simulations for evaluation for less time and money than the actual experiments in the field. Computer simulation also has disadvantages because of the limitations in capacity and technique to actually simulate many of the real world variables in a given simulation. Another limitation is our lack of knowledge of the variables of the real world and their associations and relationships to cause and effect with the strategies, methods and inputs that we wish to evaluate. Therefore, we can conclude that data from computer simulations must be carefully evaluated in terms of its value and appropriate applications in actual field program situations until better epidemiologic data are available.

Analytic epidemiologic studies may be developed to evaluate continuing programs or programs that have been completed using cohort or case control or cross sectional epidemiologic studies. Most studies of disease control programs for comparative evaluation have been primarily descriptive with limited use of analytic epidemiologic techniques. Examples include studies by the National Brucellosis Technical Commission to compare six states that had nearly achieved eradication with six relatively comparable states which had made the least progress from control toward local eradication¹⁵. These studies provided valuable insights regarding associations and were an aid in evaluation, but also had disadvantages in the limitations of available data that had been collected by state and federal governments and in the lack of control of known and unknown variables from state to state.

Alternative Methods of Design for Evaluation, Collection of Data and Analysis

In a rapidly developing field such as evaluation it is only natural that there are differences of opinion regarding the most appropriate use of any given method for designing evaluation studies. Evaluators come from many

backgrounds and they often bring their biases with them. Thus, there is need for considerably more research to develop criteria for using any given design for evaluating a specific disease control or eradication program or any of its parts. At present our data base is not sufficient to provide appropriate guidance within the constraints of time, effort, money and the field situations we must evaluate.

One should note that there are a number of statistical methods that may be applied to simulate epidemiologic patterns of geographic spread and increase or decrease in rates of disease. Evaluators and planners have used several different techniques, but have failed to agree on which technique may be most appropriate for a given simulation. Also, different epidemiologic coefficients have been used for similar simulations. These differences of opinion and use still flourish and even create controversial debates from time to time. This emphasizes the need for further research on methodology of simulations concerning health and disease.

Evaluation activities including computer simulation have emphasized the need for greater knowledge of the epidemiologic patterns of health and disease and for greater emphasis on the kind and quality of data needed by planners, epidemiologists, administrators, economists and evaluators in planning and evaluating programs. More people are beginning to understand the importance of collecting the right kind and quality of data which will be useful in planning, administering and evaluating disease control programs. Such data collection efforts should be planned as an integral part of the program to meet the needs of planners, administrators, epidemiologists, economists and evaluators. In the past, we often failed to collect any data or failed to collect data which would be useful to those who needed it. As a result data were collected, were filed but not utilized, and later discarded as lacking value. These inappropriate efforts gave data collection a low priority with most administrators and the field personnel. Now the task is to obtain cooperation for collection of the right kind of data which can be used to help epidemiologists, economists, evaluators, administrators and veterinarians in the field. With the advent of microcomputers, we may be developing more appropriate technology that will aid in better data collection and ease of use by all concerned.

Measure Or Estimate Impact and Outcomes

One of the primary reasons for evaluation studies is to measure impact and outcomes of disease control programs, activities or methods associated with a program. These are best measured against apriori objectives which are clearly stated and defined to enhance ease and clarity of measurement.

One example is the stated objective for the program to control and eradicate vesicular exanthema from the United States. When Dr. Frank Mulhern was asked for the criteria which would be used to measure accomplishment of the objective, he replied, "When no clinical cases of vesicular exanthema have been reported in swine for a period of two years." This definition provided criteria for measuring when the desired outcome had been achieved. A similar definition and criteria were developed to measure eradication of hog cholera in

the United States and more recently to measure and judge when the desired outcome of eradication of aftosa had been achieved in Chile.

In the case of brucellosis, the National Brucellosis Technical Commission used a more restrictive definition of the desired outcome for the brucellosis program in the U.S. A state is judged to have achieved the desired outcome if they have no cattle which are infected with field strain B. abortus for at least 12 months; or if field strain B. abortus is reintroduced from a source outside the bovine brucellosis free state and the newly introduced infection is detected early and eliminated without any spread between in-state herds, the state will retain status as bovine brucellosis free. If newly introduced infection is not detected before it spreads between in-state herds the state will lose status as bovine brucellosis free.

These criteria for the desired outcome recognize that brucellosis may be imported from time to time into a state, but if they have a good surveillance system for early detection and there is no in-state spread of brucellosis, there will be no loss of status. These criteria operate to reward a state for maintaining a good surveillance system and encourage quick detection and reporting of the infected herd to prevent further in-state spread of the infection. This type of reward system encourages the impact and outcome desired.

Impact and outcome are semantically similar. However, impact is often used to measure progress toward a defined outcome or to measure a degree of change or difference associated with making progress toward or achieving a specific outcome.

Measure or Estimate Benefit/Cost Ratio
Or Cost Effectiveness or Efficiency

During the past 20 years there has been an increasing demand from administrators and legislators for evaluation of proposed or continuing programs in terms of benefit/cost ratio, cost effectiveness and/or efficiency. These methods of evaluation of disease control and eradication programs have become more feasible and more popular as computer capabilities and services have increased.

There have been a number of benefit/cost studies of brucellosis programs in several countries of the world^{6, 7, 8, 9, 10, 11, 12}. These have been applied first to evaluate basic programs involving control toward local eradication in a country. In addition, most of the studies have also evaluated benefit/cost ratios for alternative methods, strategies and inputs to evaluate proposed new programs or various modifications of continuing current programs.

Benefit/cost studies can be very helpful in testing alternatives using given assumptions. They offer an opportunity to compare strategies and methods in various ways without actually setting up the field experiment. Unfortunately, we do not have enough background data or experience with such simulations to know if the assumptions being used are valid. We know the data base on epidemiologic patterns and costs of brucellosis in physical losses are incomplete and not wholly accurate. This is partially because of failure to collect the appropriate data which are needed. For example, there is considerable disagreement over epidemiologic coefficients for brucellosis and some apathy for collecting appropriate data on a systematic basis to accurately represent physical losses.

Economists, including veterinary economists, have differing opinions on the appropriate discount rate to use in B/C studies and in fairly reflecting opportunity costs for alternative uses of program funds. This can result in differing values for similar studies. Most of the Benefit/Cost studies have used a production model which calculates losses for producers with disease and applies this concept of loss and benefit to all producers. These models based on losses to some producers fail to take into account the concept that when some producers lose in production of meat and milk, the supply goes down, the price goes up, and those producers who are free of the disease gain increased income. Thus, while there may be losses for individual producers, the gains offset the losses if one considers all producers.

To avoid this problem of inappropriate use of economic models for Benefit/Cost studies the National Brucellosis Technical Commission "utilized a supply and demand model developed by the Bureau of Agricultural Economics, U.S. Department of Agriculture which evaluates the Benefit/Cost ratio for the consuming public who are buying meat and milk products. This type of model also provides data to encourage support of disease control programs with public funds since the Benefit/Cost ratio demonstrates the benefits for the public.

Cost-effectiveness analysis is another method for evaluating programs by studying the relationship between project costs and outcomes, usually expressed as costs per unit of outcome achieved. Efficiency evaluations are usually concerned with achieving maximum impact with least effort or cost. Both cost-effectiveness and efficiency evaluations have been utilized in evaluating disease control and eradication programs.

Examples Of Data From Studies Of The National Brucellosis Technical Commission¹³

Tables attached include Tables 1, 2, 3, 4, 5, 6, 7, 8, which illustrate differences among states which have nearly achieved eradication as well as differences between those states and states which have had the least progress toward eradication¹³.

Figures attached include Figures 1 and 2. Figure 1 illustrates the efficacy of the milk ring test as a screening test to detect herds suspected of having brucellosis infected dairy cattle. Although it only has a sensitivity of about 70%, application of the test four times a year makes it very effective as a means of detection at a low cost. Figure 2 illustrates the proportion of funds allocated to pay indemnity to livestock producers for removal of brucellosis reactor cattle¹³. Figure 3 illustrates differences in incentives for vaccination of calves with strain 19 B. Abortus vaccine.

Appendix A attached⁵

This appendix is attached to provide more detailed information for the reader who is concerned with planning, administering or evaluating animal disease control and eradication programs. This outline attempts to provide the key principles and factors which are important influences in the success or failure of programs.

Appendix B attached⁴

This appendix is attached to provide a summary of the findings and recommendations of the National Brucellosis Technical Commission sponsored by the U.S. Department of Agriculture to evaluate the state-federal brucellosis program from 1976-1978. Copies of the main Report and Appendices to the Report A through K are available from the U.S. Department of Agriculture, Washington, D.C.

TABLE 1

Number of Blood Samples Received by the Laboratory as Not Satisfactory for Serologic Testing (hemolized, spoiled, insufficient quantity, etc.)

<u>State</u>	<u># of Samples Not Satisfactory for Lab Test</u>	<u>% of Total Samples Not Satisfactory</u>
51	3,000	00.3%
52	6,000	00.4%
53	40,000	7.0%
54	419,000	18.0%
55	109,000	24.0%

TABLE 2

Progress of States in Reducing Number of Brucellosis Reactor Herds from 1960 to 1976

<u>Year</u>	<u>Name of State and Number of Reactor Herds</u>					
	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>
1960	= 2,046	2,041	1,399	1,415	467	530
1976	= 440	5,902	10	1,458	3	405

TABLE 3

COMPARISON OF HERDS WITH REACTORS AS A PERCENT OF MCI HERDS TESTED RESULTS
OF INITIAL ON-FARM BLOOD TESTS (1967-1972-1977 Ave.)

<u>Rank Order</u>	<u>Ave. No. of MCI Reactor Herds of Origin Tested</u>	<u>Ave. No. of Herds with Reactors</u>	<u>Rank Order Herds with Reactors Percent of Herds Tested</u>
41	1,229.2	666.0	54.2%
42	757.4	330.3	43.6
43	406.3	160.8	39.6
44	82.8	16.9	20.4
45	16.8	2.0	11.9
46	101.1	6.8	6.7
47	73.5	2.1	2.9%

TABLE 4

RESULTS OF INITIAL ON-FARM BLOOD TESTS OF HERDS OF ORIGIN OF BRUCELLOSIS
REACTORS DETECTED BY MCI PROGRAM (1967-1972-1977 Average)

<u>State</u>	<u>Rank Order Mean Herd Size of Reactor Herds</u>	<u>Average Number of Reactor Animals in the Reactor Herd</u>	<u>Average of the Percent of Reactor Animals in the Reactor Herds</u>
1	288	3	1%
2	214	7	3%
3	66	6	9%
4	55	6	11%
5	44	8	13%
6	42	7	16%
7	35	6	18%

Table 5

Comparison of Herds with Reactors as a percent of BRT Herds Tested
Results of Initial On-Farm Blood Tests (1967-1972-1977 Ave.)

<u>State</u>	<u>Ave. No. of BRT Suspicious Herds Tested</u>	<u>Ave. No. of Herds with Reactors</u>	<u>Rank Order Herds with Reactors As Percent of Herds Tested</u>
31	188.0	134.0	71.3%
32	280.8	139.0	49.5%
33	121.5	48.3	39.8%
34	78.1	24	30.7%
35	40.6	6.5	16.0%
36	53.5	4.3	8.0%

Table 6

Results of Initial On-Farm Blood Tests of Herds Originally
Detected by the Milk Ring Test for Brucellosis
(1967-1972-1977 Average)

<u>State</u>	<u>Rank Order Mean Herd Size of Reactor Herds</u>	<u>Average Number of Reactor Animals in the Reactor Herd</u>	<u>Average of the Percent of Reactor Animals in the Reactor Herds</u>
21	220	4	1.7%
22	187	5	2.7%
23	83	3	3.3%
24	82	4	4.8%
25	50	3	5.7%
26	33	2	6.7%
27	29	3	10.9%
28	30	4	13.5%

TABLE 7

TOTAL ACCUMULATED NUMBER OF CATTLE TESTED FOR BRUCELLOSIS IN 6 STATES LISTED IN RANK ORDER BY RATE OF CATTLE TESTED PER 1,000 COW YEARS FOR EACH STATE POPULATION OF COWS 1962-76

Selected State	Total Cow Years	Total Number of Cattle Tested	Rate of Cattle Tested/1,000 Cow Years	Prevalence Rate of Reactors Per 1,000 Cattle Tested
61	15,772,996	8,810,354	560	7
62	53,404,964	29,545,506	550	19
63	74,553,224	23,413,447	310	37
64	31,818,784	8,922,445	280	19
65	40,937,148	10,561,060	260	39
66	51,965,640	6,743,126	130	6

TABLE 8

TOTAL ACCUMULATED NUMBER OF BRUCELLOSIS REACTORS COMBINING MCI TEST RESULTS 1962-76 AND ON-FARM TEST RESULTS 1946-76 IN 6 STATES LISTED IN RANK ORDER BY REACTOR RATES PER 1,000 CATTLE TESTED

Selected State	Total Cow Years	Total Number of Reactor Cattle	Prevalence Rate of Reactors/1,000 Cow Years At Risk	Rate of Reactors/1,000 Cattle Tested
71	40,937,148	412,604	10	39
72	74,553,224	865,084	12	37
73	53,404,964	567,065	10	19
74	31,818,784	167,009	5	19
75	15,773,996	62,068	4	7
76	51,965,640	43,815	1	6

Figure 1

NO. OF DAIRY HERDS SUSPICIOUS FOR BRUCELLOSIS AS DETECTED BY THE MILK TING TEST FOR EACH 1,000 HERDS TESTED *. COMPARISON OF RATES/1,000 FROM SELECTED STATES (1952-1976).

* Rate = No. of herds suspicious/1000 herds tested.

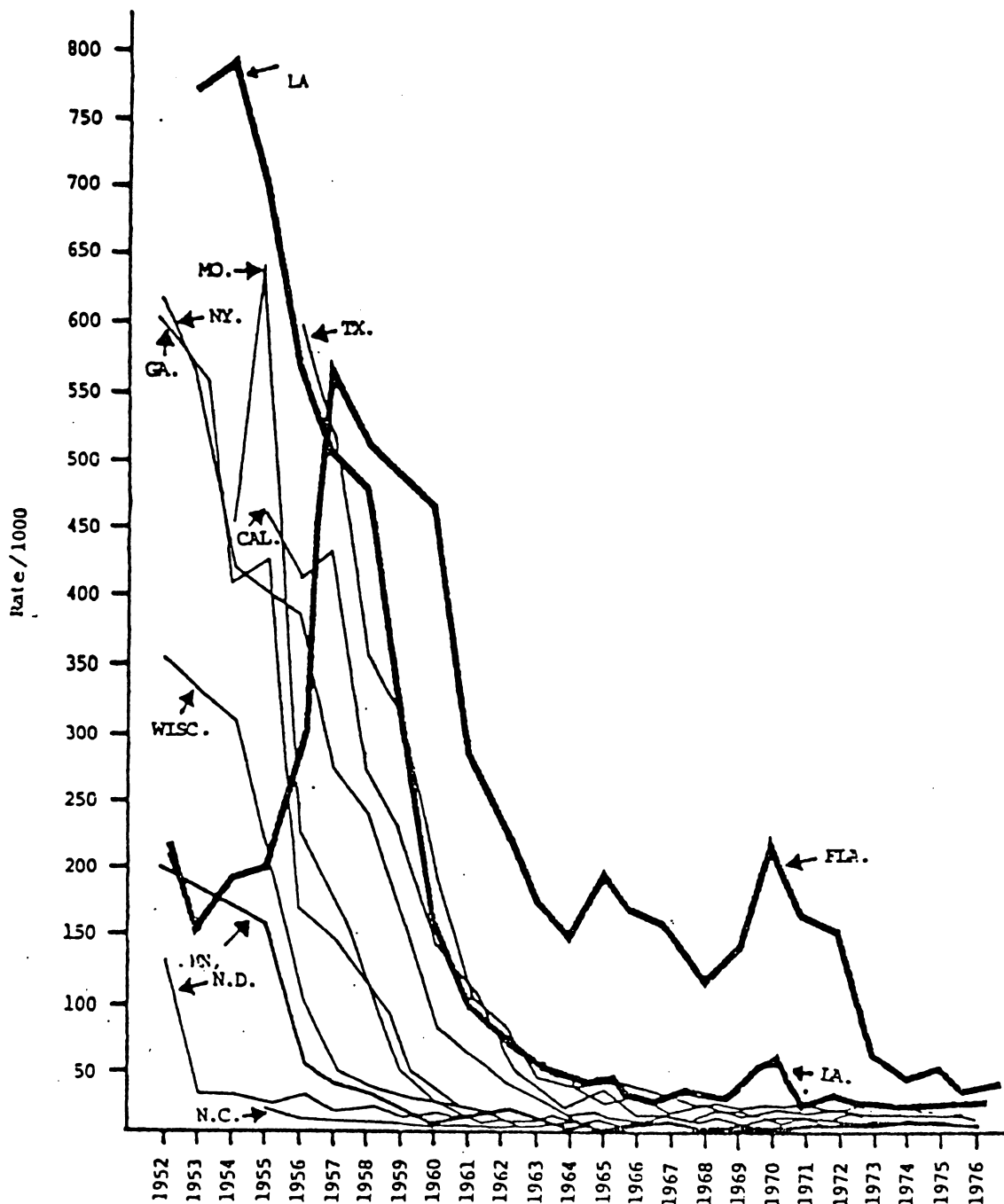


Figure 2 Profile of Percent of Federal Brucellosis Funds Allocated to Pay Indemnity to Owners of Brucellosis Reactor Cattle, U.S. 1954-76

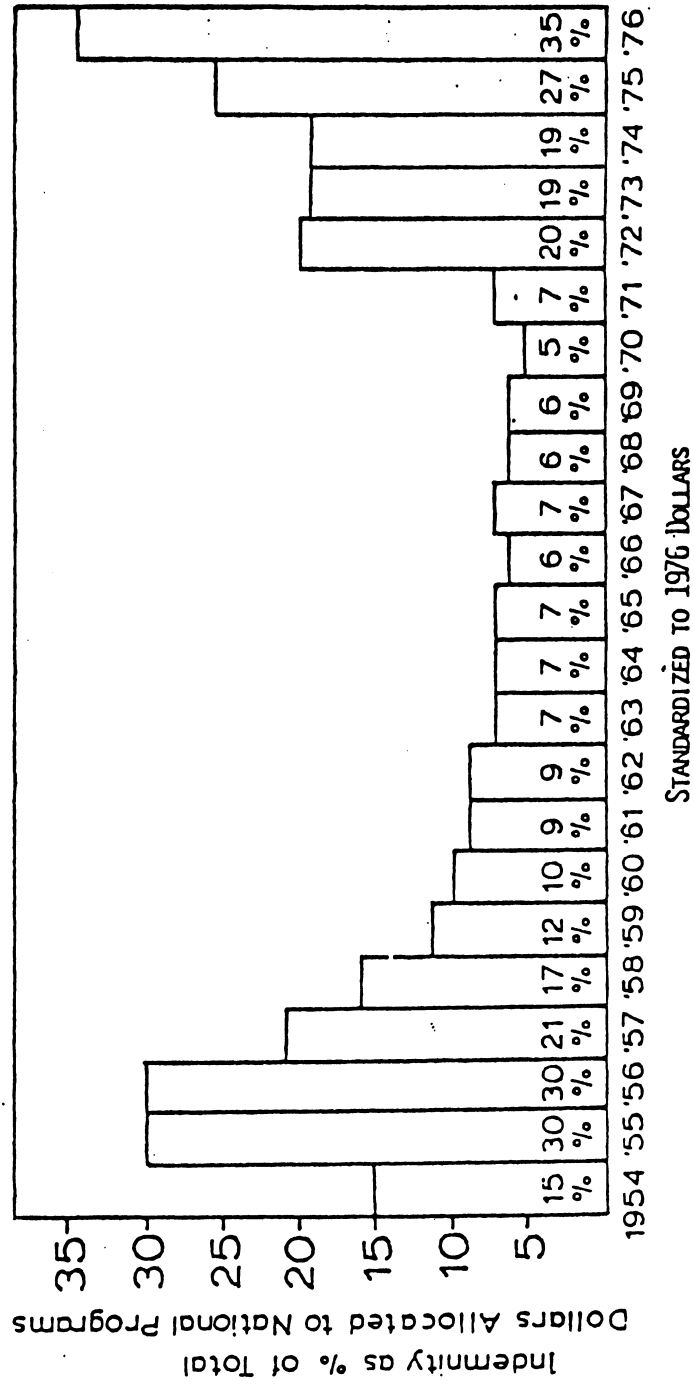
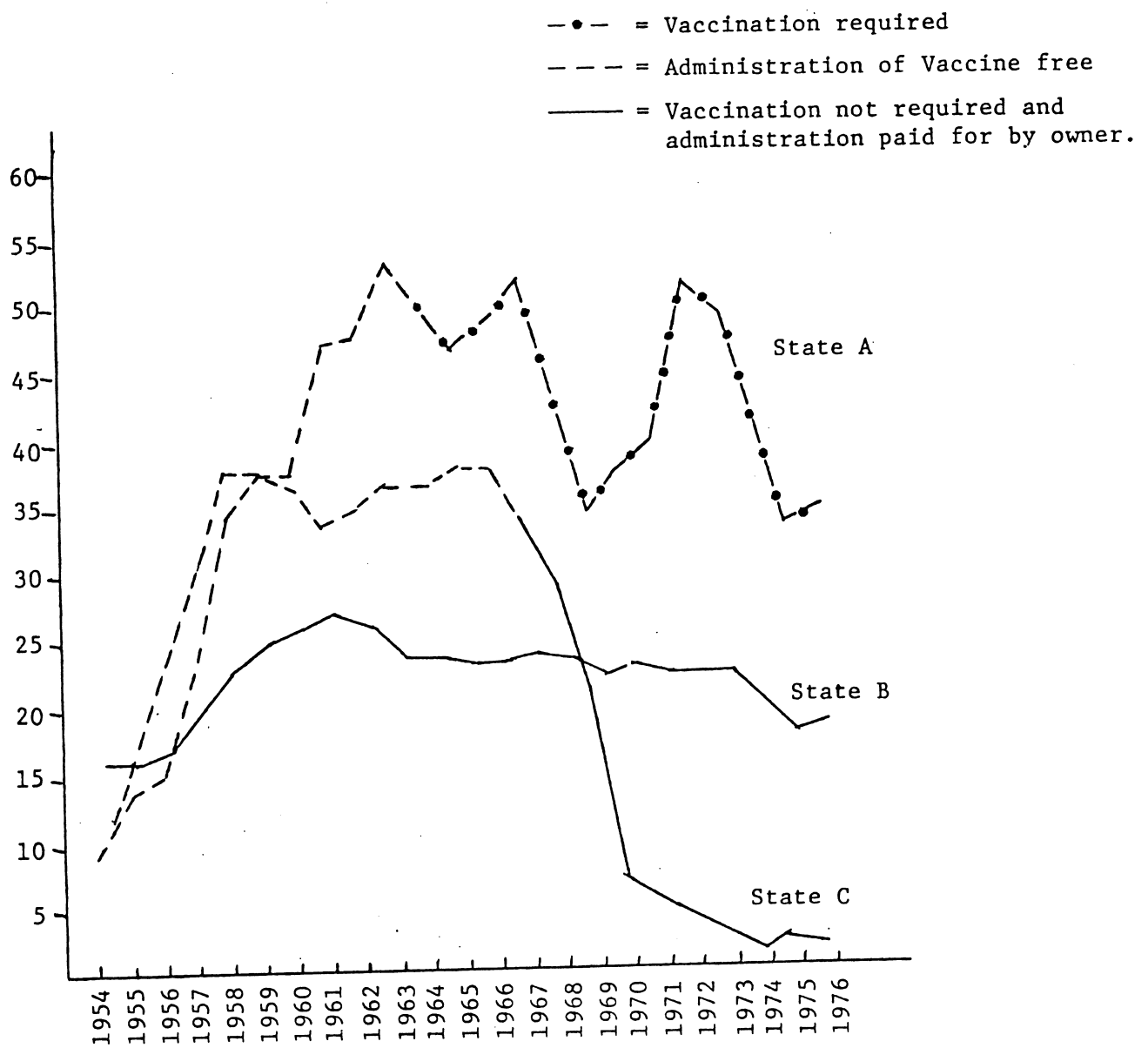


Figure #3

PERCENT OF CALVES VACCINATED FOR BRUCELOSIS .IN RELATION TO VARIOUS INCENTIVE SCHEMES SUCH AS FREE VACCINATION OR LEGALLY REQUIRED VACCINATION (1954-1976)



Prepared by Robert K. Anderson, D.V.M., MPh, University of Minnesota, 1981

PRINCIPLES AND FACTORS INFLUENCING FEASIBILITY, COSTS,
BENEFITS AND OUTCOMES OF CONTROL AND PREVENTION PROGRAMS
LEADING TOWARD LOCAL ERADICATION OF ANIMAL DISEASE

- I. Definitions of Eradication
 - A. Control of a disease or problem.
 - B. Prevention of a disease or problem.
 - C. Local eradication of a disease or problem.
 - D. Global eradication of a disease or problem.

- II. Biological Factors and Nature of the Problem
 - A. Epidemiologic characteristics.
 - B. Methodology for detection.
 - C. Methods for control and prevention - influence on biological factors.

- III. Influence of the Nature and Structure of the Industry
 - A. Producers
 - B. Processors
 - C. Related business interests.
 - D. Interrelationships affecting movement of host and agents.

- IV. Influence of Geography and Environmental Factors
 - A. Geographic
 - B. Climatic
 - C. Physical
 - D. Biologic
 - E. Environmental impact of methods for control and prevention

- V. Influence of Public Health Factors
 - A. Groups affected and degree of impact on health and wellbeing.
 - B. Methods of prevention of human health problem.
 - C. Public perceptions of hazards and consequences.
 - D. Perceptions and authority of public health officials to influence the reward system.

- VI. Influence of Political and Legal Factors
 - A. Political factors.
 - B. Legal factors.
 - C. Reward Systems.
 - D. Influence on industry, consumers, government administrators and employees.
 - E. Interrelationships of political and legal factors and the reward system.

APPENDIX A continued:

VII. Influence of Education and Reward Systems on Behavioral Change

- A. Education - for whom,
- B. Data on diffusion of knowledge.
- C. Influence of reward systems on behavioral change.
- D. Factors influencing the reward system.

VIII. Influence of Sociological and Cultural Factors

- A. Social and power structure of the community.
- B. Cultural factors.
- C. Diffusion of knowledge.
- D. Reward systems - public vs. private.
- E. Interrelationships of factors.

IX. Influence of Facilities, Equipment and Supplies

- A. Planning for scope and time of the effort.
- B. Facilities
- C. Equipment
- D. Supplies
- E. Distribution (appropriate place and time)
- F. Government vs. private - interrelationships.

X. Influence of Man-Power - Public and Private

- A. Planning for scope and time of the effort.
- B. Public agencies - kind and number of people.
- C. Private sector - kind and number of people.
- D. Distribution (appropriate place and time).
- E. Government vs. private - roles and interrelationships.

XI. Influence of Economic Factors

- A. Consumer demand and costs of problem.
- B. Processor demands and costs of problem.
- C. Producer costs of the disease/problem.
- D. Costs to related businesses.
- E. Concept of on-site/off-site costs.
- F. Interrelationships of health and economic factors.

APPENDIX A continued:

XII. Benefit/Cost Analysis of Alternative Approaches to Control and Prevention Leading to Eradication

- A. Types of alternative programs - options.
- B. Selection of assumptions - problems.
- C. Data to evaluate assumptions and options - problems.
- D. Data and computer programs for modeling.
- E. Selection of discount rates.
- F. Outcomes - benefits/costs "To Whom."
- G. Influence of reward system.
- H. Interpretations - problems and pitfalls.

XIII. Influence of Decision Makers in Selecting a Program

- A. Producers - owners and managers.
- B. Processors - owners and managers.
- C. Consumers - individuals and groups.
- D. Professional and technical experts - private and public.
- E. Legislative - federal, state, local.
- F. Judicial - federal, state, local.
- G. Administrators - private and public.

XIV. Systems of Evaluation and Cybernetic Control

- A. Evaluation plan must be integral part of planning and implementation.
- B. Collection, storage, retrieval of data to provide a data base for analysis and interpretation.
- C. Evaluation in terms of stated objectives - outcomes of the program.
- D. Continual evaluation by staff of agency with annual report.
- E. Evaluation every three years by an outside group using experts from industry, universities, other agencies, other countries.
- F. Forum for review of annual and triannual evaluation reports by all concerned groups.
- G. Mechanism for continuing changes and adjustments in program in accord with findings and recommendations of evaluation reports and the advisory groups.

APPENDIX B

Report

National Brucellosis Technical Commission

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Prepared For

U. S. Animal and Plant Health Inspection Service

and

United States Animal Health Association

August 28, 1978

Section 1

Findings and Recommendations

In this section of our report we present eleven sets of findings and recommendations. These refer specifically to parts of the Charge to the Commission, and seem to us to address major policy questions to which we wish to give special emphasis. They are only a portion of all of the findings and recommendations, which are to be found throughout the body of the report and the appendices.

1. Finding: Effective control leading to local eradication of bovine brucellosis is biologically feasible.

Finding: If there were not a cooperative state - federal program, uncoordinated state and individual programs would be initiated, which would prove to be more costly, interfere with commerce more than the existing program, and result in significant increases in the prevalence of bovine and of human brucellosis. The Commission also finds that achievement of the goal requires the assumption by individuals of responsibility for their actions which affect control leading to eradication.

Therefore: The Commission recommends that the state and federal governments, and the industries affected support a cooperative program of control leading toward local eradication, as defined and substantiated in this report.

2. Finding: Biologic knowledge essential to accomplish control leading to local eradication is available, and has been used in many areas to reach this goal.

Finding: The levels of understanding and current knowledge of brucellosis are so low in many places, among those who have a need to know, as to constitute a major barrier to the achievement of control leading to local eradication.

Therefore: The Commission recommends increased support for ongoing cooperative state - federal - industry programs of education and training to correct these deficiencies.

Specific programmatic recommendations are made in the report which address: education for producers and the marketing segments of industry so that they will have an information base from which to assume greater individual responsibility in their own interest; education targeted in terms of the individuals' need to know, at the time they have a need to know, to promote actions from a base of enlightened self-interest;

education to improve the quality of information possessed by those professionals in both the public and private sectors who have the responsibility of advising and of regulating those engaged in the production, handling and marketing of cattle and cattle products; education to increase general public awareness of all of the implications of the disease and the programs designed to achieve local eradication.

3. Finding: Using a systems simulation model, various program options, including "no governmental program" were simulated to determine their economic impact. All of the program alternatives, except the "no governmental program" option, had favorable benefit/cost ratios and produced net benefits for funds invested.

Finding: While the modeling process contains inherent limitations, which make it inappropriate to use the results obtained by such an analysis as the sole criterion for policy recommendations, the results obtained so strongly support the other approaches to analysis of the problem as to permit generalization.

Therefore: The Commission recommends recognition of the principle that investment of funds in epidemiologically sound modifications of the present program specifically targeted to varying requirements of herds, states and regions will produce a favorable return.

4. Finding: Indemnity payments accounted for 35 percent of total program obligations in FY 1976. Given the substantial costs accruing to producers from requirements of brucellosis control programs, and the benefits which accrue to the public generally, indemnity payments are appropriate to use as incentives. However, administrative problems in disbursing indemnity payments engender antiprogram feeling in some states which is strong enough to constitute a negative incentive to cooperation with the program.

Procedures necessary to obtain increases in levels of indemnity to conform with market conditions, or to implement herd depopulations are excessively complex. In some states where program components are of relatively low quality, large disbursements of federal indemnity funds are being made.

Therefore: We recommend that the progress toward improvement in the claims system represented by the BICS be accelerated. We also recommend that a study be undertaken to determine the effects of adopting an indemnity system keyed to replacement value, which moves with the market.

We recommend reexamination of the policy of making federal indemnity payments in states where program components are of relatively low quality.

5. Finding: We agree with the National Academy of Sciences Subcommittee on Brucellosis Research that the major reduction in funds for brucellosis research from 1967-75 was premature. Increased financial support for brucellosis research since 1975 is already showing promise of significant advances in the data base for improvement in vaccination practices and aid to diagnosis. Additional data basic to an understanding of brucellosis are also being developed.

Therefore: We recommend that research funding be continued at levels and for sufficient time to assure an adequate flow of new information both for presently perceived needs and for unanticipated problems which will arise. The Commission also recommends the continuation of the policy adopted by APHIS and SEA of establishing ad hoc panels of experts for peer evaluation of research and development proposals and the establishment of an advisory system to help in establishing funding priorities.

6. Finding: The dynamics of both the dairy and beef cattle industries have such an important influence on the conduct of all programs of disease control, including brucellosis, that it is essential that there be an adequate base of economic and epidemiologic data for the design of program policies, their implementation and evaluation.

Finding: While the biologic aspects of brucellosis research are fairly well covered in presently sponsored research projects, there is a need for additional research on the interaction of economics, epidemiologic factors and the dynamics of the livestock industry as they influence the prevalence of brucellosis.

Therefore: The Commission recommends that APHIS and SEA, in coordination with other appropriate federal agencies, the State Departments of Agriculture and the Land Grant Universities, sponsor ongoing research on the cyclic, geographic, movement, marketing and other economic and epidemiologic factors as they influence disease control. The Commission further recommends to APHIS and USAHA that this research generated data be used in the systematic review of brucellosis program policy, its implementation and evaluation.

7. Finding: Program data as presently collected in the states, and compiled by APHIS staff do not provide an epidemiologic or administrative data base which is adequate for precise evaluation of program and performance. Such a data base is essential for rational recommendations in support of, or for changes in program components. We recognize that APHIS is currently conducting studies on data based management systems, including several pilot operations.

Therefore: The Commission recommends that priority be given to completion of these studies, and their evaluation jointly with the states, to insure earliest possible implementation of adequate data collection and data management systems, with compatibility of state and federal processing systems.

8. Finding: All of the alternatives which the Commission has examined to accommodate the expressed desires of the livestock industry for increased flexibility of programs, and which do not compromise principles of sound disease control, require the development and implementation of a nonduplicative individual animal identification system.

Therefore: The Commission recommends that by December 31, 1981, all cattle changing ownership shall have a permanent nonduplicative individual identification that can be traced to the previous owners and herd of origin. We also recommend that the States initiate action to provide the appropriate legislative and administrative authority to implement this recommendation prior to December 31, 1981.

9. Findings: Brucellosis is a serious and debilitating disease of human beings. Its incidence in the U.S. is understated in all official reports, but is clearly related to the prevalence of brucellosis in cattle, swine, goats and sheep. Increases in prevalence of bovine brucellosis in recent years have been directly associated with increases in incidence of human brucellosis caused by Brucella abortus among livestock producers, their families and others in the marketing and processing chain. The recent experience repeats that of the past, when prevalence of bovine brucellosis was higher nationally. There is not now a structured system to protect from, or to compensate for illness and disability occurring in members of farm families, employees or private veterinarians who are at risk of infection.

Packing house employees are presently the occupational group with the highest reported incidence of brucellosis and there is no successful program to protect them from exposure to brucellosis from infected animals presented for slaughter.

Two states have instituted regulations restricting import of branded reactor cattle for slaughter, and packing house infections are under investigation in other states by state and local health departments and the Center for Disease Control.

Therefore, the Commission recommends: That local eradication be recognized as a public benefit in that it provides protection to public health.

We recommend: That serious consideration be given to the prospect that Occupational Safety and Health standards may be imposed in the packing industry at some time unless a plan is in effect to reduce the hazards to employees through local eradication of animal brucellosis. Serious consideration must also be given to the prospect that consumer protection standards on processing brucellosis reactor cattle, comparable to those presently in force requiring cooking of branded tuberculin reactor cattle, or cattle or swine with lesions of tuberculosis.

10. Finding: Over the years, in attempts to accommodate to competing desires of various geographic and industry segments, changes in the U.M.&R. have produced trade offs of sound epidemiologic principles. In the process, the U.M.&R. has evolved into a document which contains many barriers to the achievement of control leading to local eradication. Specifically the present U.M.&R. promotes the transfer of responsibility and accountability from individuals engaged in the livestock and marketing industries to the federal and state regulatory agencies. In the process, it generates a false sense of security on the part of individuals who accept animals on the basis of rules which are epidemiologically invalid. It creates rewards for systems of evasion, thus promoting the maintenance and dissemination of bovine brucellosis.

Application of the present U.M.&R. results in continued very high costs, for surveillance and for stamping out reintroductions into the low prevalence and brucellosis free areas. In higher prevalence areas, surveillance costs are also high but the U.M.&R. do not provide sufficient positive incentives for individuals to take actions promoting control leading to local eradication.

Therefore: The Commission recommends consideration by the U.S.A.H.A., A.P.H.I.S., the States and various components of industry of proposed principles for a different approach to the U.M.&R. which address the deficiencies we have identified.

The goals of this proposal are: (1) to educate, by means of a warranty on all changes of ownership, the buyers, sellers and handlers of cattle, on the nature and extent of the risks involved in transfer of cattle. This warranty would be educational for a period of time, and

then with enabling legislation, have legal force; (2) to foster the assumption of individual responsibility and accountability for actions which tend to perpetuate and disseminate brucellosis, and to stimulate positive actions for effective control; (3) to establish criteria for classification of herds and states or regions which are based upon sound epidemiologic principles; (4) to apply these criteria so that resources may be used optimally to protect the 993 herds per thousand which are presently brucellosis-free from the risk of infection posed by the reservoir of 7 herds per thousand which are not; (5) to increase flexibility in meeting local and national needs by stimulating adoption of systems of individualized herd management which apply the best available technology to the specific epidemiologic situation; (6) to utilize presently available knowledge, as well as new information developing from research to increase resistance in herds and populations on a selective basis, and to limit spread of infection by rationally based movement and marketing constraints; (7) to develop and implement quality control standards for program performance and services.

11. Finding: Effectiveness, efficiency and cost of surveillance procedures are influenced both by long term trends in the cattle industry, such as change in herd size, geographic concentration of enterprises, and shorter term effects such as the phase of the beef cattle cycle or drought.

Finding: Any single method of surveillance is vulnerable to these changes in the dynamics of the cattle industry and may fail significantly in detecting infection under particular circumstances, as for example, during the accumulation phase of the beef cattle cycle when a smaller proportion of animals will pass through marketing channels.

Therefore: The Commission recommends that the MCI should not be used as the sole or primary method of surveillance, or for classification of states. Combined strategies of testing at slaughter, or change of ownership or movement, and post purchase testing should be keyed to prevailing conditions of marketing. Increased emphasis on timely and adequate epidemiologic follow up on surveillance test reports, including contact herd testing, and appropriate use of supplemental serologic tests, and culture where appropriate, are highly cost effective and should be extended.

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INTER-AMERICAN INSTITUTE FOR COOPERATION ON AGRICULTURE

III INTERAMERICAN MEETING OF DIRECTORS OF ANIMAL HEALTH
Buenos Aires, Argentina, August 5-8, 1981

REDISA 3/10

August 1981

REPORT ON AFRICAN SWINE FEVER SITUATION IN LATIN AMERICA
AND PROGRESS IN ITS CONTROL AND ERRADICATION

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REPORT TO THE III INTER-AMERICAN MEETING OF DIRECTORS OF VETERINARY SERVICES
(REDISA III)

Report on African Swine Fever Situation in Latin America and
Progress in its Control and Eradication

by Dr. Franz J. Peritz *

It is now just over three years that outbreaks of African Swine Fever (ASF) were recognized and confirmed by laboratory diagnosis, first in May in the State of Rio de Janeiro in Brazil and then in early July, also in 1978, in the Dominican Republic. These outbreaks were attributed to inter-continental spread as a consequence to the increased incidence of ASF experienced during 1977 in the Iberian Peninsula as was its spread to Malta and Sardinia early that year.

As has already been reported to the II Inter-American Meeting of Directors of Veterinary Services in September 1980, the disease spread from the Dominican Republic to Haiti and presumably from there to Cuba, where it was confirmed in December 1978 and January 1980, respectively.

The Dominican Republic eradicated ASF by the total depopulation of all pigs from its national territory. The plan, drawn up by the veterinary authorities with the collaboration of technical advisors from the U.S. Department of Agriculture (USDA) and the Food and Agriculture Organization of the United Nations (FAO), was executed with the support of the U.S. Agency for International Cooperation (AID). First the Eastern provinces and the Samaná Peninsula containing about 10 percent of the country's swine population was depopulated by February 1980. To accelerate the depopulation of the rest of the country the breeding of swine was discouraged by the publication of a decree in March 1980, by which a date was set after which no compensation was to be paid for uncastrated boars, pregnant sows and young pigs under 25 kg body weight, when found. At the same time, to ensure the consumption of all stored pork and pork products, the importation of these products was prohibited from 31 March 1980 to end 1980. By 31 August, the date set for total depopulation, the programme's success was demonstrated by the fact that only 200 pigs could be found from that date to February 1981 by repeated searches of the countryside.

Repopulation was initiated in the Eastern Region in mid July 1980 by siting the first group of sentinel pigs and has been continued in the rest of the country. Blood samples were taken at 45 and 90 days without any serological evidence of ASF having been found.

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Plans have been formulated for a repopulation programme for which financial assistance is being sought from international credit agencies. The plans comprise the maintenance of an adequate swine disease surveillance programme, the distribution of pigs to small farmers through local cooperatives and a system of official supervision and control.

In Cuba, where the laboratory confirmed outbreak had been announced by the Minister of Agriculture on 11 February 1980, the last focus of infection was recorded on 4 March 1980. There had been a total of 53 foci in the three affected eastern provinces of Guantánamo, Holguín and Santiago.

During the total elimination of the swine population of the affected area, 166,000 died or were slaughtered. Of these 20,000 were destroyed as infected or exposed contacts and nearly 100,000 head were cooked or barbecued under supervision for immediate consumption as they were not of a size or conformation to allow industrial processing.

The sentinelization of the area has been completed without any residual source of infection having been detected and planned repopulation has been initiated.

In Brazil, where the first outbreak recognized and confirmed as ASF occurred in April 1978 in the State of Rio de Janeiro, it was later concluded on the ground of studies carried out, that the disease had not in fact been disseminated to the rest of the States of the Federation from this outbreak, but had been introduced inadvertently some years before without having been recognized. This was because the character of the virus introduced was one of low virulence which varied very much in its pathogenicity. There was considerable variation in morbidity and mortality. On some farms all pigs died, on others maybe one or two were sick. On occasions virus was isolated from apparently healthy pigs killed for diagnosis. Thus clinical manifestations were indistinguishable from classical swine fever (also called hog cholera) endemic to the country, and was probably also the reason for its apparently slow dissemination from its much earlier introduction.

A tremendous effort has been made by the Brazilian Veterinary Services to stamp out all clinical outbreaks of the disease, resulting in that the last clinical case reported and confirmed by the laboratory as due to ASF, was found in December 1979 in the State of Pará in the North of the country.

In view of this situation, the Federal Ministry of Agriculture formulated a programme for the eradication of ASF and the control of hog cholera which aims at the progressive establishment of ASF-free areas, initially in the Southern states of the country, with a view to extending these later to comprise the country as a whole and obtain the corresponding progressive international recognition of their ASF-free status.

The initial area (Rio Grande do Sul, Santa Catarina and Parana) selected for priority action contains a very highly developed and integrated swine industry which due to its technical level of competence and expertise can respond to the demands of foreign markets in respect of quality, as well as expand production to meet export opportunities. Since access to foreign markets is impeded by the risk of possible introduction of ASF into their territories by potential importers, Brazil is determined to prove beyond reasonable doubt that such risks will have been eliminated by a progressive ASF eradication campaign. The Federal Veterinary Services, in collaboration with the state services of the above enumerated three states, carried out a serological survey involving the examination of 44,000 pig sera from abattoirs and pig farms in these states. The purpose of the survey is the first approach which is to be followed by a systematic study of the problem, for the determination of possible residual sources of infection remaining after clinical manifestations of ASF were not any more detected in this area after August 1979 (in Santa Catarina).

On the base of the results of the survey it is considered that the success of the programme for the progressive eradication of ASF and control of hog cholera will depend on the resources made available and the determination with which it is going to be executed, bearing in mind that it is the first campaign of this kind and scale ever attempted anywhere.

In Haiti ASF was confirmed by the Plum Island Animal Disease Centre (PIADC) in December 1978, consequent to the veterinary services having investigated reports of high mortality due to a swine disease similar to hog cholera in pigs recently vaccinated against that disease. It is assumed that the disease had spread across the sparsely populated mountainous and difficult to control border with the Dominican Republic, across which there is a traditional flow of migrant labour, pigs and pork products into the Artibonite Valley.

Except for the 15 km deep pig free 'cordon sanitaire', created by the slaughter of over 20,000 pigs on being notified of the outbreak in the Dominican Republic and the serum survey carried out to establish the extent to which it had been disseminated in Haiti after confirmation by the PIADC, no organized control and eradication programme has been carried out to date. The serum survey involving the examination of some 1,368 sera collected in various parts of the country, and examined by the immunoelectroosmophoresis (IEOP) test showed that 93 sera or 7 percent were positive to ASF. The positive animals were found widely distributed, mostly asymptomatic and probably chronic carriers of the virus.

At present clinical cases are rarely seen and spontaneous repopulation has been commenced by farmers on the base of surviving pigs, in response to rising prices for pigs and their products. It is considered that a stabilized enzootic situation with a large reservoir of virus carriers now exists in Haiti.

Consequently the USDA declared an animal health emergency for the United States on 21 January 1981, because the existence of ASF in Haiti poses a serious threat to the U.S. swine industry. This declaration permits the U.S. Government to authorize USDA to use its emergency funds in cooperation with the Government of Haiti and other governments and international organizations, to carry out an ASF eradication programme. Such a programme has been formulated and will be supported financially and technically by the Governments of Canada, Mexico and the United States, and administered by the Inter-American Institute for Cooperation in Agriculture (IICA). FAO will provide support for this programme by the establishment of the necessary laboratory.

According to information available, the programme should have been initiated by the time this report is presented.

FAO's action programme during 1980/81

FAO's programme carried out during 1978 and 1979 was reported on the occasion of REDISA II in September 1980.

FAO's programme for the prevention, control and eradication of ASF has focused on:

- (a) Maintenance of countries' awareness of the continuing threat posed by ASF and other animal diseases exotic to the hemisphere, by continuing to issue the ASF Newsletter on a bi-monthly basis. The Newsletter is published to keep animal health services and the livestock industry aware and updated on the current status of ASF, relevant studies and means of prevention and control throughout the world, with special emphasis on the Western Hemisphere. Attention is also drawn to other animal diseases exotic to the Hemisphere, which might pose a threat.

Awareness has also been maintained by short term consultancies to three countries of South America, carried out by a communications specialist. Assistance was provided to the national veterinary services in the preparation of information material for the general public through release to the mass media on ASF prevention with emphasis on international travellers, the ASF eradication programme of the Dominican Republic, with reference to national animal health programmes, and the publication of this material.

- (b) Provision of ASF diagnostic reagents

Consequent to the FAO Technical Consultation on ASF held in October 1979 in Panama, the United States Agency for International Cooperation (USAID) undertook to finance the production and distribution of diagnostic reagents for the differential diagnosis of hog cholera and ASF, to the official laboratories of the countries of Latin America and the Caribbean by the PIADC.

This project has been continued through 1981 and all animal health services were advised of this by the ASF Newsletter of January 1981, and reminded to examine their stock of reagents and order replenishments as necessary.

(c) Training

A national seminar on the diagnosis of the main swine diseases with emphasis on ASF and the prevention and control of this disease was held in Bolivia for animal disease control specialists in November 1980, under FAO's Technical Cooperation Programme. The seminar analyzed the institutional, technical and legal problems which have to be dealt with by technical personnel to implement an adequate surveillance programme and when necessary deal with an eventual outbreak of the disease.

The Regional Project "Regional Training for Emergency Animal Disease Control with Emphasis on ASF" financed by UNDP and executed by FAO has become operational on 2 March 1981 with the arrival of the Project Manager in Santo Domingo, Dominican Republic, which is the headquarters of the project. The professional staff of the Dominican High Commission for the Eradication of ASF is available to the project as consultants and lecturers, at no honorarium cost. Under this training project selected officers from member countries will be trained in specialized subjects related to emergency disease control.

(d) Subregional project for "Strengthening of Veterinary Services for the Prevention of African Swine Fever in the Member Countries of the Agreement of Cartagena".

Collaboration was provided to the Board of the Agreement of Cartagena (JUNAC) in the formulation of this project which has since been submitted by the Board to the European Economic Community for financial support.

The project comprises experts, consultants, equipment, training activities at the national, sub-regional and international level, as well as fellowships. The contribution of US\$ 3.3 million was requested by the JUNAC from the EEC for the execution of this project. FAO will provide technical support to this project,

(e) Technical collaboration for the eradication of ASF

Haiti: Assistance will be provided to Haiti in the establishment of an ASF diagnostic laboratory through FAO's Technical Cooperation Programme (TCP). It will strengthen Haiti's ASF Eradication Programme through ASF diagnostic services, disease surveillance and epizootiological investigation support activities.

As soon as the FAO TCP project commences, efforts will be made to expand the scale of assistance by identifying a donor interested in establishing a new veterinary institute in Haiti.

Brazil: Collaboration was provided to Brazil through a technical advisory mission, comprising expertise in the fields of virology, epidemiology and regulatory veterinary medicine, to review with the National Secretariat for Animal and Plant Protection the status of ASF in Brazil and to advise on the strategy and measures to be adopted for the establishment of areas free of this disease initially.

(f) Development of an International Animal Disease Emergency Programme (IADEP)

An Expert Consultation was held at FAO Headquarters to establish the basis for the initiation of a system through which it will be possible to provide assistance to member countries in diagnosing and implementing prompt control and eradication measures, when outbreaks of animal diseases exotic to them and of an emergency character occur in their national territories.

* * *

PROGRAMA DE APOYO A LOS LABORATORIOS DE DIAGNOSTICO
VETERINARIO DE LAS AMERICAS

CONSIDERANDOS:

Que la ganadería representa un factor de suma importancia para el desarrollo social y económico de los países del -
Continente.

Que las enfermedades de los animales representa un serio obstáculo que impide el desarrollo y reduce considerablemente la productividad de la ganadería en las Américas.

Que los laboratorios de diagnóstico veterinario representan un recurso fundamental para mejorar la sanidad de la ganadería e incrementar así su productividad.

Por lo expuesto se estima conveniente y necesario, un programa de apoyo a los laboratorios de diagnóstico veterinario de las Américas que deberá tener como

O B J E T I V O :

Elevar el nivel técnico de los laboratorios de diagnóstico veterinario del Continente, que les permita proporcionar -
un servicio competente y óptimo que asegure la salud de

la población animal existente, la prevención de la introducción y diseminación de enfermedades exóticas y respalde los programas de salud animal.

M E T A S

1. Colaborar con los servicios de salud animal de los países del Continente, en la implantación de un sistema de laboratorios de diagnóstico veterinario idóneo a sus necesidades, participando si se le solicita en la coordinación regional o continental a los laboratorios.
2. Colaborar con los países que lo soliciten a promover el uso, el interés y el conocimiento de los servicios que proporcionan los laboratorios de diagnóstico veterinario entre la comunidad profesional pecuaria y en la comunidad ganadera.
3. Colaborar con los países, en la formación, capacitación, actualización y administración de recursos humanos profesionales y técnicos de los laboratorios de diagnóstico veterinario.
4. Colaborar con los países en el mantenimiento, adquisición y producción de los recursos materiales e insumos necesarios para lograr el funcionamiento óptimo de los laboratorios de diagnóstico veterinario.

5. Colaborar con los países, en la capacitación sobre técnicas administrativas a los responsables de los laboratorios de diagnóstico veterinario y proporcionar a solicitud de los países, asistencia técnica para el establecimiento de sistemas y procedimientos administrativos idóneos y adecuados a las necesidades de los laboratorios de diagnóstico veterinario.
6. Apoyar y respaldar técnica y financieramente, a aquellos laboratorios del Continente que estén en posibilidades de proporcionar servicios de referencia.

F U N C I O N E S

1. Coordinación nacional, regional y continental de los laboratorios de diagnóstico veterinario.
2. Promover el uso de los laboratorios de diagnóstico veterinario.
3. Información, capacitación, actualización y administración de recursos humanos, profesionales y técnicos.
4. Mantenimiento, adquisición y producción de recursos materiales.
5. Asistencia administrativa.

Para la obtención de las metas anteriormente enunciadas, se deberán desarrollar las actividades que a continuación se programan a cinco años:

Meta 1. Implementar una coordinación regional o continental de los laboratorios de diagnóstico veterinario.

AÑOS

ACTIVIDADES :

1 2 3 4 5

1.1 Auscultación entre las autoridades de salud animal del Continente sobre sus intenciones y opiniones de coordinarse a nivel nacional, regional o continental.

1

1.2 Implementar sistemas nacionales, regionales y/o continentales de coordinación, según se manifiesta la decisión de los países auscultados.

1

1.3 Dependiendo de la auscultación definir el tipo de laboratorios que deberán implementarse, según las necesidades observadas. (Laboratorios tipo A, B, C, D, E, según la clasificación mexicana).

1 2 3

Meta 2. Promover el uso, el interés y el conocimiento de los servicios que proporcionan los laboratorios de diagnóstico veterinario entre la comunidad profesional pecuaria y en la comunidad ganadera.

A Ñ O S

A C T I V I D A D E S:

1 2 3 4 5

2.1 Diseñar un curso de una semana para Médicos Veterinarios dedicados a clínica y extensionismo, sobre el uso del laboratorio, envío de muestras y cómo el diagnóstico de laboratorio puede ser base para el mejoramiento de la Clínica privada y del servicio de asistencia técnica que da el medio veterinario.

1

2.2 Organizar cursos de capacitación para instructores de los diferentes países que impartieron el curso que se menciona en el inciso 2.1.

1 2

2.3 Apoyar a los diferentes países interesados en la redacción y diseño de diferentes medios promocionales de los servicios, ventajas y uso del laboratorio de diagnóstico veterinario (Cine, radio, televisión, material escrito).

1 2 3 4 5

2.4 Colaborar con los países solicitantes en la organización e impartición de los cursos mencionados en el inciso 2.1

Meta 3. Formación, capacitación, actualización y administración de recursos humanos, profesionales y técnicos de los laboratorios de diagnóstico veterinario.

ACTIVIDADES:	AÑOS				
	1	2	3	4	5
3.1 Detectar e identificar los organismos e instituciones que estén en posibilidades y competencia para capacitar personal profesional y técnico en las áreas de patología, parasitología, bacteriología, virología y toxicología.	1				
3.2. Establecer, implementar y copatrocinar cursos cortos de capacitación - con un programa de estudios definidos en aquellos organismos e instituciones detectados con competencia técnica para hacerlo a nivel nacional, regional y/o continental, en las disciplinas antes mencionadas.	1	2	3	4	5
3.3. Establecer un programa de becas para copatrocinar con los países solicitantes, la asistencia del personal profesional y técnicos de los -					

	AÑOS				
	1	2	3	4	5
laboratorios a los cursos menciona nados en el inciso 3.2.					
3.4. Formar un banco bibliográfico so-- bre temas relacionados al diagnós- tico de laboratorio y proporcionar un servicio de información biblio- gráfica a los laboratorios de diag nóstico veterinario del Continente.	1	2	3	4	5
3.5. Elaborar, producir, distribuir y-- mantener actualizado, un manual de técnicos de laboratorio de diagnós- tico veterinario para distribuir a todos los laboratorios de diagnós- tico del Continente.	1	2	3	4	5
Meta 4. Colaborar con la adquisición y mantenimiento de - equipo de laboratorio, en la adquisición y produc- ción de reactivos diagnósticos para los laborato- rios que lo soliciten					

	AÑOS				
ACTIVIDADES:	1	2	3	4	5
4.1. Recopilar un catálogo sobre provee- dores de equipo y proveedores de - mantenimiento para equipo de labo- ratorio, en las distintas regiones del Continente y proporcionar in--					

A Ñ O S

formación a los laboratorios que lo soliciten.	1	2	3	4	5
4.2 Desarrollar un curso sobre mantenimiento de instalaciones y equipo de laboratorio.	1				
4.3 Impartir periódicamente y a nivel regional el curso sobre mantenimiento de instalaciones y equipo de laboratorio; establecer un programa de becas en apoyo de los asistentes a este curso.	1	2	3	4	5
4.4 Promover entre los productores de equipo de laboratorio, sistemas y programas periódicos de mantenimiento y servicio de equipo de laboratorio a nivel regional.	1	2	3	4	5
4.5 Recopilar un acervo de catálogos de proveedores de reactivos y medicos de laboratorio y ponerlo a disposición de los laboratorios como fuente de información.	1				
4.6 Detectar los laboratorios y organismos afines que estén en posibilidades de producir reactivos diagnósticos y apoyar financieramente-	1				

1 (mantenerlo actualizado)

	AÑOS				
	1	2	3	4	5
su producción y distribución.	1	2	3	4	5
4.7 Elaborar y distribuir un manual sobre el control de calidad para reactivos diagnósticos y medios de cultivo para ser utilizado en los laboratorios de diagnóstico veterinario	1	2	3	4	5

Meta 5. Capacitar en técnicas de administración a los responsables de los laboratorios y asistir técnicamente en el establecimiento de sistemas y procedimientos administrativos idóneos a las funciones y necesidades de los laboratorios.

	AÑOS				
A C T I V I D A D E S:	1	2	3	4	5
5.1. Implementar un curso específico para la capacitación administrativa de los responsables de laboratorio* e impartirlo regionalmente, contando con un apoyo de becas.	1*	2	3	4	5
5.2 Elaborar un manual de procedimientos y sistemas administrativos para distribuir entre los laboratorios.	1				
5.3. Diseñar un sistema para evaluar y tabular el personal profesional y técnico de los laboratorios de diagnóstico veterinario.	1				

Meta 6. Apoyar técnica y financieramente a los laborato --
rios y organismos que estén en posibilidades de --
proporcionar servicio de referencia.

ACTIVIDADES:	AÑOS				
	1	2	3	4	5
6.1 Detectar aquellos laboratorios y/o instituciones de investigación y docencia, que estén en posibilidades de proporcionar servicios de referencia y considerarlos por regiones y por tipo de servicio, producción de reactivos diagnósticos, control de calidad de biológicos, reactivos y tipificación de especímenes.	1				
6.2 Implementar convenios de colaboración con los laboratorios y/o instituciones de investigación y docencia con el fin de proporcionar los servicios de referencia a nivel nacional, regional y/o continental.	1	2	3		



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**REPORT OF THE COMMISSION FOR THE EVALUATION OF VETERINARY
LABORATORY DIAGNOSTIC SERVICES IN THE AMERICAS**

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AN ASSESSMENT OF VETERINARY

DIAGNOSTIC LABORATORY SERVICES IN THE AMERICAS

I. BACKGROUND

During the second interamerican Meeting of Directors of Animal Health (REDISA II) of the Interamerican Institute for Cooperation in Agriculture (IICA), that took place in San José, Costa Rica, from 8 to 12 September of 1980, the Directors recommended (General Recommendation REDISA 2/20, Page X and Resolution 10, Laboratory, REDISA 2/17, C 7), (Appendix 1), that IICA establishes a Commission of laboratory scientists that will:

- 1.- Assess the diagnostic capabilities and develop criteria and methods for rating animal health laboratories in the Hemisphere.
- 2.- Be a source of information as to where particular diagnostic capability exists in the Hemisphere.
- 3.- Advice on which laboratories could serve as "reference laboratories" for certain diseases and give advice generally that will enable a country to provide for laboratory service adequate to its needs.
4. Establish criteria to insure that biologicals produced in the region attain international standards of purity and efficacy.
- 5.- Establish the basis for securing the agreement of

Governments to allow the entry of diagnostic materials into countries offering certain diagnostic services, and for the rapid shipment and or trans-shipment of such material without delay.

- 6.- Develop a system for determining cost for the diagnostic services of, and/or to provide financial support to the reference laboratories.
- 7.- Establish where training of laboratory personnel at various levels may best be done.

Following approval of these recommendations by the Board of Directors of IICA at their annual meeting in Mexico City in September, 1980, officials of the Animal Health and Production Directorate, IICA, appointed a commission to evaluate veterinary laboratory diagnostic services. The Commission is composed of: Dr. Carlos Arellano-Sota (Coordinator of the Commission), Director General, Instituto Nacional de Investigaciones Pecuarias, Mexico, D.F., Mexico; Dr. Julius Frank, Former Director General, Animal Pathology Laboratories, Manotick, Ontario, Canada; Dr. Jack A. Howarth, Professor School of Veterinary Medicine, University of California, Davis, California, U.S.A.; Dr. Carlos Palacios, Former Director, Instituto de Investigaciones Veterinaria, Maracay, Venezuela; Dr. Vaughn A. Seaton, Professor and Head Veterinary Diagnostic Laboratory, Iowa State University, Ames, Iowa, U.S.A.; Dr. Pedro N. Acha, Special Advisor of the Director General, IICA, Washington, D.C., and Dr. Thomas G. Murnane, IICA Regional Veterinarian, Mexico, D.F., Mexico.

II. INTRODUCTION

Access to an efficient diagnostic laboratory service is essential to the well-being of the livestock industry in the Western Hemisphere.

Within the Hemisphere there is a considerable contrast in efficiency of production of livestock between different countries.

In a recent publication, Acha reported:

"Thus Latin America and the Caribbean, with roughly the same amount of agricultural land as the United States (55 per cent of which is used for pasture), have more than twice the head of livestock (448 million food animals versus 192 million). In 1978 the nations of the Americas, excepting Canada and the United States, had 247 million cattle, 109 million sheep, 63 million pigs, and 29 million goat. (1)

Even considering differences in prices and slaughter cycles, this represents about U\$S 45 billion in cattle alone.

However, the herd is constantly at risk from diseases—both those endemic to the Hemisphere and exotic diseases. The livestock industry's productivity is only 67 per cent of what it is in Australia and 32 per cent of what it is in the United States (2). It follows that the United States, with only half the livestock, produces almost twice the supply of meat and meat products" (2).

Despite the apparent abundance of livestock, in Latin America and the Caribbean, nutritional deficiencies and malnutrition in their infant population are the direct or indirect cause of half of the deaths in this sector of the population (3). It is necessary to increase animal productivity in the countries of Latin America and the Caribbean; an improved livestock industry will help attain greater economic viability and a more efficient and productive animal industry. This would help raise the living standard of the rural sector and make animal protein cheaper and more accessible to the nutritional needs of the populations of these countries.

Among the major obstacles restricting the desired level of livestock productivity in Latin America and the Caribbean is disease. In the decade of the 1960's, disease reduced livestock productivity by 33% in Latin America. For example, foot-and-mouth disease, hog cholera, babesiasis and Newcastle caused an estimated loss of 11,701 metric tons of meat, eggs and milk from 1961 to 1964 (2).

The control of these diseases alone could have a significant effect on animal productivity in the region. When foot-and-mouth disease is eradicated from Latin America, it is expected that 350,000 more tons of meat and 500,000 more tons of milk will be obtainable from the same number of cattle in today's herd (4).

Besides being a major obstacle to animal productivity, some animal diseases also create barriers to international trade of livestock and their products and thereby impede socio-economic development of some Latin American countries (2).

The majority of the countries of the Western Hemisphere have implemented programs in animal health to relieve the problems caused by the livestock diseases. This is evidenced by the large investments derived from national sources and international financial agencies such as the Interamerican Development Bank, Canadian International Developing Agency, The World Bank and the Agency for International Development of the United States. Monies are being provided to finance various projects involving the following activities:*

- 1.- Providing an infrastructure for diagnosing animal diseases and conducting diseases control activities in the field;
- 2.- Training of personnel;
- 3.- Implementing long-term control efforts;
- 4.- Integration and coordination of national and international resources for animal disease control.

Veterinary diagnostic laboratory services are essential to any animal health program. With the assistance of the diagnostic laboratory, reliable information on the presence

(*) Acha, P. (2)

and importance of animal diseases can be obtained, quarantine procedures and progress in animal disease campaigns can be evaluated, the potency and safety of veterinary biologics can be assured, and the quality of field diagnostic services can be improved by corroborating clinical diagnosis with confirmatory laboratory tests.

Many laboratories have been established. A Panamerican Health Organization study (1), reported that there were 453 veterinary diagnostic laboratories recorded in the Americas in 1978. (Table I). However, of these 206 (45%) were located in the United States or Canada, and the remaining, 247 (55%), were distributed among the countries of Latin America and the Caribbean. With the exception of Argentina, Colombia and Mexico, no integrated laboratory system exists among the countries of Latin America although Brazil, Honduras and Venezuela are developing a network of laboratories (2).

An effective diagnostic service could provide a reliable inexpensive insurance in protecting the animal industry in the area which represents a value of 50 billion dollars in cattle alone. Recognizing this, the countries of the Americas, as expressed on the REDISA II meeting in Costa Rica, are anxious to developing more adequate diagnostic laboratory services. However, a number of impeding problems exist in these countries which

need to be overcome.

The primary objective of this study is to make an analysis and evaluation of the present situation and problems prevailing in the veterinary diagnostic laboratories. This will serve as a basis for initiating the appropriate actions to make laboratories optimally functional and reliable service elements for improving the health of the livestock of the Americas.

III. METHODOLOGY

To accomplish the assigned objectives the Commission for Evaluation of Veterinary Diagnostic Laboratory Services first met in Mexico City from the 16th to the 22nd of November, 1980, to plan the survey and organize the schedule of work. The following documents were prepared:

a.- Methods and criteria to assess diagnostic capabilities and for classifying veterinary diagnostic laboratories (Appendix 2).

b.- A questionnaire to obtain the information for assessing and classifying diagnostic laboratories (Appendix 3).

c.- A document identifying the problems perceived in human resources, programs and organization in veterinary diagnostic laboratories (Appendix 4).

d.- A tentative program for visiting representative veterinary diagnostic laboratories in each country of Latin America and the Caribbean (Appendix 4).

e.- A work plan and schedule for presenting a report on the evaluation and classification of veterinary diagnostic laboratories to the Directors of Animal Health at the REDISA III meeting.

f.- Information material which would be needed by the Commission members in their visits to laboratories in different countries.

The central or principal laboratory of each country in Latin America and the Caribbean was selected to be visited. Additionally, in those countries where a network existed, laboratories representative of various work levels were also designated to be visited. The Commission was divided into three teams of two members each. Each team was assigned a geographical area, and the laboratories therein to be visited and evaluated. In the report, Inter-american Study on the Animal Health Situation prepared by PAHO in 1978, veterinary diagnostic laboratories were identified in Latin America and the Caribbean, this figure has been recently up-dated to 258 (2). Of these, the Commission selected 53 laboratories to be visited and evaluated. The visits were begun in March and concluded in April 1981.

Of the laboratories of USA one team visited Puerto Rico. The other continental and territories laboratories of the USA and of Canada were not visited because the Commission considered that recently assessed and detailed information on these countries is readily available (6), (7). Two members of the Commission reviewed this information for the purpose of this report.

IV. FINDINGS

Of the 53 laboratories which were visited only 11 laboratories were designated full service (FS) laboratories. That is, they provide services in pathology, bacteriology, serology, parasitology, virology and toxicology. Thirty seven of the laboratories were designated limited service (LS) laboratories and five were designated special service (SS) laboratories.

Only three of all the FS laboratories, two in Argentina and one in Colombia, were designated as full service laboratories type A. This type of laboratory is so designated for its high level of diagnostic performance in all laboratory disciplines (Table 2).

An analysis of each of the laboratory disciplines shows the following (Graph. 1).

Pathology. Eight of the 53 laboratories were classified as performing at the high level (P) in this discipline; 24 were classified as performing at a lower level (p) and 21 laboratories were not performing this service.

Bacteriology. Ten laboratories were classified as performing at the higher level (B); 32 were classified as performing at a lower level (b) and 11 laboratories were not performing this service.

Serology. Thirteen of the laboratories were classified as performing at the higher level (S); thirty-three were

classified as performing at a lower level (s) and seven laboratories were not performing this service.

Parasitology. Eleven laboratories were classified as performing acceptably (Pa), thirty-six were classified as performing at a lower level (pa) and eleven were reported as not performing this service.

Virology. Twenty-six of the laboratories or 51% were not performing this service. Only eleven of the laboratories were classified as performing at a higher level (V) and fifteen were classified as performing at a lower level (v).

Toxicology. Thirty-three of the laboratories or 62% were not performing this service, only four or 8% were classified as performing at a higher level (T) and sixteen were classified as performing as a lower level (t).

In the region Mexico-Central America-Panama, fifteen laboratories were evaluated. Of these only one was designated FS, twelve were designated LS and two were classified as SS laboratories (Table 3). In this region it should also be noted that only one laboratory in Mexico was classified as performing at a higher level in the disciplines of pathology, bacteriology, serology and parasitology. The disciplines in the remaining laboratories of the region were all classified at the lower level of performance.

In the region designated the Caribbean, eight laboratories were evaluated. No laboratory was classified as FS. In only five laboratories, one or more of the disciplines were classified at the higher level and these were one in pathology, three in bacteriology, three in serology and two in virology. (Table 4).

In the South American region twenty-eight laboratories were evaluated. Of these ten were classified as FS, sixteen as LS and two as SS laboratories. The three laboratories which are classified as FS, type A, are located in this region. Among all the laboratories evaluated in the region, those classified as performing at a higher level in pathology were six, in bacteriology six, in serology ten, in parasitology five, in virology nine, in toxicology four only (Table 5).

In Canada (Table 8), diagnostic activities are carried out both in Federal and in provincial laboratories. The Federal laboratories are responsible for the diagnosis mostly of the major infectious diseases (the "reportable diseases"), while the provincial laboratories provide a service to veterinarians and livestock owners in the diagnosis of all other disease conditions. There are presently nine Federal laboratories and twenty-four provincial laboratories. In addition the three veterinary colleges provide some diagnostic assistance from time to time. There is close collaboration between all the laboratories in disease reporting and in the

exchange of information at Annual Animal Pathology and Poultry Disease Conferences. While no one laboratory conducts every discipline at a high level, the full complement of disciplines is available in the Federal and several of the provincial laboratory systems. Within the last few years a couple of private laboratories have been established to serve mainly small animal practitioners.

Veterinary diagnostic laboratories in the United States are located in every state of the Union. Only two are federally funded diagnostic laboratories, the National Veterinary Service Laboratory, APHIS, USDA, Ames, Iowa and the Plum Island Animal Disease Center, SEA, USDA, Greenport, Long Island, New York. The former laboratory is concerned with animal disease diagnoses indigenous to the USA. The Plum Island Laboratory is concerned with the diagnoses of animal diseases foreign to the U.S.A.

Other diagnostic laboratories include those funded and administered through the fifty states through State Departments of Agriculture or through universities. In addition, there are a few private diagnostic laboratories and those funded by commercial interests in which the laboratories are generally "special service" laboratories serving a particular industry. An example would be a poultry disease laboratory funded by a commercial poultry enterprise. A directory of about 110 veterinary diagnostic laboratories in

the USA is available listing laboratories by location, services offered, and species of animal accepted for diagnosis.*

Generally the diagnostic laboratories in the USA other than those federally funded are full-service laboratories charged with disease diagnosis and surveillance for the benefit of the animal industries within their respective states.

The National Veterinary Services Laboratory at Ames, Iowa, largely supports federally funded animal disease eradication or control programs and as serves as a reference laboratory to all state laboratories. It provides personnel training, some diagnostic reagents, quality control measures for diagnostic techniques and consultation on diagnostic problems.

The state laboratories have available to them a voluntary program for laboratory accreditation which is sponsored by the American Association of Veterinary Laboratory Diagnosticians (AAVLD). This program is designed to assist diagnostic laboratories to improve their capabilities by applying minimum standards for space, equipment personnel qualifications, budgetary guidelines and services offered. Currently twenty-five diagnostic laboratories in U.S. have been accredited by the AAVLD.

One of the members of the Commission (Dr. J. Frank), recently visited the laboratories in the Leeward and Windward

* "Directory of Animal Disease Diagnostic Laboratories", 1979. Prepared by National Veterinary Services Laboratories, Ames, Iowa, in cooperation with the American Association of Veterinary Laboratory Diagnosticians ().

Islands and it would be appropriate to include a brief report on these laboratories. There are eight fairly small laboratories on these islands which are adapted to serve the needs of relatively small livestock populations on the islands. On each of the islands the animal populations vary from 3,000 to 10,000 cattle, 3,000-10,000 swine, 5,000-21,000 sheep and goats and 8,000 to 270,000 chickens. In general, these laboratories might be classified as limited service laboratories carrying out tests in parasitology and serology and a very small amount of bacteriology.

Disease surveillance and exotic disease

Except for a few instances the veterinary diagnostic laboratories visited were not prepared nor staffed with trained professionals and technicians capable of coping with the introduction of exotic or animal disease foreign to their own countries.

Surveillance capabilities were extremely limited as the diagnostic volume was insufficient in most laboratories to be representative of the disease incidence within their respective countries.

Reference service laboratories

The Commission members identified those laboratories which might serve as reference laboratories based on the high performance in the diagnostic disciplines as well as in

their potential capacity to conduct one or more reference functions in training, diagnostic reagents production, consultancy, specimen identification and quality control. As can be observed in Table 6, 11 laboratories in Latin America and the Caribbean and five in USA and Canada were considered capable of giving reference services in different disciplines. In the Caribbean only one laboratory in Puerto Rico was considered capable of giving training in serology. In Mexico, Central America and Panama only one laboratory, SURESA could provide reference services. In South America there were 9 laboratories that could provide reference services; 4 in Brazil, 1 in Venezuela, 1 in Chile, 2 in Argentina and 1 en Colombia.

In the Americas there are two international institutions, Panamerican Zoonosis Center (CEPANZO) and Foot-and-Mouth Disease Center (PANAFTOSA), that provide with several reference services to laboratories in the region (2). Other diagnostic centers used by the countries are primarily national laboratories of recognized international standing like: USDA's Plum Island Animal Disease Center, USDA's Animal Disease Center in Ames, Iowa, U.S. Public Health Service Center for Disease Control in Atlanta, Ga., PAHO/WHO's Caribbean Epidemiology Center (CAREC) in Port Spain, Trinidad, the Animal Virus Research Institute in Pirbright, Great Britain; the Central Veterinary Laboratory in Weybridge, Great Britain; the

National Livestock Research Institute in Palo Alto, Mexico;
and the Animal Disease Research Institute in Ottawa, Canada
(2).

V. ANALYSIS AND CONCLUSIONS

a) Full and limited services laboratories:

In analyzing the data presented in the previous section we believe it is important to review briefly the criteria for classification of veterinary diagnostic laboratories made by the Commission (Chapter III, Appendix 2). Laboratories were considered full service (FS) if the laboratory provided services in pathology, bacterology, serology, parasitology, virology and toxicology, or, in other words, those services that are necessary to make a diagnosis of all possible cases presented to the laboratory.

Of the 53 laboratories which were evaluated, only 11 provide all these services and among these, only three provide services at the higher level. If this is examined by region (Chart. N°2), one may observe that there is no FS laboratory in the Caribbean region. It is not likely that each country in this region could support a FS laboratory but it is possible that one such laboratory might be developed in the area and it could serve as a reference laboratory for the whole region.

In the region Mexico-Central America-Panama there is only one laboratory that provides all services and

even here the disciplines of virology and toxicology do not reach the higher level of performance. Of the 10 countries in South America, all, with the exception of Paraguay, Bolivia, and Peru, have at least one laboratory that can provide full services. Nevertheless, only two countries Argentina and Colombia, provide full service at higher level. The other five countries their FS laboratories should improve some disciplines with the objective of attaining the higher classification.

b) Limited Services:

Laboratories which do not provide all services are classified as limited service laboratories. The majority of the visited laboratories, 36 or 67%, were classified in this category. Among the 36, 27 or 50% were classified as limited service at the "C" level; in other words, all the disciplines which are provided by these laboratories were classified at the lower level. Therefore, all of these laboratories do not have the capability, at this time, to provide a complete and integrated laboratory diagnostic service. Normally, in these cases the laboratory forwards the specimens to a laboratory that is better equipped to make a complete laboratory diagnosis

In some cases, some of these LS laboratories could be up-graded with a relatively small additional expenditure for equipment and staff.

Ideally, each country should aspire to develop at least one FS laboratory. In this respect, in thos

countries where an integrated laboratory network exist or in those where one may be developed, it is not necessary that all the laboratories be a full service.

c) Technical Performance:

In determining the classification of a laboratory, each of the laboratory disciplines of pathology, bacteriology, mycology, serology, parasitology, virology, toxicology was evaluated and rated as non-existent, or low or high level of performance. Performance was judged on the basis of facilities, equipment, techniques used and personnel competence.

Table 7 specifies the disciplines carried out in the 53 laboratories visited and highlights the deficiencies in the level of performance.

Surprisingly only 15% of the laboratories were conducting histopathological examinations at a high level also more than one third of the laboratories did not do any pathology at all. It was again surprising to see so few laboratories equipped with suitable post-mortem facilities for large animals.

Of the laboratories visited only 11% were carrying out parasitological diagnosis at a high level.

It was dissapointing to find only a small percentage of laboratories were doing virological and toxicological work. The activity in these disciplines must be expanded.

In general, the level of diagnostic activity in most of the laboratories was minimum. This is directly related to the insufficient technical proficiency and enthusiasm for diagnostic work and methods must be found to improve technical competence.

Problems Observed

The visits to the 53 laboratories confirmed the problems previously listed in Appendix 4. The solution to these problems affords an opportunity to elevate the level and quality of performance in the different laboratories.

Human Resources

In general, the experience in recruitment and retention of professionals in the veterinary diagnostic services has not been favorable. This is attributed to several causes:

a. In general, in the Schools of Veterinary Medicine in the Western Hemisphere do not place significant emphasis on careers in laboratory diagnostic medicine and, therefore do not devote sufficient time and effort to related laboratory disciplines.

b. In practically none of the laboratories which were visited by members of the Commission, were there any systematic or organized programs of continuing education for the professionals or technicians. In general, where there were

training efforts, these were isolated and circumstantial.

c. Except for rare instances, the salary level of personnel employed the diagnostic laboratories was low and unattractive.

Furthermore there is generally lacking any system of salaries progression or other incentives which motivates the laboratory veterinarians to excell. Without the above professional personnel do not attain a status level which they merit. As a result veterinarians may become discourage from pursuing professional laboratory career. To maintain and improve the quality of laboratory diagnostic medicine, it is essential to provide adequate economical remuneration. Similarly, adequate salary levels must be established for laboratory technicians.

d. Another factor which often makes it difficult to obtain competent professionals in the veterinary diagnostic services, is the locations of diagnostic laboratories. In certain location living conditions are undesirable for a professional family life.

Material Resources

a. A major problem exists in all countries of Latin America and the Caribbean in the servicing and maintenance of laboratory equipment. This fact causes serious disruptions of the laboratory activities and impedes accurate and timely diagnoses.

The problem of servicing and maintaining equipment has also limited the development of disciplines such as virology and toxicology because of the use of more complicated equipment for this work.

b. Most laboratories lack many of the reliable diagnostic reagents which can be procured commercially or through other institutional sources. This severely limits the scope of diagnostic services offered by these laboratories. Generally, these deficiencies are attributable to bureaucratic or regulatory procedures which totally impede or delay timely and economic acquisition of these critically important material. Given the availability and acquisition of diagnostic reagents the laboratories themselves must initiate proper internal quality control procedures to insure maintenance of identity and stability of these products.

c. Many countries of Latin America and the Caribbean have adequate laboratory installations and in recent years the financial support extended to many national animal health programs has resulted in the construction of new laboratory facilities. Nevertheless, a number of countries still have inadequate facilities which need to be improved. While the desirability of new or improved laboratory facilities is recognized in many countries the lack of modernity or sophistication in physical facilities should not impede development of quality veterinary diagnostic laboratory services.

d. Laboratory animal resources were absent or totally inadequate in many locations of Latin America and the Caribbean. Lack of acceptable facilities and adequate animal inventories limit the diagnostic and investigative capabilities and is a critical deficiency among the laboratory resources.

Financial Resources and Administrative Systems

In the majority of the laboratories, even where sufficient financial resources were provided for construction or purchase of equipment, problems were frequently encountered in obtaining sufficient budgetary resources for maintenance and operations. No resources were available in most cases for technical and scientific journals, for travel and for training, all of which are important in maintaining scientific competence and professional growth.

There was an obvious lack of administrative ability in the operation of many laboratories and training in this field is lacking. Also in connection with administration, many laboratories did not have access to budgetary information. Government administrative procedures often are not adaptable to the needs of the laboratory.

It was called to the attention of the Commission that procurement of foreign scientific equipment and materials is often complicated by restrictive import regulations and tariffs and burdensome administrative procedures. This works

to the disadvantage of national animal health interests as it impedes establishment and development of new or improved diagnostic services.

Disease Surveillance and Exotic Diseases

The livestock industry in Latin America and the Caribbean is highly susceptible to infection with a variety of exotic animal diseases. The animal health defense system in the Americas, is dependent upon several factors including a reliable laboratory diagnostic service. The insufficiency of trained laboratory diagnosticians, and the absence of an effective program for laboratory surveillance of animal disease increase the possibility that an exotic animal disease may be introduced and remain temporarily undetected. Further in regard to surveillance, an endemic animal disease may surge to epizootic levels before recognition.

Reference Services

The availability of reliable reference services are essential to improve the veterinary diagnostic laboratories capabilities.

As indicated in Table 6, there are quite a few laboratories that have a reference capability. These could be encouraged and supported. So provide training and other reference services to laboratory personnel from all countries in the region.

Diagnostic reagent production, specimen identification and quality control, it should be done within the same country to avoid international regulatory problems. However, this could not be feasible in all countries and in such cases, efforts should be made to obtain references services regionally following accepted and standardized procedures complying with international regulations.

VI. RECOMMENDATIONS

In view of the comments made earlier in this report, we believe it appropriate to make certain recommendations.

Action on these recommendations will be required if the veterinary diagnostic services are to be developed to a level of competence which will insure the health of existing livestock populations and prevent the introduction and spread of foreign animal diseases.

- 1.- It is recommended that each country develop a veterinary diagnostic laboratory with full service capabilities or a diagnostic laboratory network providing such capabilities, sufficient to protect the animal industry of that country.

Such a laboratory, or network of laboratories, will have the capability of safeguarding the food supply of animal origin, of providing public health surveillance of diseases communicable between animals and man, of carrying out surveillance for foreign animal diseases and of insuring the health of the livestock population..

- 2.- It is recommended that consultations be held regularly between members of the veterinary profession, the animal health regulatory authorities, the livestock owners' associations and the administrative officials of the schools of veterinary medicine to stimulate interest in, promote the use of, generate

support for, and make meaningful to the public at large, the diagnostic laboratory capabilities of each country.

- 3.- It is recommended that human resources which are fundamental for the conduct of excellent diagnostic services, be the primary consideration given by Animal Health Directors when planning laboratory diagnostic improvements. Particular attention should be paid to the following:
- a. Representation should be made to the schools of veterinary medicine to devote more time and effort to the training of personnel in laboratory disciplines as applicable to diagnostic veterinary medicine.
 - b. Salary schedules and incentives should be developed which would encourage dedication to a meaningful veterinary diagnostic laboratory career. Individuals should be evaluated and paid on the basis of their productivity and of those activities and functions for which they are responsible in the laboratory
 - c. Systematic programs of training for professional and technical personnel employed in diagnostic laboratories should be established to update and provide professional growth in the new techniques which are involved in the laboratory disciplines.

d. Provide current scientific periodicals and other informational materials, capable of stimulating technical development and growth of personnel.

e. The laboratory should be located in areas conducive to desirable living conditions for the professionals and their families.

4.- With regard to material resources, it is recommended that:

a. Regular maintenance schedules should be established for all equipment in the laboratory. One person should be designated to perform maintenance functions and he or she should be encouraged, and given an opportunity, to take adequate training in this work.

b. Programs for reagent development should be initiated nationally and internationally. Support should be provided to institutions providing diagnostic reagents to other countries. Within each country reagents.

c. Facilities for diagnostic laboratories must be professionally designed to best meet the needs of the laboratories.

5.- With regard to financial resources and administrative control, it is recommended that:

a. Each laboratory must have a specific and accessible budget over which the administrator of the laboratory has control.

- b. Training must be provided to the laboratory administrator in administrative procedures and techniques and also in personnel management.

The Commission did not deal exhaustively with the following terms of reference included in the resolution passed by the Directors of Animal Health at REDISA II:

- a. Establish criteria to insure biologicals produced in the region attain international standards of purity and efficacy.
- b. Establish the basis to secure the agreement of governments for the entry of diagnostic materials into countries offering certain diagnostic materials and for the rapid shipment or trans-shipment of materials without delay.
- c. Develop a system for costing this diagnostic services of and/or to provide financial support to the reference laboratories.

The Commission recognizes the great importance of these items and therefore, recommends specific studies be initiated in regard to these items.

CONCLUSIONS

1. The finding of this study clearly show that animal health campaigns in Latin America and the Caribbean do not have adequate diagnostic laboratory support, thus placing their respective livestock industries at risk.

2. The veterinary diagnostic laboratories of Latin America and the Caribbean are not capable of providing adequate foreign animal diseases surveillance for their respective countries.

3. The veterinary diagnostic laboratories as presently constituted and funded are generally not adequate to provide excellent disease diagnostic service necessary for efficient animal production.

4. The activities of the veterinary diagnostic laboratories observed in Latin America and the Caribbean are not well coordinated with current animal health programs in their respective countries.

5. The veterinary diagnostic laboratories in Latin America and the Caribbean often devote extensive time, effort and money to peripheral diagnostic or survey interests rather than directed efforts toward top priorities of diagnostic needs for their respective countries.

6. The personnel in the veterinary diagnostic laboratories are generally not trained in the respective scientific disciplines to the level necessary for excellence in diagnostic Service.

7. The laboratory administrators generally are not trained nor experienced in administrative priority setting, personnel management.

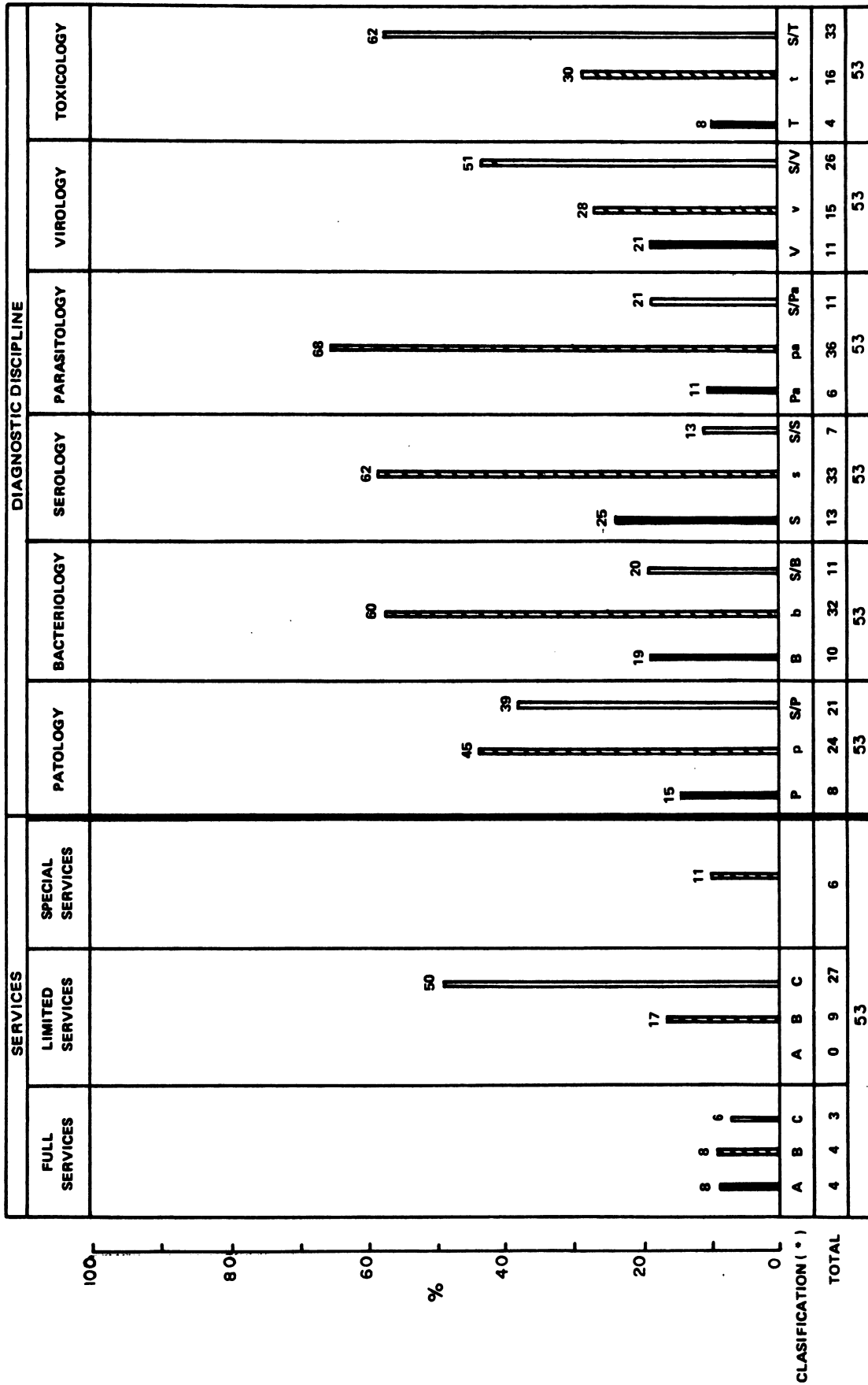
8. The veterinary diagnostic laboratories are often overstaffed with non-essential personnel to the detriment of efficient use of their human resources.

9. Budgets were generally found to be inadequate in amount of resources, unrelated to direct needs of the laboratory and under the control of distant administrators often not knowledgeable in laboratory administration.

10. Most of the veterinary diagnostic laboratories were under utilized and cost ineffective.

FIG. 1

PERCENTAGE EXPRESSION ON THE SERVICE LEVEL AND PERFORMANCE
IN THE 53 LABORATORIES VISITED



(*) See Appendix III

TABLE 1

DISTRIBUTION OF THE LABORATORIES BY COUNTRY AND ADMINISTRATIVE BELONGING. AMERICAS 1976

COUNTRY	TOTAL	DEP. OF AGRICULTURE			HEALTH DPT.	UNIV.	PRIV.	MUNI- CIPAL	ARMY
		Federal or National	Provincial or State	Autarticos Independent					
1. Argentina	31	12	7	7	-	3	-	1	1
2. Barbados	1	1	-	-	-	-	-	-	-
3. Bolivia	4	4	-	-	-	-	-	-	-
4. Brasil	29	11	18	-	-	-	-	-	-
5. Canadá	29	8	21	-	-	-	-	-	-
6. Colombia	26	-	-	26	-	-	-	-	-
7. Costa Rica	1	1	-	-	-	-	-	-	-
8. Chile	10	4	-	-	1	3	2	-	-
9. Ecuador	8	3	1	-	2	2	-	-	-
10. El Salvador	4	3	-	-	-	-	1	-	-
11. Grenada	1	1	-	-	-	-	-	-	-
12. Guatemala	4	1	-	-	1	1	-	-	-
13. Guyana	1	1	-	-	-	-	-	-	-
14. Haití	-	-	-	-	-	-	-	-	-
15. Honduras	2	2	-	-	-	-	-	-	-
16. Jamaica	1	1	-	-	-	-	-	-	-
17. México	62	62	-	-	-	-	-	-	-
18. Nicaragua	1	1	-	-	-	-	-	-	-
19. Panamá	10	10	-	-	-	-	-	-	-
20. Paraguay	6	2	-	-	1	1	2	-	-
21. Perú	13	3	-	-	2	7	1	-	-
22. Rep. Dominicana	10	8	-	-	1	1	-	-	-
23. Suriname	1	1	-	-	-	-	-	-	-
24. Uruguay	8	2	-	-	1	1	4	-	-
25. USA *	177	28	64	-	5	54	23	3	-
26. Venezuela	13	10	-	-	1	-	2	-	-
	453	180	111	33	15	73	36	4	1

Panamerican Health Organization (1).

TABLE 2

ASSESSMENT OF THE LABORATORIES BY COUNTRY, BASED ON TYPE OF SERVICE AND PERFORMANCE
IN THE DIAGNOSTIC DISCIPLINES

COUNTRY	LABORATORIES VISITED			FULL SERVICES			LIMITED SERVICES			PATHOLOGY			BACTERIOLOGY			SEROLOGY			PARASITOLOGY			VIROLOGY			TOXICOLOGY			SPECIAL SERVICES		
	A	B	C	A	B	C	A	B	C	P	P	P	B	b	b	S	s	s	Pa	pa	pa	V	v	v	T	t	t	S	s	s
BARBADOS																														
GUAYANA																														
PUERTO RICO																														
SURINAM																														
TRINIDAD-TOBAGO																														
HAITI																														
JAMAICA																														
REPUBLICA DOMINICANA																														
CARIBEAN - TOTAL																														
MEXICO																														
NICARAGUA																														
PANAMA																														
SALVADOR																														
COSTA RICA																														
GUATEMALA																														
HONDURAS																														
MEXICO-CENTRALAMERICA-PANAMA-TOTAL																														
CHILE																														
ARGENTINA																														
URUGUAY																														
PARAGUAY																														
BOLIVIA																														
PERU																														
ECUADOR																														
COLOMBIA																														
BRASIL																														
VENEZUELA																														
SOUTH AMERICA-TOTAL																														
TOTAL																														
%																														



TABLE 3

**ASSESSMENT OF THE LABORATORIES VISITED IN MEXICO-CENTRAL AMERICA-PANAMA
BASED ON THE TYPE OF SERVICES AND PERFORMANCE IN THE DIAGNOSTIC DISCIPLINES**

LABORATORY/COUNTRY	FULL SERVICES			LIMITED SERVICES			PATOLOGY		BACTERIOLOGY		SEROLOGY		PARASITOLOGY			VIROLOGY			TOXICOLOGY		SPECIAL SERVICES		
	A	B	C	A	B	C	P	P	B	B	S	S	Pa	pb	V	v	T	t					
1) Laboratorio Central Regional de Patología Animal.- Calamandá Oro./México.									Δ			Δ									Δ		
2) Laboratorio de Patología Animal "Guillermo Aranda Guedes".- León, Gto./México.									Δ			Δ											
3) Centro de Salud Animal de Inpuerto. Guanejuato/México.									Δ			Δ										Δ	
4) Centro de Salud Animal "Roberto Sanz Bienos".- S. Rafael, Ver./México.								Δ				Δ										Δ	
5) Subdirección de Referencia en Salud Animal (SURES) Tecamac/México.			Δ							Δ												Δ	
6) Centro Nacional de Diagnóstico e Investigaciones Veterinarias/Nicaragua.										Δ												Δ	
7) Laboratorio de Diagnóstico e Investigación Veterinaria.- Panamá/Panamá.										Δ												Δ	
8) Laboratorio de La Región 5. Capira/Panamá.										Δ													
9) Laboratorio de Diagnóstico de Enfermedades Vesiculares/Panamá.																							
10) Departamento de Laboratorios/Salvador.																							
11) Laboratorio Médico Veterinario para Diagnóstico e Investigación.- S. José/Costa Rica.																							
12) Laboratorio de Control e Investigación de La Garrapata.- S. José/Costa Rica.																							
13) Laboratorio de Diagnóstico de Sanidad Animal (LDSA).- Aurora/Guatemala.																							Δ
14) Instituto Hondureño de Investigaciones Médico Veterinarias.- Tegucigalpa/Honduras.																							
15) Laboratorio Regional 02.- S. Pedro Sula/Honduras.																							
TOTAL	1						12	1	5	1	11	1	1	12	1	10	2				7		2

TABLE No. 4

ASSESSMENT OF THE LABORATORIES VISITED IN THE CARIBBEAN BASED ON THE TYPE OF SERVICES AND PERFORMANCE IN THE DIAGNOSTIC DISCIPLINES

LABORATORY/COUNTRY	FULL SERVICES			LIMITED SERVICES			PATOLOGY		BACTERIOLOGY		SEROLOGY		PARASITOLOGY		VIROLOGY		TOXICOLOGY		SPECIAL SERVICES
	A	B	C	A	B	C	P	P	B	b	S	s	Pa	pa	V	v	T	t	
1) Veterinary Diagnostic Laboratory/Barbados.				▲			▲		▲		▲		▲						
2) Veterinary Diagnostic Laboratory/Guayana.						▲	▲			▲		▲		▲					
3) Laboratorio de Diagnóstico Veterinario/Puerto Rico.						▲				▲				▲					
4) Veterinary Diagnostic Laboratory Paramaribo/Surinam.						▲	▲			▲		▲		▲					
5) Government Veterinary Diagnostic Laboratory/Tobago.						▲		▲				▲		▲					
6) Laboratoris de Medicine Veterinarie-Damien/Haiti.								▲								▲			
7) Linton McDough Memorial Veterinary Laboratory Kingston/Jamaica.						▲		▲		▲		▲		▲					
8) Laboratorio de Enfermedades de Cardos.-Sto. Domingo/Rep. Dominicana.						▲		▲				▲				▲			
9) Laboratorio Regional de Sanidad Animal.-Puerto Plata/Rep. Dominicana.																			
10) Laboratorio Regional de Sanidad Animal Norte Santiago/Rep. Dominicana.								▲											
11) Laboratorio Veterinario Central -Sn. Cristobal/Rep. Dominicana.						▲		▲		▲		▲		▲		▲			
TOTAL				6	5	1	8	3	5	3	6	9	2	1	9	2	1		

ASSESSMENT OF THE LABORATORIES VISITED IN SOUTH AMERICA BASED ON THE TYPE OF SERVICE AND PERFORMANCE IN THE DIAGNOSTIC DISCIPLINES

LABORATORY/COUNTRY	FULL SERVICES			LIMITED SERVICES			PATHOLOGY	BACTERIOLOGY			SEROLOGY			PARASITOLOGY			VIROLOGY			TOXICOLOGY			SPECIAL SERVICES
	A	B	C	A	B	C		P	B	b	S	S	Pa	Pa	V	V	V	T	T	T			
1) Laboratorio Central de Chile - Departamento de Laboratorios/Chile.			0				0		0		0		0		0						0		
2) Laboratorio de Diagnóstico de Rabia. Instituto / Chile.																						0	
3) Laboratorio Regional Pecuaria - X Región Osorno/Chile.						0	0		0		0		0										
4) Facultades de Medicina Veterinaria y de Ciencias de la U. Austral de Chile/Chile.		0				0	0		0		0		0								0		
5) Servicios de Laboratorios (SELAB)/Argentina.						0			0		0		0										
6) Centro de Investigaciones en Ciencias Veterinarias (CICV) - INIA-Castelar/Argentina.		0					0		0		0		0								0		
7) Unidad de Investigación en Diagnóstico Animal (UNIPA) INIA -Barracas/Argentina.		0					0		0		0		0								0		
8) Miguel C. Rubino/Uruguay.			0				0		0		0		0								0		
9) Laboratorio de Investigación y Diagnóstico Veterinario/Paraguay.						0	0		0		0		0										
10) Departamento de Laboratorios (SENACSA)/Paraguay.																						0	
11) Instituto Nacional de Biología Animal La Paz/Bolivia.									0		0		0										
12) Instituto Nacional de Biología Animal Sta. Cruz/ Bolivia.						0	0		0		0		0										
13) División de Investigación y Diagnóstico (IZIP)/Perú.						0	0		0		0		0										
14) Laboratorio Veterinario de Guayaquil/Ecuador.			0				0		0		0		0								0		
15) Laboratorio Veterinario de la Sierra y Oriente -Quito/ Ecuador.						0	0		0		0		0										
16) Laboratorio de Investigación en Medicina Veterinaria/Chimbita.		0					0		0		0		0								0		
17) Centro de Diagnóstico Veterinario I.C.A. de Villa Vicencio/Colombia.							0		0		0		0								0		
18) Centro de Diagnóstico Veterinario I.C.A. de Cartagena/Colombia.							0		0		0		0										
19) Laboratorio de Diagnóstico de Peste Porcina Africa. UNIV. Fed. de Rio/Brasil.																						0	
20) Laboratorio Nacional de Referencia Animal -(LANARA) Pedro Leopoldo -Belo Horizonte/Brasil.						0			0		0		0										
21) Laboratorio de Referencia Animal (LARA)-Campinas-Sao Paulo/Brasil.						0			0		0		0									0	
22) Laboratorio de Referencia Animal (LARA) Porto Alegre/Brasil.						0			0		0		0									0	
23) Laboratorio de Biología Animal.- Pasagro.-Rio de Janeiro/Brasil.		0					0		0		0		0								0		
24) Instituto Biológico de Sao Paulo/Brasil.		0					0		0		0		0								0		
25) Laboratorio Regional de Diagnóstico Veterinario.-Maracaibo/Venezuela.						0			0		0		0										
26) Instituto de Investigaciones Veterinarias.-Maracay/Venezuela.		0					0		0		0		0									0	
27) Laboratorio Regional de Diagnóstico Veterinario S.Felipe/Venezuela.						0			0		0		0									0	
TOTAL	3	4	3	4	10	6	11	6	16	10	14	5	17	9	11	3	10	3	10	3	3		

LABORATORIES WITH POSSIBILITIES TO PROVIDE REFERENCE SERVICES

LABORATORY/NAME	REFERENCE SERVICES IN :																							
	PATOLOGY			BACTERIOLOGY			SEROLOGY			PARASITOLOGY			VIROLOGY			TOXICOLOGY								
	a	r	c	a	r	c	a	r	c	a	r	c	a	r	c	a	r	c	a	r	c			
1) Laboratorio de Diagnóstico Veterinario El Dorado/ Puerto Rico																								
2) Subdirección de Referencia en Salud Animal (Sunasa) /México																								
3) Laboratorio de Diagnóstico de Pesta Porcina Africana/Río de Janeiro/Brasil																								
4) Laboratorio Nacional de Referencia Animal (Lanara)/Río de Janeiro/Brasil																								
5) Laboratorio Regional de Apoyo Animal Porto Alegre/Brasil.																								
6) Instituto Biológico de Sao Paulo/Brasil																								
7) Instituto de Investigaciones Veterinarias. Maracay/ Venezuela.																								
8) Facultades de Medicina Veterinaria y de Ciencias en la U. Austral/Chile.																								
9) Centro de Investigación en Ciencias Veterinarias (CICV).- INIA - Castelar/Argentina.																								
10) Unidad de Investigación y Diagnóstico Animal (UNIPA) INIA - Barcecal/Argentina.																								
11) Laboratorio de Investigación en Medicina Veterinaria (LIMV) / Colombia.																								
12) Animal Disease Research Institute Ottawa, Canada																								
13) National Veterinary Services Laboratory Aphis, USDA, Ames, Iowa, USA.																								
14) Plum Island Animal Disease Center, USDA- Lone Island, New York-USA																								
T O T A L	6	7		9	9	8	7	10	8	5	7	7	2	4	5	2	9	8	7	8	5	4	4	1

a = training
 r = diagnostic reagents
 c = consultancy
 i = identification
 cc = quality control

TABLE 7

DISCIPLINES FREQUENCY AND LEVEL OF PERFORMANCE IN 53 LABORATORIES

DISCIPLINE	LABORATORIES PERFORMING EACH DISCIPLINE					
	Frequency	%	HIGH LEVEL	% (*)	LOW LEVEL	% (*)
Patology	32/53	60	8	15.0	24	45.0
Bacteriology	42/53	69	10	19.0	32	60.0
Serology	46/53	87	13	25.0	33	62.0
Parasitology	46/53	79	6	11.0	36	68.0
Virology	26/53	49	11	21.0	15	28.0
Toxicology	20/53	38	4	8.0	16	30.0

* Percentage from the total of (53) laboratories visited.

TABLE 8

CLASIFICATION OF THE LABORATORIES IN U.S.A. AND CANADA BASED ON THE TYPE OF SERVICE AND PERFORMANCE OF THE DIAGNOSTIC DISCIPLINES

LABORATORY/COUNTRY	FULL SERVICES			LIMITED SERVICES			PATHOLOGY		BACTERIOLOGY		SEROLOGY		PARASITOLOGY		VIROLOGY		TOXICOLOGY		SPECIAL SERVICES
	A	B	C	A	B	C	P	P	B	b	S	s	Pa	Pa	V	v	T	t	
NATIONAL VETERINARY SERVICE LAB. APHIS- USDA . AMES, IOWA- USA	▲						▲		▲		▲		▲		▲		▲		
VETERINARY DIAGNOSTIC LABORATORY IOWA STATE UNIV. AMES . IOWA . USA	▲						▲		▲		▲		▲		▲		▲		
ANIMAL DISEASE LABORATORIES NEVADA DEP. OF AGRIC- RENO, NEV. USA						▲		▲	▲		▲		▲			▲			
ANIMAL DISEASE RESEARCH INSTITUTE OTTAWA - CANADA	▲						▲		▲		▲		▲		▲		▲		
PROVINCIAL VETERINARY LABORATORY PRINCE EDWARD ISLAND, CANADA						▲	▲		▲					▲					
T O T A L	3				2		4	1	5		4	1	4	1	3	1	3	3	

APPENDIX 1

During the Second Interamerican Meeting of Directors of Animal Health (REDISA II), the following recommendations were approved:

DIAGNOSTIC LABORATORIES

(REDISA 2/20)

(Page X)

It was recommended that IICA select a Commission of diagnostic laboratory experts, the terms of reference of which will include, an evaluation of the competence of all the laboratories of the Hemisphere. In doing so, it should identify the laboratories that can and will serve as reference laboratories to other countries.

This Commission should present its report and recommendations at IICA's next annual meeting of the Directors of Animal Health of the Hemisphere on 1981.

LABORATORY

(REDISA 2/17)

(Pages C-7/C-8)

Considering that the need for diagnostic facilities in the Hemisphere generally, lags far behind current and future needs;

That the need for biologicals is so diverse, and conscious of the fact that it is necessary to ensure that biologicals meet international standards, and that;

There are distinct economic advantages in establishing a comprehensive system of diagnostic facilities at various levels of output and operation, and biologicals production in order to avoid costly duplication;

Recommends that IICA establishes a Commission of laboratory scientists that will:

1. Assess the diagnostic capabilities and develop criteria and methods for rating animal health laboratories in the Hemisphere.
2. Be a source of information as to where particular diagnostic capability exists in the Hemisphere.
3. Advise on which laboratories could serve as "reference laboratories" for certain diseases and give advice generally that will enable a country to provide for laboratory service adequate to its needs.
4. Establish criteria to ensure that biologicals produced in the region attain international standards of purity and efficacy.
5. Establish the basis to secure the agreement of Governments for the entry of diagnostic materials into countries offering certain diagnostic services, and for the rapid shipment and or trans-shipment of such material without delay.
6. Develop a system for costing the diagnostic services of, and/or to provide financial support to the reference laboratories.

7. Establish where training of laboratory personnel at various levels may best be done.

APPENDIX 2

CRITERIA FOR LABORATORY CLASSIFICATION

To rate the animal diagnostic laboratories it is necessary to determine whether the disciplines are being conducted at high or low levels of competence. These disciplines are:

Pathology	= P
Bacteriology/Micology	= B
Serology	= S
Parasitology	= Pa.
Virology	= V
Toxicology	= T

The disciplines will be graded with capital letters or small letters depending on the level of competence.

Examples:

P	= High level performance in pathology
p	= Low level performance in pathology
V	= High level performance in virology
v	= Low level performance in virology

The items to be evaluated to determine the level of competence of the various disciplines are:

- Facilities
- Equipment
- Techniques being used
- Personnel competence

LABORATORY CLASSIFICATION

1.- Full Service Laboratory (FS)

A laboratory that performs all the disciplines and is graded as:

A.- All the disciplines qualify with a capital letter.

P, B, S, Pa, V, T

Example of coding:

FS - A

B.- Some disciplines qualify with capital letters and some with small letters = P, B, S, pa, v, t.

Example of coding:

FS - B

C.- When all the disciplines qualify with small letters = p, b, s, pa, v, t.

Example of coding:

FS - C

2.- Limited Service Laboratory (LS)

A laboratory that does not perform all the disciplines and is graded as:

A.- All disciplines performed qualify with capital letters = P, B, S, Pa.

Example of coding:

LS - A

B.- Some disciplines performed qualify with capital letters and some with small letters = P, B, S, pa = p, b, S, pa, etc.

Example of coding:

LS = B

C.- All the disciplines performed quality with small letters = p, b, s, pa.

Example of coding:

LS - C

3.- Special Service Laboratory

A laboratory that performs only specific task such as brucellosis testing, rabies diagnosis, etc.

Example of coding:

SS - C - Brucellosis

4.- Reference Service Laboratory

A laboratory that has the capacity to perform at high level of technology their activities in the above mentioned disciplines (pathology, bacteriology, serology, parasitology, virology and toxicology) and have the facilities and technical capacity to conduct one or more reference functions as:

e = education - educación

r = reagents - reactivos (Production)

c = consultancy - consultoría

i = identification - identificación

cc = quality control - control de calidad

(Code =+English - Spanish)

CODING SYSTEM

Based on the codes already mentioned for the DISCIPLINES, LABORATORY CLASSIFICATION AND REFERENCE FUNCTIONS, the assessed laboratories will be coded as: (Examples)

FS - B Full Services Laboratory type B

P B S Pa v t High level of performance in pathology, bacteriology, serology and parasitology, with low level of performance in virology and toxicology.

(B r) Can conduct the reference service of reagents (r) - production in bacteriology (B).

LS - A Limited Service Laboratory type A.

P B S Pa High level of performance in pathology, bacteriology, serology and parasitology.

(B e) Can conduct the reference service of education (e) in bacteriology (B).

APPENDIX 3
INSTITUTO INTERAMERICANO
DE CIENCIAS AGRICOLAS
ANIMAL HEALTH AND
PRODUCTION PROGRAM

COMMISSION FOR EVALUATION
OF VETERINARY LABORATORY
DIAGNOSTIC SERVICE
REDISA 2/17 C-7 #10

ASSESSMENT

OF

VETERINARY LABORATORY DIAGNOSTIC SERVICES

Country

Name of Institution

Location

Date of Site Visit

Code:

Site Visit Team

GENERAL INFORMATION

1. Name, address and affiliation of laboratory

2. Name, title and address of laboratory head

3. Name, title, address of administrator to whom laboratory head reports.

a) How many laboratories report to you?

4. Nature of services offered

General diagnostic services

Specific Services

Species

Disciplines

(specify)

P _____
B _____
S _____
Pa _____
V _____
T _____

5. Number of laboratory accessions in most recent annual or fiscal year. _____

a) Do you maintain accession files? Yes ___ No ___

6. Annual report available? Yes ___ No ___
(if yes attached)

7. Years of operation _____

LABORATORY SERVICES

The laboratory performs the functions listed

	Yes	No
I. MICROBIOLOGY		
A. Bacteriology	_____	_____
1. Aerobic	_____	_____
2. CO ₂	_____	_____
3. Anaerobic	_____	_____
4. Sensitivity testing	_____	_____
5. Bacterial characterization	_____	_____
B. Virology		
1. Tissue culture	_____	_____
2. Chick embryo	_____	_____
C. Mycology		
1. Culture	_____	_____
2. Identification	_____	_____
D. Mycoplasma		
1. Isolation	_____	_____
2. Identification	_____	_____
E. Serology		
1. Agglutination	_____	_____
2. Agar gel immunodiffusion	_____	_____
3. Hemagglutination-inhibition	_____	_____
4. Complement fixation	_____	_____
5. Serum/Virus neutralization	_____	_____
6. Serotyping	_____	_____

Yes No

F. Fluorescent antibody

1. Direct

2. Indirect

Indicate for which diseases

G. Comments and observations

II. PATHOLOGY

A. Gross

B. Histopathology

1. Histochemistry

2. Frozen sections

C. Clinical pathology

1. Body fluids (i.e., blood or
 urine analysis). List tests

2. Clinical chemistry. List tests

	Yes	No
D. Parasitology		
1. Genera identification	_____	_____
2. Species identification	_____	_____
E. Comments and observations		

III. TOXICOLOGY

A. Analytical and biological chemistry		
List of intoxicants identified	_____	_____

B. Comments and observations		

IV. MISCELLANEOUS

A. Field investigations	_____	_____
1. Do you routinely do these?	_____	_____
2. Only performed under special circumstances?	_____	_____
B. Consultation and continuing education for ranchers, practitioners or others using the laboratory.		
1. Do you assist in short courses?	_____	_____
2. Do you conduct laboratory demonstrations?	_____	_____

Yes No

C. Reporting

1. How?

2. When? _____

3. To whom? _____

4. Obtain copies of representative reports

D. Maintenance and retrieval of reports

1. What system do you have available?

E. Personnel training programs

1. Do you have training programs
 for professionals? _____

2. Do you have training programs
 for technicians? _____

3. Describe: _____

F. What manuals, scientific literature
 or reference texts are available to
 you for use and study?

G. How does the laboratory participate
 in the national or state animal
 health programs? (Planning services
 only?)

H. Are the tests that you conduct for
 the national and state animal
 health programs standardized?

Yes No

I. Are resources of other institutions available to you for reference?

1. What sources of diagnostic reagents are available to you? (Specify what is quality control?)

a) What are the quality control measurement you use in this laboratory?

2. What source of personnel training is available to you? (Specify).

3. What source of technical consultants are available to you? (specify).

J. Does this laboratory produce any vaccines? What is the quality control?

K. Is the laboratory location appropriate in relation to livestock industry, transportation, supply and personnel needs?

Yes

No

L. Is there a classification system for diagnostic laboratories in this country?

Describe:

M. Comments and observations on miscellaneous areas.

PHYSICAL FACILITIES AND EQUIPMENT

I. HISTOPATHOLOGY, BACTERIOLOGY, VIROLOGY, SEROLOGY,
PARASITOLOGY AND TOXICOLOGY.

	(ENUMERATE)		
	DO NOT HAVE	HAVE IN USE	HAVE BUT NOT IN USE
a) Refrigerators			
1. Standard	_____	_____	_____
2. Walk in	_____	_____	_____
b) Freezers			
1. -10°C	_____	_____	_____
2. Ultra low temperature	_____	_____	_____
3. Liquid nitrogen storage	_____	_____	_____
c) Incubators			
1. Aerobic	_____	_____	_____
2. CO ₂	_____	_____	_____
3. Egg-normal embryo	_____	_____	_____
4. Egg-inoculated	_____	_____	_____
d) Water baths			
1. 37°C	_____	_____	_____
2. 56°C	_____	_____	_____
e) Mixers			
1. Homogenizers	_____	_____	_____
2. Grinders	_____	_____	_____
f) Centrifuges			
1. Hematocrit	_____	_____	_____
2. Table	_____	_____	_____
3. Floor model	_____	_____	_____
4. Refrigerated	_____	_____	_____
5. Ultracentrifuge	_____	_____	_____

		(ENUMERATE)	
	DO NOT HAVE	HAVE IN USE	HAVE BUT NOT IN USE
g) Microscopes			
1. Dissecting	_____	_____	_____
2. Binocular	_____	_____	_____
3. U.V.	_____	_____	_____
4. Inverted	_____	_____	_____
5. Dark field phase	_____	_____	_____
6. Electron	_____	_____	_____
h) Balances			
1. Analytical	_____	_____	_____
2. Torsion	_____	_____	_____
i) Autoclaves	_____	_____	_____
j) Ovens			
Dry heat sterilizer	_____	_____	_____
Drying	_____	_____	_____
k) Miscellaneous apparatus			
1. pH meters	_____	_____	_____
2. Spectrophotometer (standard)	_____	_____	_____
3. Rotators/Shakers	_____	_____	_____
4. Hot plates (with stirrers).	_____	_____	_____
5. Distilling apparatus	_____	_____	_____
6. Deionizing apparatus	_____	_____	_____
7. Biological safety hood	_____	_____	_____

	DO NOT HAVE	HAVE IN USE	(ENUMERATE) HAVE BUT NOT IN USE
8. Microtome	_____	_____	_____
9. Automatic tissue processor.	_____	_____	_____
10. Microtome knife sharpener.	_____	_____	_____
11. Lyophilization	_____	_____	_____
12. Parafin oven	_____	_____	_____
13. Electrophoresis apparatus	_____	_____	_____
14. Atomic absorption (spectrophotometer)	_____	_____	_____
15. Gas chromatography	_____	_____	_____
16. Spectrophotometer			
a. Infra-red	_____	_____	_____
b. U. V.	_____	_____	_____
17. Perchloric acid fumehood.	_____	_____	_____
18. Camera and photo - micrographic equipment.	_____	_____	_____
II. NECROPSY ROOM			
1. Large necropsy table	_____	_____	_____
2. Scales	_____	_____	_____
3. Cooler (walk-in)	_____	_____	_____
4. Band saw	_____	_____	_____
5. Animal holding area	_____	_____	_____
6. High pressure cleaner and/or steam cleaner	_____	_____	_____

		DO NOT HAVE	HAVE IN USE	(ENUMERATE) HAVE BUT NOT IN USE
III. LABORATORY ANIMALS				
	Species	Colony	Other Sources	Number Used annually
	_____	_____	_____	_____
	_____	_____	_____	_____
	_____	_____	_____	_____
	_____	_____	_____	_____
IV. OFFICE AND ADMINISTRATIVE AREA				
	1. Duplicating machine	_____	_____	_____
	2. Record storage area	_____	_____	_____
	3. Library	_____	_____	_____
	Number of books _____			
	Number of current periodical subscrip- tions _____			
	Interlibrary loan system.	_____	_____	_____
	Intra-laboratory communication equipment.	_____	_____	_____
V. GENERAL REQUIREMENTS				
	1. Volatile chemical storage.	_____	_____	_____
	2. Media preparation area.	_____	_____	_____
	3. Glass washing and general service area.	_____	_____	_____
	4. Maintenance shop and tools.	_____	_____	_____

	DO NOT HAVE	HAVE IN USE	(ENUMERATE) HAVE BUT NOT IN USE
5. Protective clothing	_____	_____	_____
6. Wall, ceiling and floor permitting cleaning	_____	_____	_____
7. Incinerator	_____	_____	_____
If not, how infectious material disposal.	_____		

8. Sewage disposal	_____	_____	_____
Describe:	_____		

VI. UTILITIES

1. Gas	_____	_____	_____
2. Electricity	_____	_____	_____
a. Standby	_____	_____	_____
3. Water	_____	_____	_____
a. Tap	_____	_____	_____
b. Distilled	_____	_____	_____
4. Steam	_____	_____	_____
5. Telephone	_____	_____	_____

VII. Comments and observations

PERSONNEL QUALIFICATIONS

<u>POSITION</u>	<u>INDICATE QUALIFICATIONS (Academic degree, specific training and experience).</u>	<u>HOURS WORKED PER WEEK</u>
Director	_____	_____
Pathologist/s	_____	_____
General Diagnostician	_____	_____
Bacteriologist/s	_____	_____
Parasitologist/s	_____	_____
Virologist/s	_____	_____
Toxicologist/s	_____	_____
Biochemist/s	_____	_____
Field Veterinarian	_____	_____
Technicians	_____	_____

<u>POSITION</u>	<u>INDICATE QUALIFICATIONS (Academic degree, specific training and experience).</u>	<u>HOURS WORKE PER WEEK</u>
Laboratory Aids		
Animal Caretakers		
Secretary/s		
Building maintenance		
Comments and observations		

CURRENT BUDGET

(Amounts in Local Currency)

Total Budget _____

Salaries (total _____

 Professionals _____

 Technical _____

 Others _____

Operating funds _____

Equipment funds _____

Maintenance funds _____

Travel _____

Library _____

Comments and observations: _____

APPENDIX 4

PROBLEMS COMMON TO VETERINARY DIAGNOSTIC LABORATORIES

A.- HUMAN RESOURCES

1.- Selection of personnel

Normally, during a college education the individual is not appraised of the opportunities of a career in the field of veterinary laboratory diagnosis and consequently, does not take optional courses to prepare for such a career.

Recent changes in curriculum content have reduced emphasis on laboratory training in preference to other disciplines.

Veterinarians entering the diagnosis service may not have sufficient basic training in the health science discipline (bacteriology, toxicology, etc.)

The veterinary curriculum should be reviewed to provide better training and understanding of veterinary diagnostic service.

2.- Salaries and career development

In general, the professional in the diagnostic laboratory receives a lower salary than a per-

son of the same rank and experience who is employed in a research institution.

Since diagnostic and research activities are inseparable, there should be no differential in salary structure for the two groups.

Also, an effective diagnostic service is vital to the success of national disease control programs.

Therefore, the diagnostic services should be structured to provide opportunities for advancement in professional development as well as adequate and financial rewards.

3.- Laboratory location

The location of veterinary diagnostic laboratories may be a handicap to recruitment of the more highly qualified personnel. Scientists are reluctant to accept positions in remote agricultural areas because of the lack of adequate housing and educational facilities for children. In such an environment they do not have the intellectual stimulation of contact with other professionals.

These factors should be considered along with others when a site is being selected for a diagnostic laboratory.

4.- Prestige of the institution and its staff

The livestock industry, veterinary profession and government administration must be appraised of the fact that the veterinary diagnostic laboratory is the most essential component of the animal disease control program. Therefore, it is essential to select the most qualified scientists, to provide modern facilities and to maintain adequate budgetary support for the veterinary diagnostic service. Provision of these essential components will ensure the prestige and competency of this segment of the animal health team.

5.- Training after recruitment

There should be on the job training in the laboratory and special courses at selected diagnostic institutions where personnel would obtain proficiency in specific laboratory disciplines. Selected individuals should be encouraged and offered support to pursue graduate programs leading to the M. S. or Ph. D. degree but this should not be to the detriment of the technical training segment.

Training must be oriented to the needs of the area or region. Laboratories should establish programs for the continuing education of their

scientific and support staffs.

Laboratories should emphasize training not only in newer techniques, but also in updating on-going programs and procedures.

B.- PROGRAMS AND ORGANIZATION

1.- Lack of programming

As a consequence some laboratories perform functions other than those related to animal health. In some countries laboratories lack coordination and operate independently of any centralized guidance or control. Also, these laboratories may not employ accepted methods or standardized reagents. Whereas animal disease diagnosis and research are complementary and must work together for the success of the animal health program there must exist a clear definition of the priorities of the diagnostic laboratory. The performance of regular diagnostic procedures is absolutely essential to the successful animal health program.

The work of the various laboratories within the organization should be integrated to achieve overall efficiency and economy of operations.

2.- Laboratory capability

Some laboratories may not be able to conduct

certain functions because of insufficiently trained personnel, inadequate facilities, limited equipment, supplies and budgetary support. On the other hand, it has also been observed that some laboratories, although well staffed and equipped, are not fully used or not integrated into the animal health program. This may occur if livestock owners and animal health specialists lack confidence in the laboratory, if the laboratory is poorly located in relation to livestock activities or in the absence of a comprehensive program which coordinates the activities of the field and laboratory groups. Poor laboratory performance reflects adversely on the entire animal health program.

- 3.- Government officials must understand that diagnostic laboratory activities are essential to any program of animal health. The quality and responsiveness of the laboratory service is fundamental to solving the disease problem in the livestock sector and, also, for promptly recognizing epizootics or newly introduced disease agents. The data developed in the diagnostic laboratories must be made available to authorities who will employ it in animal disease surveillance and control programs.

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INTER-AMERICAN INSTITUTE FOR COOPERATION ON AGRICULTURE

III INTERAMERICAN MEETING OF DIRECTORS OF ANIMAL HEALTH
Buenos Aires, Argentina, August 5-8, 1981

REDISA III/12
July 24, 1981
Original: English

REPORTS OF THE REGIONALS MEETING OF ANIMAL HEALTH
MEETING OF ANIMAL HEALTH OFFICIALS OF THE NORTH ZONE

RESANORTE 1

FINAL REPORT

First Meeting of Animal Health Officials of
The North Zone
(Mexico, Central America, Panama)
Mexico City, Mexico
April 24, 25 1981.

The first meeting of animal health officials of the North Zone, which comprises Mexico, Central America and Panama, was held in Mexico City on April 24 and 25, 1981. This was the first of projected annual meetings to be sponsored by the IICA. The purpose of the meetings is to provide, at least annually, an opportunity for discussion of animal health matters of mutual interest to member countries of the region, review progress of programs, develop recommendations for consideration in the annual meeting of all directors of animal health in the Western Hemisphere (REDISA) and to receive technical and administrative training in areas related to management of national and international animal health programs. The list of attendees and program are attached (Inc's 1 and 2).

The meeting of animal health officials was preceded by a Seminar, " Planificación en Salud Animal", sponsored jointly by the School of Veterinary Medicine, University of Mexico, the Panamerican Health Organization, the Department of Animal Health of Mexico and the IICA. The Seminar was attended by all participants of the Animal Health officials meeting. The program of the Seminar is inclosed (Inc. 3). The program offered 3 days of comprehensive commentary on political, social and economic activities affecting animal health programming; methods of cost analysis; and operational aspects of national and international animal disease campaigns. The program was developed in response to the request of animal health directors (REDISA II) for training in methods of organizational management and administration.

The meeting of animal health director, or their representatives, of the North Zone immediately followed the seminar. The 14 participants in the meeting (Inc. 2) represented Costa Rica, El Salvador, Guatemala, Honduras, México, Nicaragua, Panamá and the IICA. Dr. Benjamín Jara Guillén, Subdirector of Animal Health, Mexico was elected president and Dr. Amilcar Ventura, Subdirector of Animal Health, Nicaragua was elected recording secretary.

The program (Inc. 2) for the meeting was designed to fulfill the objectives, as were mentioned previously. The presence of several representatives from most of the countries afforded an opportunity for greater discussion. This is an aspect of attendance which should be considered in all future regional meetings. The week's seminar and meeting afforded less senior officials an insight to national animal health programming which, assuming career progression, will benefit them individually as well as their respective countries.

The preliminary report of the Commission to Evaluate Animal Health Diagnostic Laboratories was confined to observations and comments on the central animal health laboratories of Panama, Central America and Mexico. The evaluation revealed that, with the exception of Mexico, all animal health laboratories of Central America and Panama were classified as Limited Service, Type C. Very limited or no diagnostic services were available in the areas of virology and toxicology. In essence, no one of these countries can individually investigate animal herd problems of abortion and reproduction - to cite an example of an area of disease investigation. Reliable information in these disease areas is fundamental to development and progress in animal production. In general, deficiencies found in the laboratories were a) Director had limited experience and are afforded little opportunity for interchange of ideas and experience (b) New techniques are not employed in routine bacteriology and serology (c) Limited or no current professional references and publications (d) Inadequate methods for cleaning and preparing glassware and other equipment (e) Animal colony facilities are totally inadequate.

The comments following the presentation generally indicated agreement with the laboratory assessment, best described as coldly realistic. Specific deficiencies among the laboratories was requested and one comment reflected disagreement with comparing the laboratories to those of the US or Canada. Actually, the laboratories were not evaluated or compared to laboratories of North America.

Attendees were advised that some immediate steps were being taken to correct some deficiencies, specifically, training would be offered in Guatemala on differential diagnosis of hog cholera and African swine fever for diagnosticians from Honduras, Nicaragua and El Salvador where hog cholera was active.

Plans are being made for training in diagnosis of hemo- protozoan diseases particularly by serological methods and a program will be developed for establishing a laboratory capability for diagnosis of virus diseases using serological and FA techniques.

Dr. Hugh Graham, of the US Department of Agriculture in Mission, Texas presented information to the attendees on the projected study to make a cost estimate for extending the screwworm eradication program from Mexico to Central America and Panama.

Country representatives showed continuing interest in this potential. Two officials from each country of Central America and Panama recently received 21 days training from the Mexican/US Commission for screwworm eradication and are prepared to assist in future investigations and appraisals of the problem in their countries.

The presentation by Dr. Miguel Osorno was a comprehensive and extremely informative discussion on diagnostic methods for anaplasmosis and babesiosis. The presentation clearly demonstrated the feasibility with which these examinations can be accomplished given minimum but appropriate facilities in a laboratory. The presentation was intended to set the stage for future development of this diagnostic capability in the laboratories.

Dr. Pedro Acha informed the attendees of the status of international activities to establish a program for eradication of African swine fever in Haiti. Given the proximity and interactivity between countries of Central America the Caribbean nations, the continued presence of ASF in Haiti constitutes a significant threat to the porcine industries of Central America, Mexico and Panama. Eradication is essential to porcine health of the Western Hemisphere.

Following the technical presentations the officials addressed the recommendations made previously in REDISA II. Recommendations evolving from REDISA II which affect the North Zone, the progress and status was presented and discussed topically as follows:

1. Screwworm (SW) eradication.

- a). Training. Requirements as recommended for personnel of the countries of Central America and Panama were discussed with the Director and Codirector of the Mexican/US Commission for Eradication of SW.

They were totally supportive and made personnel and facilities of the Commission in Mexico City, Tuxtla Gutiérrez and Guadalajara available for 21 days of training of Central American and Panama veterinary officials as well as the veterinarians of OIRSA in each of these countries. The training program was coordinated and funded entirely by IICA, North Zone. Three trainees sponsored by the Caribbean Zone also attended. In some countries these trainees have now initiated surveillance programs in their respective countries to determine distribution and incidence of SW. They will assist the team of experts who will visit Central America and Panama to make a cost estimate of SW eradication.

b) Interamerican commission for eradication of screwworm. A commission of this level is considered premature at this time. Further pursuit of this Commission should be deferred pending completion of cost estimate studies and development of a proposal for parasite eradication. The officials did recommend establishing an expert Committee on SW and this is shown among subsequent resolutions of the meeting.

c) Expert review and evaluation of SW situation in Central America and Panama. This is interrelated to the previously discussed developments. Dr. Hugh Graham led a group of experts in visits to Central America and Panama to develop a cost estimate for eradicating screwworm from Central America and Panama. His report will be completed in July 1981.

2. Tick control and anaplasmosis and babesiosis.

In REDISA II it was emphasized that prior to initiating these control programs the establishment and development of laboratory competence to conduct epizootiologic studies is absolutely necessary. Laboratory facilities and activities were recently evaluated in visits to these facilities throughout Mexico, Central America and Panama. Deficiencies, as previously reported in this meeting, were found and only in Mexico and Costa Rica were there laboratories capable of providing comprehensive diagnostic or disease surveillance services for ticks borne diseases. Obviously development of laboratory capability is fundamental to tick control and animal disease campaigns. Progress will be interrelated if not dependent upon progress in improving and expanding laboratory services.

The feasibility of establishing or expanding laboratory diagnostic methods for blood protozoan diseases has been considered and believed reasonable. A training program in this area of disease diagnosis is being planned in conjunction with Dr. Miguel Osorno, of INIP.

3. Management and administrative training of animal health officials.

The first of a series of training programs in these subjects was held in conjunction with this meeting. The scope of this training program was previously presented and can be found in Inc. # 3.

4. Animal health diagnostic laboratories.

A Commission to evaluate Latin American and Caribbean laboratories was established by IICA. The Commission completed its review in April and will make a final report of the findings and recommendations in August at the REDISA III. A preliminary on the status in Mexico, Central America and Panama was presented at this meeting.

5. Expert Committees.

The Commission on Laboratory Evaluation was established. No other groups have been formed or proposed with the exception of that of the screwworm group as recommended at this meeting.

6. Cataloging biologicals and assistance funds.

The maintenance of emergency funds for purchase of biologicals was not deemed feasible by the IICA. The development of a list of recommended biological agents and source is feasible and will be pursued.

7. Collaboration with OIRSA.

Veterinarians of OIRSA were invited to participate in the screwworm program in Mexico and have been active and contributory in those countries where distribution studies of *D. hominis* have been initiated. One OIRSA veterinarian participated in the Seminar presenting as investigative report on mammalitis.

8. Animal disease reporting.

Format for animal disease reporting from all of Latin America and the Caribbean is being developed and will be distributed to animal health directors.

9. Leptospirosis and parasitic infection surveillances.

The study of the incidence of parasitic infections and leptospirosis in Mexico, Central America and Panama is directly related to progress in improving and expanding laboratory services in these countries. The acquisition of leptospiral antigens appears to be impeded by administrative and purchasing procedures. There is no capability in any laboratory for leptospira isolations. Leptospirosis probably constitutes a significant disease problem in most of Central America and Panama.

Recommendations and Conclusions.

Animal health officials indicated their satisfaction with progress in addressing the problem areas identified in REDISA II and their support of these actions taken by IICA to resolve the problems.

Specifically animal health officials recommended the following:

1. Caution by all animal health officials on permitting the introduction of vaccines for anaplasmosis or piroplasmosis into their countries. Equal caution should be applied to the introduction of any new biological product for the potential damages which products of limited useage or experience may cause in livestock.
2. Continued efforts on the part of IICA to explore and encourage a program for eradication of screwworm from Central America and Panama.
3. Development of a training program for laboratory diagnosis of anaplasmosis and piroplasmosis. Attendees should be those individuals who are working in these diseases.

4. Establishment of an Interamerican Committee for Screwworm eradication to assist IICA and the countries of Central America. The following were specifically recommended as members: Dr. O.H. Graham, Mission USDA, Texas; Dr. Nazario Pineda and Dr. Meadows Director and Codirector respectively of Mex/US Commission in Mexico for eradication of Screwworm; Dr. Roberto Rivera, OIRSA in Nicaragua, Dr. Celio Barreti and Dr. José Ferrer of IICA, San José, Costa Rica.

In concluding the meeting the animal health officials expressed their appreciation to IICA for the Seminar on Planification in Animal Health. Additionally the officials expressed their gratitude to the countries of the Dominican Republic and Cuba for their prompt and effective eradication of African swine fever from their countries and also to the countries of the US, Mexico and Canada who have agreed to support the eradication of African swine fever from Haiti. Some of the officials agreed to send at least one veterinarian paid for by their respective governments to participate in the eradication program in Haiti.



INTER-AMERICAN INSTITUTE FOR COOPERATION ON AGRICULTURE

III INTERAMERICAN MEETING OF DIRECTORS OF ANIMAL HEALTH
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REPORTS OF THE REGIONAL MEETINGS ON ANIMAL HEALTH
MEETING OF ANIMAL HEALTH OFFICIALS OF THE SOUTHERN ZONE

RESASUR I

FINAL REPORT

MEETING OF DIRECTORS OF ANIMAL HEALTH IN THE SOUTHERN ZONE

RESASUR 1

FINAL REPORT

The first meeting of Directors of Animal Health (RESASUR 1) of the Southern Zone of IICA was held in the premises of the Corn Exchange of Buenos Aires from 22 to 24 April, 1981; it was attended by representatives of the following countries: Argentina, Bolivia, Brazil, Chile, Paraguay and Uruguay.

After the opening session, the Chiefs of Delegation proceeded to the appointment of the members of the Directing Board, as follows: President: Dr. Emilio Juan Gimeno, from Argentina; Vice-President: Dr. Jorge Benavides, from Chile; Rapporteur: Dr. Hugo Tortora, from Uruguay. Dr. Rubén Lombardo, from IICA, acted as Ex-officio Secretary, a role which corresponds to IICA in this kind of meetings.

The opening session began with a speech delivered by the Sub-Secretary of Livestock of the Ministry of Agriculture and Livestock of the Argentine Republic, Eng. Ubaldo Farías.

He emphasized the significance of this Meeting as a means to increase the coordination of activities among countries in this important field of animal health. Furthermore, he indicated that the Argentine Republic is ready to collaborate with this kind of meetings and that it is necessary to support the actions in animal health as an essential element to increase the production of food of such origin. Finally, he expressed his wishes that the deliberations leave a very positive balance.

Next, the Director in charge of IICA office in Argentina, Eng. Leonardo Maestre, pointed out that the achievements of IICA Animal Health Program shall be the result of the support and close cooperation of the member countries and that this first Zonal Meeting is an outstanding forward step. He gave his thanks to the authorities of Buenos Aires Corn Exchange and to the Ministry of Agriculture and Livestock of the Argentine Republic for their excellent collaboration which made this meeting possible.

Then, Dr. Francis J. Mulhern, Director of IICA Animal Health Program, spoke about the fulfilment of the Resolutions of the Second Inter-American Meeting of Directors of Animal Health (REDISA 2). He also indicated that a Data Bank is being established at IICA Headquarters, not only on diseases but also on all matters connected with animal health and that the information of such system shall not be focused or limited to a particular country, but shall be carried out from the hemisphere viewpoint and it shall be in the service of all countries. Besides, he indicated that the exchange of opinions among the countries during these meetings is highly positive and constitutes their basis and spirit. Dr. Mulhern then referred to the interest of the countries in coordinating the actions of the different international organizations which give their technical assistance in the field of animal health. To close his speech, he pointed out that the conclusions attained during this meeting should be submitted to the Inter-American Meeting of Directors of Animal Health to be held from 5 to 8 August of this year in the city of Buenos Aires.

After a short break, the members of the appointed Board took seat and the first plenary working session began. The President, Dr. Emilio Gimeno, introduced the initial subject of discussion and expressed his satisfaction for the willingness of IICA to achieve an approach among the different international organizations which work in the field of animal health, in order to find the way leading to the most efficient usage of resources for technical assistance in the international field.

Immediately after, Dr. Alcides Martín presented a report on the Regional Project of Training in Animal Health. He referred to the importance of joint approaches to the epidemiologic study of transmissible diseases, pointing out that the teaching system of the projected Center shall cover the necessary subjects to get the most effective and integral training. He also indicated that the courses shall be basically directed towards achieving the necessary knowledge for the execution of programs on the control of animal diseases. Besides, he commented technical aspects of said courses.

Next to this, the participants in the meeting exchanged ideas on this subject.

To close the first meeting, Dr. Ruben Lombardo, from IICA, submitted a report on the Project of a Laboratory for Veterinary Research at INTA, Castelar; he indicated that its elaboration had been finished and mentioned its importance from the regional point of view.

Dr. Lombardo also commented the accomplishment of the recommendation given by REDISA 2 on the Evaluation of Animal Health Diagnosis Laboratories in the Americas and he said that the results shall be presented during next REDISA 3 to be held in Buenos Aires from 5 to 8 August of this year.

Dr. Emilio Gimeno referred to the need of strengthening the budgetary aspect of the Pan American Foot-and-Mouth Disease and Zoonoses Centers, indicating at the same time that a good financial support for their maintenance should be attained and that this meeting should specially deal with this matter. This was done at the end of the plenary session in the afternoon.

The second session was opened by Dr. Ronald Smith, IICA Consultant, who spoke on the present situation of Tick, Babebiosis and Bovine Anaplasmosis Control Programs, and he pointed out the progress made in relation to their epidemiology. During a clear and well documented speech, he informed about the biology, epidemiology and pathogenicity of parasites; he based on them his recommendations for the systems of control. At the end of his speech, there were various inquiries and comments from the countries representatives.

Upon an invitation from the President, Dr. Signorini, from the Service of Health Control (SELSA), submitted the Program on Tick Control which is being developed in the Argentine Republic and indicated the methodology adopted for the division of the country into four zones: free, active control, preparatory control and infested and he explained which were the bases of the control and prevention measures applied in each of them.

To clarify the aspects related to the sanitary measures, he briefly explained the regulations in force on the subject and summarized the activities developed in the program, as well as the results of its evaluation during 1980.

At the end of his exposition, he answered several questions from the countries representatives about the plan of action of the program. A remarkable interest on matters related to the system for the control of ixodidides applied in the country was shown.

Then, Dr. Carlos Arteche, from Porto Alegre, Brazil, explained the situation of the program for the control of tick in his country, where at this moment the priority lies on the efforts directed towards research programs on the resistance and biology of the parasite and improvement in the control of tick-killing agents. Although at present there is no official program and the sanitary tasks are fulfilled by stockbreeders on their own account, a diagnosis of the situation in Río Grande do Sul State has been carried out and on its basis, it has been programmed the way to systematize the control by reason of the increase of this parasitosis in the mentioned State.

After an extensive exchange of opinions, the President invited Dr. Hugo Tortora, Uruguay representative, to speak. The latter explained the situation of the disease control in his country and the problems arising from its fulfillment and informed about the existing sanitary infrastructure and available legislation. He also clarified some aspects related to the control of cattle movement and the use of tick-killing bathes; he also referred to the problems connected with chemical resistance. Likewise, he mentioned the standpoint of dividing the country into regions instead of continuing considering it as a unity in regard to tick program, as up to date.

After various inquiries and exchange of opinions, the President invited Dr. Jepherson Johnston, Chile representative, to speak. He said that in his country tick has no economic significance, therefore there is no sanitary infrastructure for its control. Only in the Southern Zone of the country there are some problems with Melphagus ovinus or "false tick". As a control measure, stockbreeders carry out periodic bathes on the animals.

At the request of the President, Dr. Orlando Aguirre, from Bolivia, delivered his speech explaining that his country has no official program and that the actions are in charge of stockbreeders. Though there was a program of

of protection of the imported animals caused by an agreement with FAO, the program was discontinued at the end of the agreement. This parasitosis is not yet considered as an important problem in cattle breeding, so that there is no legislation on the subject.

At the request of the President, Dr. Richard Payne spoke about the situation in Paraguay, where there is neither official program nor legislation on the subject up to date; anyway, epidemiologic and ecological studies on anaplasma, babesia and geographic distribution of tick in both regions of the country, eastern and western, have begun. The studies are being carried out in cattle farms selected within both regions.

At the end of his speech, he answered the questions posed by the attendants. When the President considered the discussion had finished, he appointed a Committee to prepare a project of recommendations about the subject.

Next, Dr. Lombardo introduced subject N°3 on "Sanitary rules of common interest in connection with commercial exchange of animals and by-products".

He said that in the month of January the Latin American Association of Integration (ALADI) had been constituted in replacement of ALALC. He informed that ALADI has the support of Argentina, Uruguay, and Paraguay, which were the first countries that signed the Agreement; up to now, eleven countries have signed it. He stressed that it would be necessary to unify sanitary criteria on the evaluation, diagnosis and control of animal diseases to expedite the Inter-American business. He mentioned that a standardization of criteria in the sanitary field has already been achieved by the European Common Market and that this goal should be attained by the countries of the Southern Zone. He also mentioned the sanitary agreements in force on foot-and-mouth disease among countries of the Southern Zone and he suggested to extend them to other diseases of economic importance.

Dr. Prieto Busto, from Paraguay, referred to the above subject and to its significance for the countries and the convenience to adopt relevant measures.

He said that the coordination of sanitary campaigns should come to a concretion and he put emphasis on information and epidemiologic surveillance, as

well as on the updating and coordination of sanitary regulations in these countries.

Next, Dr. Carlos H. Caggiano, from Argentina, informed about the regulations on importation of living animals, products and by-products, stressing the need to unify criteria, mainly in extra-continental importations, due to the sanitary risks implied in the introduction of exotic noxae, not only for the interested country, but also for its neighbours and the rest of the Continent. Dr. Dalton, from the Service of Health Control of Argentina, described the methodology of control in the frontiers and airports which is under the responsibility of the health services as well as the controls carried out in the quarantine stations.

Dr. H. Tortora, from Uruguay, explained which are the requirements of his country for the importation of different animal species, summarizing the sanitary demands.

On continuing with the subject, Dr. F. Da Silva, from Brazil, stressed the economic and sanitary importance of the movement of animals; he informed that at present, the regulations in his country establish specific rules by animal species and by exporting country, with an increase in the corresponding controls. He emphasized the interest shown by his country in subscribing bilateral agreements on the subject and he mentioned those which Brazil has signed with all border countries.

Dr. Johnston, from Chile, said that the quality and quantity aspects of importations should also be emphasized and that no rigid prohibitions should be established by virtue of the dynamic of the progress attained in the scientific field and in the control technology.

In Chile, a country free of foot-and-mouth disease, the risks of importations must be carefully considered in relation to the needs of the country. Anyway, he thinks that the policy of closing down importations cannot be adopted, but the least possible risk should be run.

In Bolivia, Dr. O. Aguirre, explained, the legislation is dynamic and adequate to the needs of the country. He recognized the importance of bilateral agreements and considered that a deep study of sanitary regulations of

the different countries is of interest to expedite the coordination among them on the aspects connected with programs of common interest and commerce.

In the fourth session, bovine leukosis was discussed and Dr. Jorge Ferrer, IICA Consultant, spoke about the present situation of the disease and about the progress attained in the knowledge of its etiology, epidemiology and diagnosis, with special reference to their application in control programs.

He laid emphasis on the most significant aspects of the noxa such as its diagnostic methods, differentiating specificity and sensitivity of each of them. As a basic concept on the subject, Dr. Ferrer pointed out that serological tests cannot be used to establish, confirm or refuse the diagnosis of bovine leukosis. On the other hand, he considers that the radio-immune-precipitation method is the most specific one. In regard to pre and post-natal transmission of bovine leukosis virus, he established its frequencies and incidence percentages.

Another important aspect of his speech was the economic significance of bovine leukosis and of the infection with BLV. It must be emphasized that the possible threat of bovine leukosis to public health has begun to be widely analyzed. Dr. Ferrer added that at present it cannot be accurately established whether there is any relation between bovine leukosis and human leukemia.

Lastly, he expressed his wishes that all those professionals who have the possibility to carry out evaluations on this problem inform about the results obtained with the purpose of contributing to the fight against this disease.

He thanked IICA and SENASA for the invitation and the opportunity to participate in this meeting.

Then, the representatives of Paraguay, Uruguay, Argentina, Brazil and Chile explained their experiences and works carried out and at the same time they referred to the available legislation to control the noxa; they added that the establishment of an accurate diagnosis to determine the spread and possible control of the disease was of their concern.

Afterwards, the Vice-President and acting President, Dr. Benavides, asked the attendants to designate the site for next meeting, RESASUR 2, to be held in 1982. Brazil representative offered the city of Porto Alegre and it was unanimously accepted with the thanks of the countries representatives and of IICA.

As there were no other subjects to deal with, the session was adjourned.

On the 24th., the final plenary session was held in order to discuss the projects of resolutions and approve the final report of RESASUR 1.

The Resolutions appearing at the end of this Report were considered and approved.

Finally, the closing session was initiated. Dr. Francis James Mulhern, Director of IICA Animal Health Program, took the floor in the first place.

He began expressing his wishes that the Meeting of Directors of Animal Health of the Southern Area of IICA had proved to be useful to the attendants and added his appreciation for the quality of the reports presented to it. The resolutions and conclusions shall be submitted to next REDISA 3. He also asked the attendants to inform Dr. Lombardo which are the most interesting subjects for the member countries and which ones would they like to discuss during RESASUR 2.

He said that it had been very useful to him to become acquainted with the problems existing in the countries, such as tick, its economic importance and the different control programs under way or to be developed. A significant aspect to take into account is that the programs of tick control consider the important diseases it transmits.

During one of the future REDISA, the subject of bovine leukosis shall have to be reviewed, as it evidently is an arising problem the countries must be prepared to control. Those countries which are not prepared to perform such a control because they have not had any inconvenience with this disease up to now, should make inquiries to those countries which are experienced in dealing with it. In leukosis, like in blue tongue, there are no clinical manifestations, and this prevents stockbreeders from becoming aware of the problem. The only pressure existing in that sector is felt within the exporting group, but its influence is not strong enough because it is a small group.

In the U.S.A., he clarifies, the Health Department determines the sanitary regulations regarding leukosis and it does not recognize any connection between bovine and human leukosis. Therefore, studies should be continued by means of an exchange of experience which has already been proposed together with the coordination by IICA.

Dr. Mulhern also said that IICA should as well attend to the development of the various health services, besides establishing the priority of the problems, as the improvement the veterinarians could achieve in those Services shall depend upon the acknowledgement of the importance of the problems in animal health.

The significance of this matter for the economic development of a country must be demonstrated and veterinarians should assume such a responsibility, as once recognized within the economy, it shall allow veterinarians to fill high governmental posts and from them demonstrate what must be done and why. If the programs of IICA intend to be efficient from the practical point of view, they shall have to be devoted to raise the level of the profession. He ended up promising all feasible support to the programs to be developed.

Next, the President of the Meeting, Dr. Emilio Gimeno, delivered the following closing speech:

"Today, on closing these three working sessions, I am very pleased to underline some facts which I really consider of a great importance and which have been the result of this first RESASUR.

In principle, we have accomplished a working program in which the interest of sister nations have been put together for studying and analyzing subjects which concern us not only due to their practical significance but also due to their instructive value, as they have been discussed with a high scientific and technical solvency - which is not always a common characteristic of this kind of general meetings.

In that sense, we were very pleased to see that active working groups were formed and that important reports to discuss such fundamental problems as tick and relevant hematic diseases, and bovine leukosis and advances on its research, were submitted; also practical observations were extensively covered as to their theoretical and scientific basis.

Other important aspects within the working program fulfilled were the projects on the Regional Center for the training of human resources, already

under way at national level at the National University of La Plata and the Diagnosis and Reference Laboratory which expansion has been projected at INTA; this represents a significant progress of veterinary science in the hemisphere, a show of the improvement and advancement of our profession in the benefit of cattle production in the countries and a demonstration of our vocation of service towards the society that is urgently claiming for more food which constitutes a way of enjoying a greater welfare.

Another outstanding fact which has arisen from this meeting is the firm position of the countries to pose the need to integrate the Ministries of Agriculture in an institutionalized manner to manage the funds devoted to Animal Health by means of international organizations as PAHO and IICA. At present, the Foot-and-Mouth Disease and Zoonoses Centers are suffering from serious economic difficulties and it is by all known the impediment to meet the requirements of technical assistance submitted by the countries for the development of important programs devoted to the control and eradication of several diseases which damage the health of animals, so reducing significant resources of our economies. By this reason, the recommendations arisen from this meeting, added to other previously expressed, define an important proposal in the form of a permanent Committee integrated by the Ministries of Agriculture of the countries, which shall work as the only and principal Administrative Council to manage the funds coming from different international organizations as well as for those available within the countries themselves and which shall have to be progressively increased if we want our sanitary programs grow and develop with suitable technical support and with the scientific approach demanded by the evolution and progress of cattle industries and food in our countries. All of it within the present institutional background, but enlivened by a sound spirit of cooperation and integration among PAHO, IICA and the countries themselves; this shall undoubtedly occur in the benefit of all and as a sign of the greatness of spirit of American people when undertaking noble tasks under the influence of the notions of integrations promoted by the great heroes of our common history.

Colleagues of our sister countries, I reiterate that it has been a great pleasure for me to receive you in our native land, be at your service, work jointly, tighten our links and understand our common concerns, problems and difficulties which shall also find their solution within a common and openly integrated background.

On saying good-bye and wishing you a happy return, I only would like to say so long and express our wish that during your stay in Argentina you have felt at home like real fellow-citizens joined to our virtues and also to our faults, but imbued with that spirit of fight which should impel all of us in the noble effort towards the advancement of our America."

Finally, Dr. R. Lombardo, from IICA, on behalf of the organization, expressed his most sincere gratitude for the invaluable collaboration given by SENASA, SELSA and the Corn Exchange, which made the success of this Meeting possible.

As there was nothing else to add, the meeting was closed.



RESOLUTION 1CONTRIBUTIONS OF THE MINISTRIES OF AGRICULTURE OF THE AMERICAS
FOR TECHNICAL ASSISTANCE IN ANIMAL HEALTH

The Directors of Animal Health of Argentina, Brasil, Bolivia, Chile, Paraguay and Uruguay held the First Meeting of Directors of Animal Health of countries in the Southern Zone of Directors of Animal Health of countries in the Southern Zone of IICA (RESASUR 1), in Buenos Aires, and they decided to deal especially with the contributions made by the countries to organizations belonging to the inter-American system of technical cooperation in animal health.

Taking into account that the animal health programs under way must be strengthened and need to be expanded to other diseases which deserve priority attention due to the economic losses they cause,

CONSIDERING,

That it is necessary to expand the technical cooperation given to the countries by organizations of the inter-American system which act in that field;

CONSIDERING,

that technical assistance activities should be coordinated at the highest level to avoid duplications or a possible dispersion of the contributions made by the countries, what

would impede the consideration of necessary priorities and would damage the most efficient utilization of such contributions;

CONSIDERING,

That this aspect has been posed in successive and recent meetings held in the hemisphere (COSALFA VIII, RIMSA II) and discussed during the meeting of Ministers of Agriculture held in April of this year in Santiago de Chile:

CONSIDERING,

That it has been shown a general consensus about the need to increase the contributions from the Ministries of Agriculture for supporting the technical assistance required by the countries. That it is essential to establish a permanent and institutionalized mechanism, at the level of the Ministries of Agriculture, to analyze and determine the use of those funds and priorities for their application in technical assistance.

Taking into account that it would be convenient to establish in a definite way, a Council of Ministers of Agriculture to deal with the management of such funds and carry out the corresponding coordination with international organizations which give technical assistance in animal health.

RESASUR 1 RESOLVES:

To express the need that the contributions from the countries to international organizations which give technical assistance in animal health be analyzed and evaluated in full

by the Ministries of Agriculture with the aim to determine the priorities for their application.

To express that it is considered convenient to establish a Permanent Council of Ministers of Agriculture to discuss and resolve on the funds assigned to Animal health Programs of the Pan American Sanitary Bureau and the Interamerican Institute for Cooperation on Agriculture.

To request each of the countries representatives attending this meeting (RESASUR 1) to inform their Minister of Agriculture about the need to establish the corresponding mechanisms for taking the above mentioned administrative measures. That the Ministries of Agriculture are also suggested to request the inclusion of this subject in the next meeting of IICA Executive Committee to be held in June so that, after a previous study, it should form part of the definitive agenda for the meeting of the Ministers of Agriculture to be held in August of this year in the city of Buenos Aires.

In case the suggested system is approved with regards to the second paragraph of this resolution, the pertinent contacts between IICA and PASB should be made with the purpose of studying the implementation of the system.

RESOLUTION 2

TRAINING OF STAFF WORKING ON PREVENTION, CONTROL AND ERADICATION

PROGRAMS FOR ANIMAL HEALTH

SEEING,

That the importance and epidemiologic characteristics of cattle diseases imply the need to have enough qualified human resources trained in surveillance and control techniques, forming part of the general services of animal health, with a uniform scientific orientation and methodology to allow a better knowledge of the causality phenomenons that determine the outbreak and development of animal diseases;

Taking into consideration that the different activities carried out by veterinarians as a contribution to the economic and social benefit of mankind require the utilization of modern planning, programming, administration and evaluation techniques on animal health;

CONSIDERING,

That from a collective point of view, the presentation and control of serious problems in animal health require the knowledge of a special and more complex technology than that usually taught at schools of veterinary science at the pre-graduate stage;

Taking into account the report on the project for the creation of a Center for Advanced Training in Animal Health with sub-regional coverage, submitted by the Faculty of Veterinary Sciences of the National University of La Plata, Argentina.

RESASUR 1 RESOLVES:

To reaffirm the support of the countries of the Southern

Zone to finish the feasibility studies of the Project on the Creation and Operation of the above mentioned Center for Advanced Training in Animal health, with a sub-regional character, according to the report presented by the Faculty of Veterinary Sciences of the National University of La Plata, Argentina.

To request IICA to investigate on the possibility of obtaining international financial support for the functioning of the Center with the help afforded by the countries of the Southern Zone.

RESOLUTION 3

LABORATORIES FOR DIAGNOSIS, REFERENCE, RESEARCH AND TRAINING IN
ANIMAL HEALTH

Taking into account the report submitted on the Program of Animal Health Technologic Development of the Center of Research in Veterinary Sciences (CICV), INTA, Castelar, which is at present in the phase of approval by the Argentine authorities.
CONSIDERING,

That the Directors of Animal Health who met in REDISA 2, Costa Rica, in September, 1980, recognized the importance of this project from the regional point of view and requested IICA to collaborate with it;

That the above project shall contribute to the improvements of the quality and quantity of diagnostic tests in the benefit of the countries of the Region;

That the document of the feasibility of the project has

been completed and is in the phase of approval by the Argentine authorities.

RESASUR 1 RESOLVES:

1. To express its satisfaction for the preparation of the project on the Program of Animal health Technologic Development of the Center of Research in Veterinary Sciences, INTA, Castellar, Argentina, which is at present in the phase of approval by the authorities of the Argentine Republic.

2. That the countries participating in RESASUR 1 would be very pleased if such project is approved and implemented as soon as possible, due to the benefits of regional character that it would offer in the field of animal health.

3. That IICA shall continue giving collaboration within its powers with regards to this project, as well to facilitate its approval as to bring it into operation.

RESOLUTION 4

RECOMMENDATIONS ON PROGRAMS OF TICK CONTROL AND DISEASES TRANSMITTED BY TICK IN THE COUNTRIES OF THE SOUTHERN ZONE
SEEING,

That almost all countries of the Southern Zone of IICA are in general undergoing a tick infestation and that the most common diseases it transmits are anaplasmosis and babebiosis;

CONSIDERING,

That the cost-benefit analysis on the losses caused by tick

partly depends on the knowledge about the prevalence of the diseases it transmits;

That at present the parasitosis caused by tick is being attacked at different phases of its development, with a different organization in each country and with a lack of specific legislation in some of them;

That at present there are no sure, effective and practical vaccines for massive use against the diseases transmitted by tick and that prophylaxis is performed by means of vector control and pre-immunizations without the corresponding standardization and official control, resulting in a lack of uniformity and a serious risk of spread of other diseases;

That the phenomenon of chemical resistance of tick to several ixodicides in use constitutes a fact confirmed at different degrees by the countries which carried out the corresponding research;

That all studies and campaigns are centralized on Boophilus microplus species;

That the control methods of tick-killing agents are not uniform in all the countries which perform them.

RESASUR 1 RESOLVES:

1. To recommend the development of epidemiologic programs regarding anaplasmosis and babesiosis, including serologic tests and complete studies of the outbreaks.

2. That the epidemiologic studies of the transmitted diseases be carried out in close coordination with the programs of tick control for a better utilization of resources and at the same time evaluate the decrease of anaplasmosis and babesiosis incidence.

3. To study the coordination among countries of a specific legislation for the campaign of tick control.

4. To summon Technical Committees to evaluate immunization methods against anaplasmosis and babesiosis used at present and so determine uniform standards and criteria with a strict control of their use and commercialization.

5. To intensify the efforts towards the early detection of the phenomenon of chemical resistance of tick and the determination of areas of sensitivity of the parasite to different ixodocides.

6. To study the existence and distribution of other genera and species of tick which may have economic significance.

7. To summon Technical Committees to study the possibility of obtaining uniform control methods of tick-killing agents.

8. To intensify the exchange of information among countries with the purpose of evaluating the progress and problems of the campaigns of control of tick and the diseases it transmits, favouring international agreements for joint actions.

RESOLUTION 5

SANITARY RULES FOR COMMERCIALIZATION AMONG COUNTRIES AND CONTROL
PROGRAMS

Taking into account the reports and proposals of the Directors of Animal Health on sanitary rules of common interest in relation to commercial exchange of animals and their products and the necessary cooperation among countries.

CONSIDERING,

That the unification of sanitary rules connected with the commerce of animals and their products is of the highest interest as well as the programs of control of animal diseases, especially in the bordering zones of the countries.

That it is necessary to incorporate those aspects related to the scientific advances and the increase of international commerce to the sanitary legislation, as much as the present situation of exotic diseases and/or emergent diseases;

That the increase of commerce and intra- and inter-continental transport of semen and embryos must be specially considered
RESASUR 1 RESOLVES:

1. To recommend that bilateral agreements existing among countries of the Southern Zone of IICA and those to be established in the future, cover the various diseases of common interest with the purpose of unifying sanitary rules.

2. To request IICA to collaborate with the countries of the Southern Zone, at their request, in the updating of sanitary rules included in their respective legislation, with emphasis on

on those aspects related to the commercialization of animals and their products and by-products.

3. To recommend the creation of a sub-committee with representatives from the countries of the Southern Zone, to elaborate the rules and requirements of interest for the importation of semen and embryos and that the report be submitted to RESASUR 2. To request IICA to collaborate in that sense as well as to carry out corresponding coordination.

RESOLUTION 6

SEEING,

That the virus of bovine leukosis is easily and rapidly spread among cattle and knowing the negative economic impact of this virus upon the international exchange of living animals and bovine semen and the probable affect of this virus on the productivity and fertility of infected animals, and

CONSIDERING,

That is is necessary to have a better knowledge on the prevalence of infection and of the disease in cattle within the countries which form the Southern Zone of IICA,

RESASUR 1 RESOLVES:

1. To recommend the member countries to intensify the knowledge on the presence of enzootic bovine leukosis virus in cattle by means of a seroepidemiologic study.

2. To request information by means of IICA on the techniques for the diagnosis of infection by bovine leukosis virus and to

unify the corresponding sanitary requirements for the exportation and importation of living cattle and bovine semen.

3. To request IICA to study the way by which the countries of this zone could have a reference laboratory for the diagnosis of infection by bovine leukosis virus.

RESOLUTION 7

SUBMITTED BY PARAGUAY

SEEING,

The offer made by the Government of the Argentine Republic during the Second Inter-American Meeting of Directors of Animal Health, held in the month of September, 1980, in Costa Rica, to be the seat of the First Meeting of Directors of Animal health of the Southern Zone IICA (RESASUR 1) and of the Third Inter-American meeting of Directors of Animal Health (REDISA 3) to be held in August in the city of Buenos Aires, and

CONSIDERING,

The importance and significance of the subjects discussed by the Directors of Animal health during RESASUR 1,

RESASUR 1 RESOLVES:

1. To thank the Government of the Argentine Republic for having offered their country as the seat of the First Meeting of Directors of Animal health of the Southern Zone of IICA

(RESASUR 1) and of the Inter-American Meeting of Directors of Animal Health (REDISA 3) to be held in Buenos Aires during next August.

2. To congratulate the Inter-American Institute for Co-operation in Agriculture for the success obtained in this First Meeting of Directors of Animal Health of the Southern Zone.



INTER-AMERICAN INSTITUTE FOR COOPERATION ON AGRICULTURE

III INTERAMERICAN MEETING OF DIRECTORS OF ANIMAL HEALTH
Buenos Aires, Argentina, August 5-8, 1981

REDISA III/14
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REPORTS OF THE REGIONAL MEETINGS ON ANIMAL HEALTH

MEETING ON ANIMAL HEALTH OFFICIALS OF THE

ANDEAN ZONE

RESANDINA I

FINAL REPORT

MEETING OF DIRECTORS OF ANIMAL
HEALTH OF THE ANDEAN AREA

RESANDINA I

FINAL REPORT

The first Meeting of Directors of Animal Health of the Andean Area (RESANDINA I) was held in Bogotá (Colombia) in the offices of the Empresa Colombiana de Productos Veterinarios, S.A. (VECOL) on May 5 through 8, 1981, under the auspices of the Inter-American Institute for Cooperation on Agriculture, through its Program on Animal Health in the Andean Area, jointly with the Ministry of Agriculture of Colombia and VECOL.

Election of Officers:

Nominated by the Delegate of Ecuador and seconded by the Directors of Animal Health of Bolivia and Peru, Dr. Gustavo Manrique, Director of Animal Health of Colombia, was elected Chairman.

Dr. Italo Rivas, Chief of Health Campaigns of Ecuador, was named rapporteur. Dr. Manrique thanked all the delegates for having elected him, and said that he regarded his nomination as showing special honor to his country.

The meeting was addressed by Dr. José Ferrer, on behalf of the Director General of Animal Health of IICA: Dr. Frank Mulhern, who had been delayed in Haiti where he was signing an agreement on the eradication of swine fever in that country.

He said that the meeting was very important because it would examine the compliance with the resolutions of REDISA II and discuss the control of the health problems affecting livestock development in every country of the Andean Area.

The meeting was then addressed by Dr. Juan Pablo Torrealba, Regional Director of IICA in Colombia.

He began by saying that he was most pleased to be a joint sponsor with the Colombian Ministry of Agriculture of the First Meeting of Directors of Animal Health of the Andean group. He said that 1980 was the beginning of IICA's program in the area of Animal Health, which had been started in compliance with a resolution from IICA's Executive Board, and as a result of serious health problems being observed in the area of Animal Health. In joint effort with other international agencies, national or regional campaigns were being planned to control the most common diseases affecting livestock in Latin America and the subregion. The program will deal specifically with health problems and programs will be drawn up to control and/or eradicate them.

Lastly, Dr. Carlos Ossa, Deputy Minister of Agriculture, spoke on behalf of the Government of Colombia, to inaugurate the First Meeting of Directors of Animal health. He said that the Government of Colombia looked with satisfaction at

at this first meeting that was being held under the auspices of IICA. He was pleased to see that a number of actions had been taken to meet specific goals in the fight to control animal diseases, with a view to obtaining more and better food for the people. The countries currently had a large capital in the form of trained personnel and infrastructure with which to carry out this work. One example might be the production of foot-and-mouth disease vaccines, which had enabled the incidence of the disease to be reduced to sporadic levels because of the greater availability of these vaccines; vaccines were currently being prepared against bovine rabies, equine encephalitis, and other diseases, in an effort to strengthen other campaigns and thus be able to help other countries in the Andean Group and Latin America as a whole.

Renewed faith was needed if the proposed goals were to be achieved. He welcomed the Directors of Animal Health and the participants in the meeting.

Dr. Germán Gómez, Animal Health Expert at IICA (Andean Region), presented to the participants for consideration the report on implementation of the recommendations from the Second Inter-American Meeting of Directors of Animal Health of the Americas (REDISA II). Discussion of the report ensued

and a number of recommendations were made regarding its implementation.

He then went on to present the report on the development of the IICA Animal Health Program in the Andean Region. He said that projects were under way with countries of the sub-region to which the governments had given priority. In Bolivia, there were projects on the control of bovine rabies and bovine leucosis; in Ecuador, IICA is collaborating in projects on anaplasmosis, babesiosis and tick control in addition to the control of hog cholera and the prevention of African Swine fever.

Dr. Pedro Acha then took the floor to comment on the report given by Dr. Germán Gómez.

The Directors of Animal Health of the Countries then presented the following reports on the zoosanitary situation:

REPORT OF BOLIVIA - (Fernando Ruiz García)

Brucellosis Research is being done on the geographical distribution; the at-risk bovine population is 100,000, and the disease is endemic in nature.

Tuberculosis Regional distribution, with an at-risk population of 5,000 bovines.

Bovine rabies Localized regional distribution in Santa Cruz, Beni and El Chaco, endemic in nature,

RESANDINA I

FINAL REPORT

and with an at-risk bovine population of 150,000.

Hog cholera

Sporadic national distribution, with an at-risk population of 1,5000, hogs.

Hematozoa

(Anaplasma and babesia) Regional and endemic in nature with 2,000,000 animals at risk.

Ticks

National distribution, endemic in nature, and with an at-risk population of 3,500,000.

Control of ports and airports

There are airports in La Paz and Santa Cruz, with a veterinary doctor and a paramedic in each. Hams are products that are frequently confiscated.

REPORT OF COLOMBIA. (Gustavo Manrique)

Brucellosis

Campaign has national coverage with an at-risk population of 12,996,918 bovines. The disease is endemic in nature, with an average rate of infection of 4.41%. Economic losses amount to 1,200,000 pesos.

Bovine tuberculosis

Total geographic distribution in the valley of Ubaté, and Chiquinquirá. Sampling showed an affected population of 840 bovines which were slaughtered at an estimated loss of 500,000,000 pesos.

Bovine rabies

National geographical distribution, with an

at risk population of 1,000,000 head, and endemic in nature; an annual death rate of 265 bovines, at an approximate cost of 320,000,000 pesos.

Hog cholera

Nationally distributed, endemic in nature, putting the country's entire hog population at risk.

Hematozoa

(Anaplasma and babesia) National distribution in warm and temperate zones, endemic in nature and with an at-risk population of 20,000,000 animals, a 10% death rate, and a loss of 180,000,000 pesos in the Bogotá savannah.

Ticks

Parasites with endemic characteristics, with an at-risk population of 15,000,000 and economic losses of 6,649,000,000 pesos.

Control of ports, airports and borders. The airports of El

Dorado, in Bogotá; El Crespo, in Cartagena; Ernesto Cortizoz, in Barranquilla; Simón Bolívar in Santa Marta; Palma Seca in Cali, and Olaya Herrera in Medellín all employ professional veterinary doctors and technical assistants, with an 18-hour work schedule, including Saturdays and Sundays. Hams, sausages, cheeses and semen are confiscated. The airports in Cartagena, Barranquilla, Santa Marta, Buenaventura, the

border control post at Ipiales, the river port of Leticia and the border control post of Cúcuta, all have trained personnel.

REPORT OF ECUADOR. (Italo Rivas)

Brucellosis

National coverage, endemic in nature, with an at-risk population of 423,720 bovines.

Bovine tuberculosis

Reports are received only through inquiries of abattoirs which tell us of the presence of the disease.

Bovine rabies

Sporadic national distribution, with 1,998,972 animals at risk.

Hog cholera

National distribution, endemic in nature, with 1,140,127 hogs at risk.

Hematozoa

(Anaplasma and babesia). Geographically distributed in the tropical areas, endemic in nature, with an at-risk population of 1,788,917 bovines.

Bovine leukemia

Found sporadically in the area according to reported data, but without definitive laboratory confirmation.

Ticks

Found in tropical and subtropical areas, endemic in nature and with an at-risk population of 1,788,917.

Airports, ports and borders. The country has two international airports in Quito and Guayaquil, where there are veterinarians, agronomists and inspectors, who confiscate

sausages, hams, fresh meats, etc. At the maritime ports and the port of Boregen, there are veterinary doctors and health inspectors. At Rumnichaca, a port on the border with Colombia, and Huachicas, on the border with Peru, there are no personnel, and help is thus given by the Plant Safety Inspectors.

REPORT OF PERU . (Jose Castillo)

Brucellosis National distribution localized in specific areas, with an at-risk population of 700,000 animals. The disease also occurs in goats, causing problems of Malta fever in humans. It is believed to entail an annual loss of 120,000,000 soles.

Bovine tuberculosis National distribution, localized in specific areas, endemic in nature, with some 500,000 animals at risk, and an estimated loss of 150,000,000soles.

Bovine rabies National distribution according to climatic areas, endemic in nature, with one million animals at risk, and an estimated loss of 25,000,000soles.

Hog cholera National distribution, localized in specific areas, with 1,200,000 hogs at risk, endemic in nature.

- Hematozoa (Anaplasma and babesia). Endemic, regional location, with an estimated 200,000 soles in losses.
- Bovine Leukemia National geographical distribution, sporadic localization in specific areas and with 100,000 bovines at risk. Loss of one and a half million soles.
- Ticks Regional distribution according to climatic areas, with an at-risk population of 1,200,000, animals, endemic in nature, and with losses of 45,000,000 soles.

Control of ports, airports, and border areas. The José Chavez Airport of Lima and the Iquitos airport have a veterinary doctor and nine technicians. The ports of Callao, Matrami and the river port of Iquitos have one veterinary doctor and one technician. meat and especially pork products are confiscated.

The meeting held on Wednesday, May 6, at 9:00 a.m. heard a presentation by Dr. Miguel Osorno on advances in immunization against babesia and anaplasma. Dr. Osorno said that bovine babesiosis was transmitted both by vectors and by (hypodermic) needles, and by instruments used in castration, blood transfusions, etc. The incubation period for the disease was from one to two weeks, the symptomology being hemoglobinuric fever,

anemia, ictero-parasitemia, nervous symptoms prostration and death.

Existing vaccines are the attenuated vaccine by rapid passages and inactivation of infected blood; the premunition is done with infected blood, plus treatment.

Clinical, hematological and serological methods, including complement fixation and direct and indirect immunofluorescence, are used in the diagnosis.

Anaplasmosis. Its symptomology differs somewhat from babesiosis, because no intravascular hemolysis is present. The diagnosis is done with techniques similar to those used for the disease described above, such as complement fixation, plaque agglutination, capillary agglutination, etc.

Existing vaccines are the bovine blood alternated vaccines inactive blood and soluble antigen. The premunition is achieved with infected bovine blood plus treatment.

The floor was opened to discussion, and Drs. Betancourt, Carson, Rivas, Mateus, Manrique, Parra, Urbina, Lora, Cardona, Schoeder, Lombardo, Ferrer and Acha participated in the debate.

BIO-ECOLOGY OF TICKS

(Guillermo Mateus, Ph.D)

Ticks are the cause of large economic losses in Latin America; they are also vectors for various pathogenic agents. This suggests the need to set up control programs.

finding out about the species of ticks that exist in each country requires a systematic plan to collect and identify them covering the various ecological areas.

Ticks must be seen as components of an ecological system, and their activity is influenced by the presence of hosts, by the other components of the system, by the agents transmitted by them and by man himself.

According to existing data, the Boophilus micropulus is the tick that causes the greatest problems among cattle in Latin America.

Studies on ticks should include the life cycle, biology, ecology methods of control and problems inherent in control. Such studies should be done according to natural ecological areas.

The speaker felt that every country should immediately begin plans to control the Boophilus micropulus, and at the same time carry out applied research programs on ticks.

The following speaker was Dr. Andrew Carson, who spoke on the topic of "The Epidemiology of Babesia and Anaplasma"; he began by saying that bovine anaplasmosis is caused by Anaplasma Marginale , and babesiosis is caused by Babesia Bovis Bigemina. These are very significant diseases in the tropical and subtropical areas of latin America. The agents transmitted by Boophilus micropulus cause severe losses in meat cattle,

moving from free areas to endemic areas. The disease varies in form, from subclinical to severe and ends in death.

The diagnosis, control and treatment have been known since the beginning of the century. One method of vaccinating animals with chronic and subchronic infections liable to show clinical symptoms during the period of stress has been used to blood of a carrier animal to inoculate bovines (premunition). Cattle moved from areas free of anaplasma to endemic areas are severely affected after the move; the prevalence of serologically positive bovine cattle was shown in work done in Colombia, in percentages ranging from 62% in milk cattle in the Valle del Cauca to 93% in meat on the Caribbean coast.

The floor was opened for discussion, and Drs. Lombardo, Acha, Cardona and Shoeder spoke on the topic.

The following subject was then discussed by Dr. Antonio Betancourt: "Prospects for organization in Hemoparasite Control Campaigns in Colombia".

In Colombia, the known clinical infections caused by hemoparasites are Babesia Bovis, Babesia Bigemina, Anaplasma Marginale, Paraplasma Caudale, and Tripanosoma Vivax; these organisms are common in low-lying, warm areas in the country and to a lesser extent, in temperate areas. It is clear that

the most important part of hemoparasite control is the eradication of the vector tick, the predominant form of which in the country is the Boophilus micropulus, which represented more than 90% of the bovine tick specimens collected. The Colombian literature does not contain any true clinical test on methods or strategies for treatment of ticks; there have been only some tests contracted by commercial laboratories of the effectiveness of acaricide products.

Hemoparasite control began in 1968 when a team from the Institute of Tropical Medicine of Texas came to the country to work on purification and isolation of Babesia Bigemina, Babesia Bovis and Anaplasma Marginale. Considerable work has also been done on immunization against these parasites. He concluded by commenting on Tripanosomas Vivax, and provided information on the epidemiology of the disease caused by this parasite.

The floor was opened to discussion, and there were interventions by Drs. Carson, Castillo, Gómez, Pulido, Lozano, Niño, Manrique, Acha, Lombardo and Ferrer.

The concluding lecture was given by Dr. Víctor Shoeder, on the topic "Tick Control Campaigns; the Mexican Experience", who placed special emphasis on the following topics:

NATIONAL CAMPAIGN AGAINST TICK IN MEXICO

Background. Work began in Mexico during the second decade of this century on an effort that would culminate in a national official campaign. The National Tick Campaign Trust was formed in 1975, and in the same year, the loan agreement was signed with the Inter-American Development Bank (IDB).

Infrastructure. The supporting infrastructure for the campaign up till 1980 was as follows:

- Personnel: 3,369 and 279 offices.
- Transportation: vehicles, 2,516, boats, 33, aeroplanes 55
- Radiocomunications system: 315 fixed stations and 515 mobile stations, for a total of 830.
- Immersion baths: 31,155
- Line baths: 122
- Quarantine stations: 50

Activities. The work done from 1975 to the present shows us the program has been accepted by the users (the cattlemen) and the tangible results we have achieved. 192,000 farms are currently being served, i.e., more than 85% of the total. It is not only the campaign activities that are dealt with, but assistance is also given to other livestock programs.

At the meeting held at 9:00 a.m. on Thursday, May 7, Dr. José Ferrer of IICA presented the topic: "Considerations on

setting up a Hog Cholera Control and Eradication Program."

Hog Cholera is a disease that is causing large losses in Latin America, where 80% of hog farming is done in the rural sector.

The symptom of hog cholera are similar to those caused by African swine fever, which makes clinical diagnosis very difficult. The symptomatology of the disease is characterized by fever, lack of coordination of movement, exhaustion of the animals, with septicemia and rapid death. Hog cholera was eradicated in many countries, including the United States, The United Kingdom and Canada. The diagnosis is by immunofluorescence. The incidence can be reduced by vaccination in such measure that it becomes possible to proceed to the eradication stage. Chinese strain vaccine is used with good results in many countries. There must also be an adequate infrastructure and sufficient economic resources; it is essential to have cooperation between countries and to draw up an operational manual describing the steps to be followed in a program, as such a document serves as an aide-memoire for controlling the work and activities.

It is also essential to create a committee against the disease in every country. A discussion ensued, with intervention by Drs. Parra, Olga Mariño and Lora.

Dr. Frank Mulhern then addressed the topic of the "United States Experience with Eradication of Hog Cholera." He said that eradication and control projects cannot be drawn without having diagnosed the current situation and without being aware of the technical and financial resources needed for such project. He then went on to share his experiences during his professional career and to describe the work that had been done in the United States to eradicate vassicular exanthema, Venezuelan equine encephalitis, hog cholera, etc., and the eradication of foot-and-mouth disease in Mexico. He said that if problems arose, research and studies had to be done to overcome them; in the specific case of hog cholera, it was essential first to have a great deal of solid information in order to undertake an eradication campaign, and it was important to know the type and quality of vaccine that should be used. The problem of hog cholera had existed in the United States since 1910, and pork producers had become accustomed to living with the disease and not thinking that it might be eradicated. That was basically the question that had to be asked when the knowledge had being obtained that would permit the disease to be eradicated. The eradication program had been initially started on a population of 50 million hogs; virulent vaccines were eliminated, and intensive vaccinations were done over a predetermined

period, followed by epidemiological surveillance. He described the three steps in the eradication of hog cholera in the United States:

1. Panic among the owners of the animals because they were unaware of the scope of the campaign and whether it would be successful.
2. Cooperation by the farmer, who gave his total support to understanding the problems and to the future success of the eradication program.
3. Apathy, since the time when the disease has become only sporadic is a very critical one, in that potential outbreaks have to be monitored, which means using more resources and maintaining constant epidemiological surveillance. The success achieved showed that it was possible to eradicate a disease rather than live with it. This was confirmed by the cost-benefit of eradication hog cholera in the United States: **50** million dollar was spent every year on vaccines, and a large amount has been saved over the years that the U.S. has been free of the disease.

DISCUSSION

Intervention by Drs. Manrique, Lora and Rivas.

ROUNDTABLE. The final activity was a Roundtable entitled "Practical Solution for Cooperation between Research and Animal Health Campaigns". Statements were made by the Directors of Animal health of the Andean Group, on their representatives, with the exception of Venezuela, and by the Directors of the veterinary research institutes of Peru and Colombia, in addition to animal health experts from the international observer agencies. The moderator was Dr. César Lobo, of Colombia, and the Director of Animal Health of IICA, Dr. Frank Mulhern, was also present. Dr. Lobo opened the discussions, saying that a fundamental point in the proper organization of health campaigns was organizing research so that it could work effectively and in coordinated fashion with entities involved in health campaigns and animal production activities. Our countries had great difficulty and limitations in developing research schemes, but he felt that it was possible to make an effort to control disease. It was necessary for the research approach to have an epidemiological methodology, and professional ought to be more active in field work, taking maximum advantage of available human resources both as regards laboratory research and field work; programming links between the research institutes and the campaign staff were essential,

both as regards training and as regards diagnosis on animal health. Dr. Pedro Acha said that he was very much in agreement with that Dr. Lobo had said, and it was important to place emphasis on the diagnostic and field work training programs, which should involve training in the administration of campaigns, planning and epidemiological research. He said that a proposed training program, which would be explained by Dr. Roberto Bobenrieth, Consultant from PAHO, ought to be given every encouragement and backing.

Dr. Bobenrieth briefly explained the training program for Latin America, which had financing of \$3,565,000, including a nonreimbursable contribution from the IDB of 2.3 millions.

CLOSING SESSION

1. Reading and adoption of the Final Report.
2. Reading and adoption of resolutions.
3. Remarks by Dr. Juan Pablo Torrealba, Director of IICA in Colombia.
4. Remarks by Dr. Frank Mulhern, IICA Director of Animal Health.
5. Remarks by Dr. Gustavo Manrique, Director of Animal Health of Colombia and President of the Meeting.
6. Remarks by the Representative of the Minister of Agriculture, Dr. Raúl Londoño, General Manager of the Empresa Colombiana de Productos Veterinarios, S.A. (VECOL).

The Final Report was read, and adopted with a few minor corrections suggested by Dr. Víctor Shoeder in this statement.

Dr. Juan Pablo Torrealba spoke of the pleasure that IICA felt over the presence at the meeting of the Directors of Animal Health, and particularly, its satisfaction with the quality of the adopted resolutions. He noted the progress that had been made in the Andean Area, and the rapid technical development achieved in animal health; he said it was essential that they be applied to solving the countries' problems. In conclusion, and on behalf of IICA, he thanked the countries for attending.

Dr. Frank Mulhern, Director of Animal Health of IICA, thanked the Government of Colombia and VECOL for their cooperation in organizing the first RESANDINA. He spoke of the purposes of the Program, and some of its achievements in countries such as Brazil, Argentina, Mexico, Haiti and in Central America. It was his hope that the countries of the area would gradually join specific projects to control animal diseases and to improve animal production. He said that the Animal Health Program was anxious to cooperate with all the countries, and appealed for a build-up of the veterinary services in the countries, so that they could be in a position to take action to benefit the animal health programs.

On behalf of the Minister of Agriculture, Dr. Luis Fernando Londoño thanked the countries for having attended the meeting, and he expressed Colombia's determination to push forward its animal health programs in a comprehensive way, both as regards

research and the production and control of biologicals, and the health campaigns that would help reduce the incidence of disease. He also would like to see IICA become an international organization of the inter-American system in order to provide leadership in activities on animal disease control. He emphasized that IICA should not only provide support, but should also participate in campaigns against bovine rabies, brucellosis, tuberculosis, etc., that were decimating the herds of Latin America. In conclusion, he spoke of the Minister's wish that the resolutions adopted at this meeting be reviewed with great care by the Ministry of Agriculture to give them the support needed in order to meet the objectives set forth by such a select group of international experts. He then closed the Meeting on behalf of the Minister of Agriculture.

REDISA III/

RESANDINA 1

RESOLUTIONS AND RECOMMENDATIONS



BOVINE RABIES CONTROL PROGRAMS

RESOLUTION N° 1

Bearing in mind that bovine parasitic rabies is present in all the countries of the Andean Region, and realizing the negative economic impact that this disease has on livestock and,

CONSIDERING: that if this disease is to be controlled, it is necessary to understand more about its prevalence and the scientific advances that have been made,

RESOLVES:

1. To recommend to the countries of the Andean Area that they review existing epidemiological information to establish specific projects to control this disease.
2. To recommend to IICA that it include consideration of bovine rabies in the agenda for the meeting of REDISA III.

DEVELOPMENT OF PROGRAMS TO CONTROL BOVINE TICKS AND THE
PRINCIPAL DISEASES THEY TRANSMIT

RESOLUTION Nº 2

CONSIDERING: That the member countries of the Andean Subregional Pact have shown great interest in programs to control ticks and the diseases transmitted by them, as a result of the economic losses they cause, and bearing in mind that there are not many international agencies that are cooperating with the affected countries in this issue,

RESOLVES :

To request the IICA Animal Health Program to give top priority in its cooperation projects to setting up campaigns to control ticks, anaplasmosis and babesiosis.

NEED TO COORDINATE HOG CHOLERA CONTROL
AND/OR ERADICATION PROGRAMS

RESOLUTION N° 3

HAVING SEEN the importance for the Andean Region of joining efforts to control hog cholera;

CONSIDERING: that the countries of the area have begun their control work independently, and

CONSIDERING: that it is of the highest interest to develop a joint hog cholera control program in the Andean Area, in order to eradicate the problem and contribute to early diagnosis of African Swine Fever,

RESOLVES:

1. That IICA shall do coordination work in order to concentrate efforts in a single common project.
2. To request IICA to cooperate with the countries of the Andean Area in preparing a subregional project on the control of hog cholera.

EXCHANGE OF INFORMATION ON BREAKTHROUGHS MADE IN
THE ANDEAN AREA THAT WOULD BE USEFUL FOR CONTROL PROGRAMS

RESOLUTION N^o 4

The Directors of Animal Health of the Andean Area (RESANDINA I), meeting in Bogotá, feeling the need to establish more up-to-date communications on progress in research to help improve control programs, and feeling the need to establish a permanent mechanism to keep the countries of the area informed,

RESOLVE:

To request IICA to remain in constant communication with the countries of the Andean Area on progress and breakthroughs in research on tick being done in the various countries working on this topic.

ESSENTIAL COOPERATION BETWEEN THE SECTORS
RESPONSIBLE FOR CONTROL PROGRAMS AND FOR
RESEARCH REQUIRED TO IMPROVE THEM

RESOLUTION N^o 5

Integration of the Animal Health Research Institutions
with the Health Campaigns.

At the First Meeting of Directors of Animal Health of
the countries of the Andean Region (RESANDINA I), the Direc-
tors of Animal Health of Bolivia, Colombia, Ecuador and Peru,
meeting in Bogotá, resolved:

1. To review a practical system for integration between
research and animal health campaigns.

CONSIDERING: that research is a fundamental component
in any animal disease control and eradication campaign;

CONSIDERING: that the various countries of the area
have research infrastructures that could be used to generate
basic information required by the campaigns;

CONSIDERING: that part of the necessary information
has been produced by the different countries, and

CONSIDERING: that the infrastructure and information
available in a particular country of the area might be used
to the common benefit of all the countries of the subregion,

RESOLVES:

1. That the IICA Animal Health Program shall draw up an inventory as soon as possible of the availability of physical, human and financial resources and of the information existing in the Animal Health Research Centers in the countries of the Subregion, in order to determine the capacity for using these resources as reference and training centers for the Andean Area.
2. That the IICA Animal Health Program shall cooperate with the countries on applications for financial resources that they wish to present to the agencies in order to carry out specific research programs in support of the Animal Health Control Programs in the countries of the Andean Region.

RESOLUTION N° 6

CONTRIBUTIONS BY THE MINISTRIES OF AGRICULTURE OF THE
AMERICAS TO TECHNICAL ASSISTANCE ON ANIMAL HEALTH

The Directors of Animal Health of Bolivia, Colombia, Ecuador and Perú, meeting in Bogotá at the First Meeting of Directors of the countries of the Andean Region of IICA (RESANDINA I), decided to hold special discussions on the contributions that the countries make to agencies of the inter-American system for technical cooperation on animal health.

Bearing in mind that over the last three years, the animal health programs have experienced budget reductions, when they should be strengthened, and expanded to other diseases that need priority attention because they are causing serious economic and social damage to the Americas, and,

CONSIDERING: that in order to do so, it is necessary to expand the technical cooperation that the agencies of the inter-American system provide to the countries operating in this field;

The technical assistance activities must be coordinated at the highest level in order to avoid duplication and prevent the countries' contributions from being spread too thin,

which would prevent the necessary priorities from being looked at and would work against effective use of those contributions;

That this point has been raised at various recent hemispheric meetings (COSALFA VIII, RIMSA II) and was discussed at the VIII Meeting of Ministers of Agriculture of the Americas held in April 1981 in Santiago, Chile;

That there is general agreement on the need to step up the contributions from the Ministries of Agriculture to support the technical assistance needed by the countries. That it is essential to establish a permanent, institutionalized mechanism, at the level of the Ministries of Agriculture, to examine and determine the allocation and priorities in the use of those funds for technical assistance, and;

We are convinced that in order to make for better administration of those funds, it would be advisable to establish once and for all that the Inter-American Board of Agriculture shall be responsible for coordination with the international agencies providing technical assistance on animal health.

RESOLVE:

1. To state that it is necessary for the contributions that the countries make to international agencies delivering technical assistance on animal health to be analyzed and

evaluated globally by the Ministries of Agriculture, in order to determine priorities for their use.

2. To state that it is felt advisable to establish that the Inter-American Board of Agriculture of the Hemisphere, composed of the Ministers of Agriculture, shall discuss and decide on the funds to be allocated to the technical cooperation programs on animal health in the various international and regional agencies of the inter-American system.
3. To request each of the representatives of the countries attending this meeting (RESANDINA I) to report to his Minister of Agriculture on the need to establish and adequate mechanism for the administrative work described above. That it is also suggested that the Ministers of Agriculture ask that the agenda for the next meeting of the Executive Committee of IICA to be held next June include this topic, and that after study, the issue be part of the definitive agenda for the First Meeting of the Inter-American Board of Agriculture which will be held on August 10-13 of this year in Buenos Aires.

APPRECIATION AND THANKS

RESOLUTION N° 7

HAVING SEEN: the offer by the Government of Colombia to host the First Meeting of Directors of Animal Health of the Andean Region of IICA, and

CONSIDERING: the importance and significance of the topics discussed by the Directors of Animal Health of the Andean Region (RESANDINA I),

RESOLVES:

1. To thank the Government of Colombia for having offered to host the First Meeting of Directors of Animal Health of the Andean Region of IICA (RESANDINA I).
2. To congratulate the Inter-American Institute for Cooperation on Agriculture on the success achieved at this First Meeting of Directors of Animal Health of the Andean Region.



INTER-AMERICAN INSTITUTE FOR COOPERATION ON AGRICULTURE

III INTERAMERICAN MEETING OF DIRECTORS OF ANIMAL HEALTH
Buenos Aires, Argentina, August 5-8, 1981

REDISA III/15
July 31, 1981
Original: English

REPORTS OF THE REGIONAL MEETINGS ON ANIMAL HEALTH
MEETING OF ANIMAL HEALTH OFFICIALS OF THE ANTILLES ZONE

RESANTILLAS I

FINAL REPORT

FIRST REGIONAL MEETING OF DIRECTORS OF ANIMAL HEALTH
HELD AT MINISTRY OF AGRICULTURE, FOOD AND CONSUMER
AFFAIRS, GRAEME HALL, CHRIST CHURCH, BARBADOS
APRIL 27 TO MAY 1, 1981

FINAL REPORT

Dr. Trevor King, delegate of Barbados and Chairman of the proceedings opened the meeting by welcoming delegates and invitees. He pointed out that this was the first of the meetings of the Directors of Animal Health of the Antillean Zone, sponsored by IICA and was a follow-up of recommendations of the annual meeting of the REDISA II. He invited Dr. H. Barreyro, Director of IICA Office in Barbados, to address the meeting.

Dr. Barreyro welcomed all and in his address emphasized the value of the subjects on the agenda.

The staff of the Ministry of Agriculture present including the Parliamentary Secretary and Permanent Secretary, was introduced.

The Honourable Lloyd B. Braithwaite, Minister of Agriculture, Food and Consumer Affairs in his address highlighted IICA's interest in animal diseases and noted that the countries of the Caribbean and Latin America had a great potential for the expansion of livestock production. He

called attention to a report by FAO which stated that animal disease was the main constraint to livestock production. He felt confident that the problems will be resolved.

He referred to training in the Zone and called attention to the PEPAHA Centre in Guyana and the proposed Veterinary School to be erected in Trinidad and Tobago. He also alluded to the draft legislation on Animal movement and diseases and declared that Barbados supported these efforts. From a Barbados point of view he was concerned about the proper establishment of the broiler breeding project and improved animal health services. He then wished that the proceedings would be successful.

Dr. Franz Alexander made the following announcements after the coffee break.

- (i) Haiti will not be represented at the meeting hence there will be no presentation of that country's report.
- (ii) The Grenadian delegate had perhaps had some difficulties at his airport due to flooding hence he would be delayed.
- (iii) The Jamaican delegate was delayed in Miami because of airline connections.

With the alteration of making Dr. Liew-a-Joe Chairman on April 28, after lunch session, the agenda was adopted.

The Chairman introduced Dr. F. Mulhern-Director of Animal Health, IICA. Dr. Mulhern said that the meeting was evidence of the IICA approach which was to come to the Directors of Animal Health and find out what diseases, nationally and regionally, needed attention. He emphasized the need to have a hemispheric perspective so that firm recommendations could be placed before the annual meeting of the Animal Health Directors of all zones (REDISA) which will meet in August, 1981 in Argentina.

He alluded to the achievements in areas of the Animal Health Programme for the Antillean Zone and pointed specifically to:

- (i) Assessment of the capabilities of the Laboratories
- (ii) Training in screwworm control
- (iii) Animal Health Reporting system
- (iv) Attempts of studies in epidemiology using Universities in the zones
- (v) Introduction of African Swine Fever Project in Haiti

He spoke on the need for the coordination of two different bodies speaking for animal health in order to prevent duplication on their activities in the animal health programmes.

He emphasized the need to include cost benefits for animal health programmes so that full support for funding can be elicited.

Finally, he hoped that priorities will be placed on the recommendations that were likely to be submitted for IICA's attention.

The Chairman, Dr. T. King, thanked Dr. Mulhern and pointed to the lack of the availability of antigens and its effect on the animal health programmes. The question of potential duplication between PAHO/WHO and IICA was raised and clarified.

Dr. F. Alexander then delivered his report on "Review of Antilles Zone Activities for 1981". The Report was well received and later the assistance in the Seminar on Bovine Reproduction in Guyana was added to the list of achievements. Country reports were delivered by Dr. Pena de la Cruz - Dominican Republic; Dr. P. McKenzie - Guyana; Dr. T. King - Barbados; Dr. Robert Lieuw-a-Joe - Suriname; Dr. E. Caesar - Trinidad and Tobago. Several questions which emanated from these reports were adequately clarified while several suggestions to assist both technically and administratively were noted.

Paul Gibbs, Associate Professor of Virology, University of Florida, presented his paper on Blue Tongue. An excellent document was prepared by the Division of Tropical Animal Health - College of Veterinary Medicine Unit of Florida for the meeting dealing with:

- A. Blue Tongue - its relevance to the Caribbean Region
- B. Potential Blue Tongue vectors in the Caribbean Region
- C. Prevalence survey for Blue Tongue virus infection in domestic livestock in the Caribbean Region

D. Proposal for a training programme for investigation of the epidemiology of Blue Tongue in the Caribbean Region

His presentation was highlighted by slides which carried all aspects of the disease, including history, distribution, the causative agent, clinical disease, vectors, diagnosis, epidemiology, control measures, unresolved problems and future trends.

Lively discussions ensued with particular relevance to the status of Blue Tongue in the region, the serological work that had been done and the importance of the infection in relation to movement of animals.

The availability of antigen was revealed as a problem with the desire to continue work in Barbados to identify the vector and to isolate the virus. The distribution of *Culicoides insignis* suggested this species as a possible vector but several *Culicoides* fauna of the Greater Antilles existed. The difficulties associated with virus isolated were discussed. A sub-committee was formed to discuss and draft recommendations for the consideration of the meeting.

Dr. Paul Gibbs kindly presented a brief synopsis of African Swine Fever and outlined how this disease might affect Florida were it introduced. The Division of Tropical Animal Health's work included the search for a possible soft tick or other vector associated with Feral Pigs in Florida.

The susceptibility of the large population of feral pigs to African Swine Fever virus was shown.

The Emergency Animal Disease Eradication Manual for the Caribbean with emphasis on Foot and Mouth Disease was presented by Dr. Pat McKenzie. This manual had been sponsored by the Pan American Health Organization and prepared by the work group, comprised of Dr. McKenzie - Guyana, Dr. Balmore Silve - Belize, Dr. Glenister Boothe - Jamaica, Dr. Vincent Moe - Trinidad and Tobago and IICA's Veterinarian for the Antilles Zone, with the help of the PANAFTOSA Centre, Rio de Janeiro, Brazil.

It was pointed out that the manual was a relevant composite of available eradication procedures but in relation to Foot and Mouth Disease it gave the added option of vaccination if slaughter was not a possibility. He encouraged the Directors of Animal Health to adopt the recommendations and set in place the requirements for emergency action. It was important for all countries to test their effectiveness with simulation exercises with assistance from international organizations if deemed necessary.

The particular problem associated with difficulty in obtaining flights for sending samples to the PANAFTOSA Centre in Rio de Janeiro, was emphasized.

It was pointed out that the best method was by courier, and the Centre had identified a safe container with special labels for transshipment. Experience had shown that samples

should not be sent through the post and perhaps the best container might be a sealed can. IICA was directed to obtain containers for the countries and to approach USDA's PIADC for permission to send samples there for diagnosis in emergencies.

The Directors of Animal Health were urged to identify their own channels of communication and make prior arrangements for the shipment of samples. IICA was requested to assist by providing a Directory of Directors of Animal Health.

Country Report

The opportunity was taken to receive the country report from Jamaica.

Veterinary School

Dr. Caesar outlined the advancements made with respect to the Veterinary School as part of the Mount Hope Complex in Trinidad and Tobago. Arrangements had been signed with a French industrial firm to begin construction of the building. The physical plans of the school were highlighted. Everyone was pleased and exhorted support for the success of establishing the Veterinary School.

Legislation

Regrettably Mr. Hayden Blades, CARICOM, was unable to be present as planned due to change in scheduled flights from St. Vincent. The background to development of the

programme was outlined and support sought for its implementation. It was pointed out that the Ministers of Agriculture had agreed in principle to the legislation and some countries had even progressed to the stage where laws would be enacted.

It was drawn to the attention of the meeting that an omission existed in relation to animals especially horses coming in from non-scheduled countries. This had been previously pointed out by the Technical Officer, Ministry of Agriculture, Trinidad and Tobago. The Directors of Animal Health recommended that the legislation be further studied and suggestions for further amendment could be brought to the attention of CARICOM.

Reporting System

The Monthly Reporting format was discussed. It was agreed that no serious constraint existed with regard to the format and the Directors of Animal Health would make every effort to supply the information available to them and amendments could be suggested from time to time. The reports for the months of January and February had so far been received from the Dominican Republic only. The delegate from the Dominican Republic stated that they would continue their support and recommended that the other countries do likewise.

The delegate from Trinidad and Tobago reported that a more detailed reporting format was in use in his country and it was agreed that this report will be submitted instead.

The next two days were spent on a Seminar on Project Identification and Design delivered by Dr. Hector Barreyro, Irwin Telfer and Victor Ojeda of the IICA Office in Barbados. The workshop received an excellent manual on the poultry industry of Barbados and its Potential for Growth by E.St.C. Haynes and E.L. Beckles. Dr. King presented a report on the Animal Health Services to the industry and these documents provided the material for development of a project in support of the Industry. It was recommended that the resulting details of the developed Project Profile should be compiled by IICA and distributed to the various countries for valuable reference. Certificates were presented by the Honourable L.B. Braithwaite, Minister of Agriculture, Food and Consumer Affairs, to the following participants.

Trevor King	-	Barbados
Stephen St. John	-	Barbados
R. Peña de la Cruz	-	Dominican Republic
Patrick McKenzie	-	Guyana
Clifford Grey	-	Jamaica
R. Lieuw-a-Joe	-	Suriname
Ernest Caesar	-	Trinidad and Tobago
John Howell	-	PAHO consultant, Barbados
Frank Mulhern	-	IICA
Franz Alexander	-	IICA

Dr. Frank Mulhern, on behalf of IICA and the Directors of Animal Health, expressed his gratitude to the Minister and the Government of Barbados for the warmth of their welcome and in particular the Minister's personal and earnest support that had marked this successful meeting.

Dr. Mulhern took the opportunity to give background information on the mechanism for funding of Animal Health programmes by the Ministers of Agriculture and especially for the two centres PANAFTOSA in Rio de Janeiro and CEPANZO in Buenos Aires. He outlined the difficulties of representation at different meetings of Ministers of Health and Agriculture resulting in insufficient interchange and support for budgetary proposals.

A recommendation was proposed to be put to the Inter-American Board of Agriculture that this Board may approve the budget for animal health programmes for PAHO and IICA.

He further emphasized that the programmes to be approved by the Inter-American Board would be those recommended by the Directors of Animal Health on behalf of their countries' needs. They were not the projects and proposals of the international institutions. These institutions were only necessary for technical assistance in developing projects and seeking funds for their implementation. IICA would be classified as an institution for action and not just one that held meetings.

Dr. Mulhern stated that a start had been made with Screwworm Control and emphasized the need to develop these projects. He recognized the limitations that existed within the region but pleaded with the Director of Animal Health to be optimistic in their search for solutions. He had been personally involved in animal disease eradication campaigns, and he listed eight of them in Mexico, Canada and the U.S.A. None had begun with other than negative attitudes by many people but animal health personnel had to find ways and means to resolve these problems.

At the present time the hemisphere cannot ignore the problem existing in Haiti with regard to African Swine Fever. Regrettably the motor boat syndrome was being voiced by several people, viz. The project can be accomplished but, but, but....

He implored the Directors of Animal Health to be concerned with the changes that must take place. They must design these changes, be responsible for them and be prepared to defend them.

He suggested that a resolution sub-committee should be formed within the zone to deal with major problems which would confront them.

He congratulated them on the success of their first meeting and urged them to work together for the benefit of all.

RESOLUTION N° 1

RECOMMENDATIONS ON DEVELOPING EXPERTISE DIAGNOSTIC

CAPABILITY FOR BLUE TONGUE

Having regard to the need of the various countries of the region to determine the incidence of Blue Tongue in cattle and sheep.

Bearing in mind that Barbados is already engaged in work in this area and that information obtained from further and in-depth studies, would be of benefit to other countries of the region.

RESOLVES

That IICA will assist in developing the capability of Barbados to undertake prevalence survey through the use of Agar Gel, Immuno-Diffusion and other tests for antibody to Blue Tongue virus in order that Barbados may have this capability for itself and to begin the study of epidemiology of the infection in the region.

RESOLUTION N^o 2

RECOMMENDATION ON DIAGNOSTIC REAGENTS,
ANTIGENS AND CONJUGATES

Aware that there are few commercially available serological reagents for use in Veterinary Diagnostic Laboratories.

Conscious that research scientists manufacture reagents in their laboratories for their own use.

Recognizing that most countries are in need of such reagents.

RESOLVES

That IICA investigate the needs of member countries for specific antisera, antigens and conjugates, with the view of finding agencies and institutions which are willing to produce such products and seek necessary funds to cover costs of production.

RESOLUTION N° 3

RECOMMENDATION ON EMERGENCY ANIMAL DISEASE

ERADICATION MANUAL FOR THE CARIBBEAN

Recognizing the urgency with which PAHO/WHO acted in executing the resolution 1 of the seminar on Foot and Mouth Disease Prevention, held in Guyana, May 12-16, 1980, and noting the work done by the team of Caribbean veterinarians with the support of IICA in the production of the emergency animal diseases eradication manual for the Caribbean with emphasis on Foot and Mouth Disease.

RESOLVES

To thank PAHO/WHO and staff of the Pan American Foot and Mouth Disease Centre.

To congratulate the team of Caribbean veterinarians and IICA for their efforts.

To recommend that each country undertake to implement, with some urgency, recommendations of that team contained in the manual.

To request each country to report on the status of that implementation at the Second Meeting of Directors of Animal Health of the Antilles Zone.

RESOLUTION N^o 4

RECOMMENDATION FOR MINISTERS OF AGRICULTURE

IN RELATION TO PRIORITY FUNDING FOR PROJECTS

SUPPORTED BY PAHO AND IICA

The Directors of Animal Health, Antilles Zone, mindful that the programmes of Animal Health need to be continued and priority attention paid to diseases of severe economic concern.

Considering that technical cooperation is required with the various organizations of the Inter-American System which act in this field.

Considering that the activities of technical assistance should be coordinated at the highest level in order to avoid duplications and to establish priorities.

Considering that this aspect has been endorsed at recent hemispheric meetings and mindful of the needs to establish permanent and institutional mechanisms at the level of Ministries of Agriculture, to analyse and determine the destination and priorities of the application of funds provided for the support of technical assistance in Animal Health.

RESOLUTION N° 4 (cont'd)

RESOLVES

To request consideration that the technical support in animal health given countries by international organizations be analysed and evaluated on a hemispheric basis by the Ministers of Agriculture in order to determine priorities for this application.

To request consideration for the Inter-American Board of Agriculture to resolve the allocation of animal health funds of the Pan American Health Organization and the Inter-American Institute for Cooperation on Agriculture.

To ask each Director of Animal Health to contact the Minister of Agriculture or his representative who will attend the meeting of the Executive Committee of IICA to be held in June, 1981, and the meeting of the Inter-American Board of Agriculture which will be held in August, 1981, in Buenos Aires, Argentina, to inform him of the need to have the Inter-American Board of Agriculture approve the budgets for the Animal Health Programmes of IICA and PAHO.

RESOLUTION N° 5

RECOMMENDATION FOR ASSISTANCE IN

PROJECT PREPARATION

Bearing in mind the need for countries of the Region to have programmes for effectively controlling diseases of animals and for the delivery of animal health service at the field and laboratory levels.

Mindful of the fact that such programmes have to be developed as projects in order to attract funding from various international agencies.

Conscious of the knowledge that expertise for the preparation of such projects in a form which will attract the necessary funding, does not reside in the area of animal health in the region.

RESOLVES

That IICA renders technical assistance in the preparation of such documents to Directors of Animal Health, upon request.

RESOLUTION N^o 6

RECOMMENDATION FOR ASSISTANCE IN IMPLEMENTATION

OF THE ANIMAL HEALTH PROGRAMME BY MINISTERS

OF AGRICULTURE

Bearing in mind that the Inter-American Institute for Cooperation on Agriculture has established a Regional and Hemispheric Programme for Animal Health at the request of the Ministries of Agriculture.

Considering that the Institute is concerned with the implementation of activities programmes and projects based on the recommendations of the Directors of Animal Health.

Mindful of the difficulties that obtain on occasion with communication within the region.

RESOLVES

To request consideration for a mechanism to be established by IICA and the Directors of Animal Health to gain the endorsement of these activities by the Ministers of Agriculture in order to facilitate their technical implementation.

RESOLUTION N^o 7

RECOMMENDATION TO EXPRESS THANKS TO THE

GOVERNMENT OF BARBADOS FOR HOSTING

THE SEMINAR

The Directors of Animal Health at the 1st Regional Meeting for Directors of Animal Health sponsored by IICA held in Barbados , April 27 - May 1, 1981.

Recognizing the warm welcome and hospitality of the host country during their stay.

RESOLVE

To express their deep feeling of thanks to the Government of Barbados through the Minister of Agriculture, Food and Consumer Affairs.

LIST OF PARTICIPANTS

Ministry of Agriculture, Food and Consumer Affairs, Barbados

Honourable L.B. Braithwaite - Minister
Mr. Leroy Sisnett - Parliamentary Secretary
Mr. L. Austin - Permanent Secretary
Mrs. Patricia Layne - Assistant Secretary
Dr. L.H. Smith - Chief Agricultural Officer
Mr. A. Braithwaite - Senior Assistant Secretary
Mr. L. Parris - Senior Assistant Secretary
Mr. J.P.W. Jeffers - Deputy Chief Ag. Officer -
Research
Mr. E. Payne - Deputy Chief Ag. Officer -
Ext./Dev.
Mr. C. Gooding - Chief Agricultural Economist
Dr. Vincent St. John - Veterinary Pathologist
Mrs. June Roach - Supervisor, Veterinary
Diagnostic Laboratory
Mr. Elletbert Haynes - Agricultural Economist -
Planning
Dr. Ridley Holder - Veterinary Officer

Dr. Reynaldo Peña de la Cruz
Director Of Animal Health
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Dr. Ernest Caesar
Senior Veterinary Officer
Ministry of Agriculture, St. Clair
Port-of-Spain, TRINIDAD AND TOBAGO

Dr. Heinemann - PAHO Barbados Office

Dr. John Howell - Consultant Poultry Pathology, PAHO

Professor Robert Ericson

Dr. A.W. Vaughn - Director of Veterinary Public Health,
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Dr. L.R. Hutson - Retired Veterinarian, Amberley Grane
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Mr. Victor Ojeda	- Agro-Economist	
Mr. Irwin Telfer	- Project Planning/CDB	
Miss Margarita Webster	- Secretary	

Dr. Paul Gibbs - IICA Consultant
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INTER-AMERICAN INSTITUTE FOR COOPERATION ON AGRICULTURE

III INTERAMERICAN MEETING OF DIRECTORS OF ANIMAL HEALTH
Buenos Aires, Argentina, August 5-8, 1981

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GENETIC ENGINEERING OF AN
FMD VACCINE

Dr. JERRY J. CALLIS



GENETIC ENGINEERING OF AN FMD VACCINE

J. J. Callis*

Genetic engineering, recombinant DNA or gene splicing, the taking of genetic material from one organism and putting it into another to create new life forms, is becoming common in the general field of molecular biology. The newly altered DNA can be inserted into bacteria or other microbes such as yeast and into animal cells propagated in tissue culture. These new or altered life forms can then be propagated to produce the products for which they have been engineered.

One of the most commonly used "factories" for production of these products is the bacterium E. coli, one of the most studied organism known to microbiologist. It is precisely this background of knowledge about the organism that allows it to be manipulated to the extent that a plasmid, a circular form of DNA in E. coli, can be removed from bacteria, cut by enzymes and altered through insertion of other pieces of genetic material from another organism. When the newly reconstructed plasmid is re-inserted into the bacterium, it produces the protein product for which it was coded. This technology has been used to produce several biological products, including human and bovine growth hormone, insulin, interferon and, now, FMD vaccine. In other words, nonbacterial genes are inserted into bacteria which produce nonbacterial

proteines which are then used as vaccines.

In the FMD technology, Bachrach, et.al., in 1975, succeeded in separating the four major proteins of FMDV (VP₁, VP₂, VP₃, and VP₄). One of the sub-units, VP₃, was shown to be noninfectious but capable of producing immunity in livestock. Production of the subunit vaccine from whole virus was not economical on a commercial scale. In recombinant DNA production methods, the bacteria, E. coli, strain K-12 is the host for producing the VP₃ polypeptide of foot-and-mouth disease virus. Plasmid, or small rings of DNA, are removed with enzymes from E. coli. The nucleic acid fragment that codes for VP₃ is separated from the other nuclear material of the virus and spliced into the E. coli plasmid and then the recombined plasmid re-inserted into the E. coli bacterium. The bio-engineered bacteria can then be propagated to produce the protein of FMD vaccine. The generation time of the E. coli approximates 20 minutes, and within 16-18 hours, the concentration is 10⁻¹² million protein molecules per cell. Similar cloning has been reported from Germany, but the production of protein was at lower level. Workers in England reported on the nucleotide sequence of a type of VP₃ protein, meaning that production of the protein is also possible by synthesis.

In the work at Plum Island, the protein was separated from the bacteria, and a vaccine was prepared from it as 50:50 oil-adjuvant aqueous emulsion. The vaccine contained 150

micrograms of VP₃. Six cattle and two swine were immunized using two doses of vaccine 28 days apart. The immunity of the animals was challenged 14 days after the last dose of vaccine. The serological results of the vaccinated animals averaged approximately 2.5, log of neutralizing antibody and the results of challenge of their immunity by contact exposure will be discusses.

*The work reported was conducted under terms of a cooperative agreement between the United States Department of Agriculture, Science and Education, Plum Island Animal Disease Center, Greenport, New York 11944, by Douglas M. Moore, Peter D. McKercher, Marvin Grubman, Betty H. Robertson, Donald O. Morgan, Howard L. Bachrach, and Genentech, Inc., South San Francisco, California 94080, by Dennis G. Kleid, Daniel Yansura, Barbara Small and Donald Dowbenko.

REFERENCE

H.L. Bachrach, D.M. Moore, P.D. McKercher, J. Polatnick, J. Immunology 115, 1636-1641 (1975).

RECOMBINANT DNA RESEARCH*

(The following background statement was prepared in the Regional Information Office, Northeastern Region, Science and Education Administration, Beltsville, Md. Much of the information was furnished by the Office of Research Reporting and Public Response, National Institute of Allergy and Infectious Diseases, National Institutes of Health, Bethesda, Md.)

1. WHAT IS RECOMBINANT DNA RESEARCH?

Recombinant DNA research involves the use of a technique which may enable scientists to unravel many fundamental questions about genes -- the basic units of heredity. Each gene is a specific segment in the larger DNA (deoxyribonucleic acid) molecule which is the genetic material, or blueprint, of all cells. Now scientists can break up and rejoin segments of DNA from very different organisms to form recombinant DNA molecules. This allows a gene or small series of genes from one organism to be incorporated into (recombined with) the DNA of another organism.

2. HOW IS IT CARRIED OUT?

One method of recombining DNA from different organism involves use of circular bits of DNA -- known as plasmids -- that are found in some bacteria. Scientists isolate a plasmid and, using special chemicals (restriction enzymes) cut the circular DNA to make it linear. Using these same enzymes, they then isolate a piece of DNA containing

* USDA, Science and Education Administration, Washington, D.C.
20250

a specific gene or genes from some other organism's DNA. They insert this second piece of DNA between the cut ends of the plasmid's DNA and fuse the recombined molecule together into a circle again. Copies of this new DNA molecule are produced when it is introduced into a bacterium -- usually Escherichia coli, strain K-12. The added piece of DNA will be reproduced as part of the plasmid through the cell's normal reproductive processes.

3. WHAT ARE "VECTORS" AND "HOSTS"?

In recombinant DNA technology, plasmid are known as vectors, since they are used to insert the new DNA molecule into the host (the bacterium) for propagation. Another vector which can be used in these experiments is bacteriophage DNA. The bacteriophages are viruses that grow only in specific bacteria so they are no danger to higher organisms.

4. WHY ARE SCIENTISTS INTERESTED IN DOING RECOMBINANT DNA RESEARCH?

Primarily, recombinant DNA research is conducted to acquire new basic scientific knowledge. This new technology also has considerable potential for practical application. For example, scientists know that by inserting proper genes into bacteria they can make the bacteria act as miniature factories that produce useful substances such as antibiotics, antibodies, hormones, and vaccines. There have been some successes. For example, University of California scientists isolated the gene that produces insulin in rats and mass-produced a copy

of the gene in E. coli K-12. In other research, scientists have successfully induced the production of somatostatin--a brain hormone--in bacterial cells. A chemically synthesized gene-- inserted into the genetic make-up of E. coli--was used to produce synthetic somatostatin that had the same properties as natural somatostatin isolated from animals. Scientists from the University of California and Genentech, Inc., were involved in the somatostatin research.

5. ARE THERE RISKS ASSOCIATED WITH RECOMBINANT DNA RESEARCH?

There has been much discussion about the possible risks involved in conducting recombinant DNA research.

Some scientists have been concerned with the possibility that inserting foreign genes into harmless microorganisms might make them capable of producing disease, if they should be introduced into the environment. However, most scientists closest to the problem believe the chance of these events happening is extremely small. Types of E. coli used in these experiments -- in particular E. coli K-12 --are strains weakened in ways that virtually eliminate their ability to survive outside the laboratory.

6. WHO IS RESPONSIBLE FOR ESTABLISHING GUIDELINES FOR THIS TYPE OF RESEARCH?

The National Institutes of Health (NIH) has had a lead role in establishing guidelines for recombinant DNA research. Currently, the NIH guidelines are mandatory in the U.S. only to Federally supported research. However, many pharmaceutical

firms in the U.S. have agreed to comply voluntarily. NIH has solicited input from a wide range of interested parties, and has established a Recombinant DNA Advisory Committee (RAC) which serves as the principal body to the NIH and to the Secretary of the Department of Health, Education and Welfare. RAC advises on the ethical, legal, public health, and environmental issues relating to this research. Also, the Committee provides recommendations to the NIH Director on new types of bacteria for use in recombinant DNA experiments; on whether certain presently prohibited experiments should be conducted; whether additional categories should be exempted from the guidelines; and on potential future changes in the guidelines.

In addition to the Advisory Committee, the Office of Recombinant DNA Activities was established at the NIH to implement NIH's policies on recombinant DNA research on a continuing basis.

7. WHAT PRECAUTIONS ARE TAKEN TO CONTAIN POTENTIALLY HARMFUL MICROORGANISMS?

There are two types of containment -- physical and biological. Physical barriers range from standard laboratory precautions, termed P1 for minimal risk experiments, to maximum security conditions, or P4, for experiments with the highest possibility of risk. Requirements for P4 containment are extremely strict.

Although physical barriers are highly effective in presenting the scape of microorganisms, scientists have devised a built-in safeguard -- biological containment -- for added security. Through genetic manipulation, crippled hosts and vectors that self-destruct outside the laboratory can be created. The guide lines call for three levels of these debilitated microbes with varying inability to survive naturally.

These two types of barriers -- physical and biological -- are always used in combination to prevent the accidental introduction of recombinant DNA molecules into the enviroment.

BLOCK ANNOUNCES PRODUCTION OF FOOT-AND MOUTH DISEASE VACCINE*

SACRAMENTO, Calif., June 18--Secretary of Agriculture Jhon R. Block today announced a breakthrough in genetic engineering to produce a vaccine against the virus of foot-and mouth disease, one of the world's most serious animal diseases.

"This breakthrough can mean annual saving of billions of dollars and an increase in the world's supply of meat", Block said.

"We believe this to be the first production through gene splicing of an effective vaccine against any disease in animals or humans. Animals tests carried out over an eight-week period ending today show that the vaccine works," he said.

Block said the breakthrough was in the application of "recombinant DNA technology," a form of genetic engineering whereby a single gene or small series of genes from one organism are inserted into the DNA of another organism.

The work was done under a cooperative agreement between the U.S. Department of Agriculture's Science and Education Administration and Genentech Inc., a San Francisco-based research firm.

USDA and Genentech scientists carried out the tests as well as the developmental work on the vaccine, at USDA's high containment facility at the Plum Island Animal Disease Center, about 1-1/2 miles off the coast of Long Island, N.Y.

* USDA, Office of Governmental and Public Affairs,
Washington, D.C. 20250

Genentech handled non-hazardous aspects of the work at its California facilities.

"Foot and mouth disease is a highly contagious disease of cattle, sheep, swine and many other animals," Block said. There is no known cure. When an outbreak occurs, exposed and infected animals must be destroyed. Although outbreaks have occurred here in the past, foot and mouth disease does not now exist in the United States.

"The vaccine produced by the new recombinant DNA technology is safe and effective. It cannot produce the disease in a vaccinated animal because only a segment of the virus is used, not the whole virus. Also the vaccine produced with the new technology can be stored for long periods of time without refrigeration. It is economical to produce and greater quantities can be produced at a time than was possible under previous methods of production.

FACT SHEET

Recombinant DNA Research
Foot and Mouth Disease

SEA and Genentech scientists have reproduced, through gene cloning, a fraction of the foot and mouth disease virus coat. The fraction, called VP₃, is one of the four major proteins (VP₁, VP₂, VP₃ and VP₄)-- or polypeptides--in the foot-and-mouth disease coat.

Biochemist Howard L. Bachrach and research colleagues at Plum Island demonstrated in 1975 that the sub-unit VP₃ is non-infectious but capable of producing immunity in livestock. However, until the new recombinant DNA techniques were developed, production of the polypeptide VP₃ vaccine was not possible on a commercial scale. It had to be produced through conventional methods from purified, inactivated viruses. These techniques were time-consuming and costly.

These production methods and others used to produce virus vaccines are risky. If the virus is not properly inactivated, the vaccine could cause the disease in vaccinated animals. And escape of the live virus from the laboratory is always possible.

Nevertheless, more than 500 million doses of the whole virus vaccines are currently produced and used annually in countries where foot and mouth exists.

In the recombinant DNA production method, scientists use the bacteria Escherichia coli, Strain K-12, as the host for

reproducing the VP₃ polypeptide of the foot-and mouth disease virus coat. Using a cutting enzyme, scientist, cut apart a plasmid (small ring of DNA) from the E. coli bacterium . Then they isolate the VP₃ DNA fragment, splice this DNA fragment into the E. coli plasmid, and insert the recombined plasmid into the E. coli bacterium . The bio-engineered plasmid can then be cloned in the bacteria to produce the foot-and mouth disease vaccine.

Yields of the immunizing protein, VP₃ obtained by this technique are such that production of commercial quantities of the vaccine are feasible.

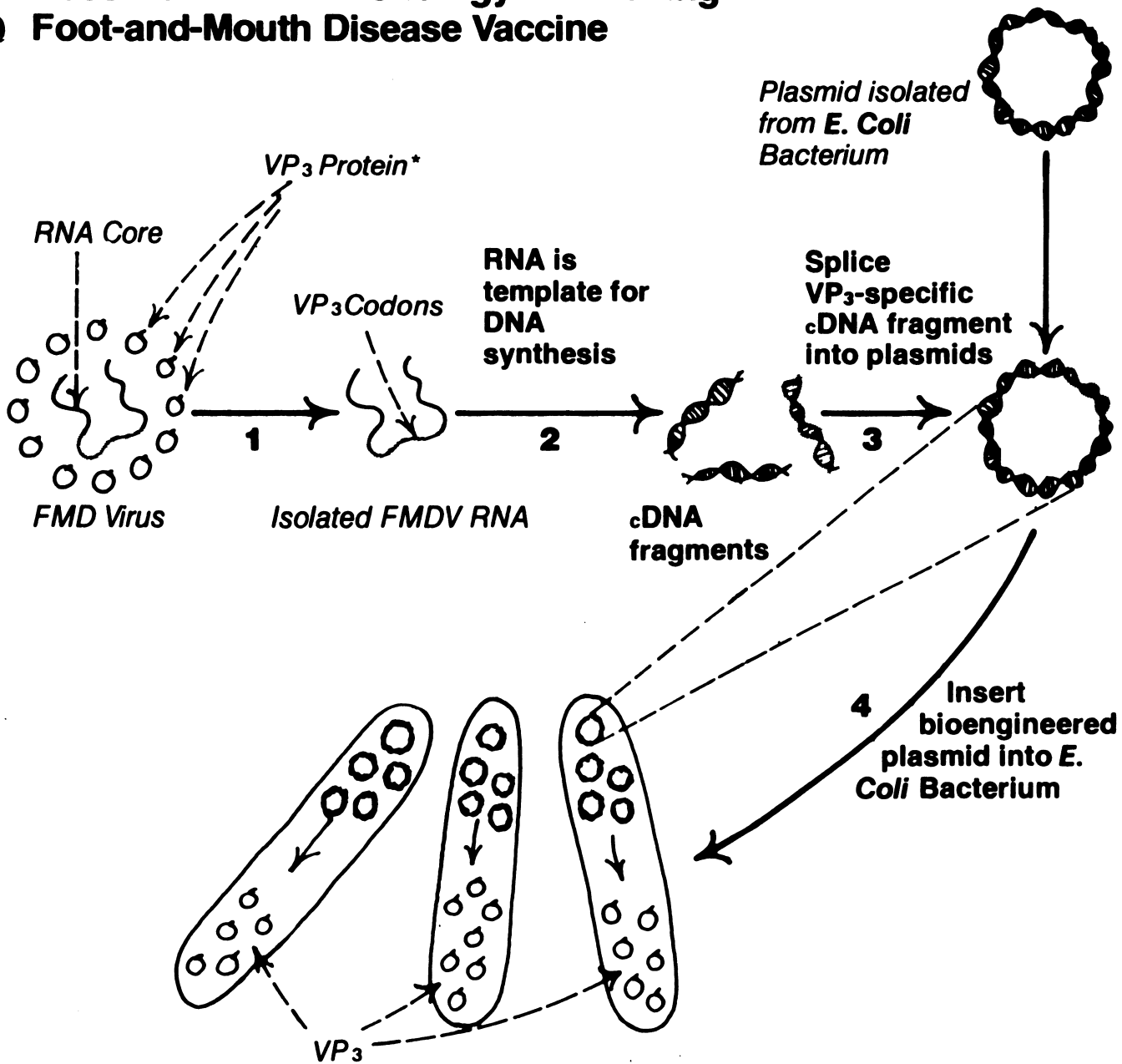
Production of the VP₃ sub-unit in the E. coli bacteria, in the work reported today, yielded approximately one million or more molecules of the immunizing protein per cell. In earlier reported recombinant DNA experiments in Germany, bacteria produced only 1,000 molecules of protein per cell. Tests on the protein for immunization potential were not reported. Work in England reported molecular cloning of nucleotide sequences corresponding to the protein genes of foot-and mouth disease virus.

The National Institutes of Health, through its Recombinant DNA Advisory Committee, establishes guidelines for recombinant DNA research. Permission for the USDA-Genentech project and step-by-step approval were obtained from the Recombinant DNA Committee and the work was continually monitored by a specially appointed committee.

The cooperative agreement between USDA and Genentech involved no exchange of money. Genentech scientists in effect "invented" the recombined plasmid, from which the VP₃ vaccine can be produced, through cloning. Therefore the company has patent rights and the right to license the manufacture of the vaccine. USDA, however, retains the right to make use of the "invention," without payment of royalty, at any time there is a need in this country.

Scientists involved in the project include Dennis Kleid, Daniel Yansura, Donald Dowbenko and Barbara Small of Genentech and Howard Bachrach, Douglas Moore, Peter McKercher, Marvin Grubman, Betty-Jo Robertson and Donald Morgan of USDA.

Recombinant DNA Strategy For Making Foot-and-Mouth Disease Vaccine



Growing E. coli bacteria may produce VP₃ for use as vaccine for foot-and-mouth disease. No virus or infectious RNA is produced by the harmless bacteria strain.

*VP₃ is the protein from the shell of the virus which can act as a vaccine for immunizing livestock against foot-and-mouth disease. The idea outlined above is to make this VP₃ protein without making any virus or infectious RNA.



INTER-AMERICAN INSTITUTE FOR COOPERATION ON AGRICULTURE

III INTERAMERICAN MEETING OF DIRECTORS OF ANIMAL HEALTH
Buenos Aires, Argentina, August 5-8, 1981

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ADDRESS BY THE DIRECTOR GENERAL
OF THE OIE

Dr. LOUIS BLAJAN

ADDRESS BY DR. LOUIS BLAJAN, DIRECTOR GENERAL OF THE O.I.E.

PRINCIPAL DECISIONS ADOPTED BY THE COMMITTEE OF THE
O.I.E. DURING ITS FORTY-NINTH GENERAL MEETING
(25-29 May, 1981)

Since it is my wish to facilitate a constructive discussion among the participants in this Fifth Meeting of the Regional Conference of the O.I.E for the Americas, allow me to present a summary of the decisions adopted during the Forty-ninth General Meeting of the International Committee of the O.I.E. which was held in Paris from 24 to 29 May. I shall refer more specifically to those decisions that concern the Americas.

1. Zoosanitary information system of the O.I.E.

Without wishing to appear repetitious, I want to emphasize the statement I made in San José, Costa Rica during the REDISA II, that information on zoosanitary matters has been from the start the most important function of the O.I.E. and continues to be of primary importance for our Organization.

The decisions adopted last May can be classified as follows:

- short-term decisions;
- long-term decisions.

1.1. Short-term decisions

These decisions refer to the notification by the O.I.E. of a case, cases or outbreaks of one of the diseases listed below, in a country which was until that time free from that disease:

LIST A

Foot-and-mouth disease

Rinderpest

Infectious bovine pleuripneumony

Infectious nodular dermatosis

Sheep pox and goat pox

Blue tongue

Equine plague

Glanders

Durine

Hog Cholera

African swine fever

Swine enzootic encephalomyelitis

Swine vesicular disease

Fowl plague

Newcastle disease

Rabies

Vesicular stomatitis

Venezuelan equine encephamolyelitis,

or any other recent outbreak of a disease who has just been recognized in a country.

The Central Office (OIE-Paris) will send the notification to:

- (a) by telex or telegram, to the neighbouring countries of the country in which there has been an outbreak of the disease, as well as to all the veterinary services that have shown an interest in receiving information on any change in the health conditions of the country in question;
- (b) by letter mailed within 24 hours, to other countries in the region, as well as to any other interested parties;
- (c) by monthly circular, in all other cases.

I should like to point out, in this connection, that the Central Office has decided a year ago to inform FAO immediately by telex of any new outbreak of infectious diseases.

In the same way we provide information to PAHO last March in occasion of the outbreaks of foot-and-mouth disease that were reported in France and in the United Kingdom.

It would be easy, in my view, to institutionalize the exchange of information by telex between IICA and PAHO on the one hand, and the O.I.E. on the other.

1.2. Long-term decisions

I have been requested by the International Committee of the O.I.E. to gather a group of specialists in zoonitary information, who will carry out the preliminary work leading to the establishment of a high-level Commission that will serve all the regions of the O.I.E.

This Commission will submit to the O.I.E. International Committee proposals for the establishment of a modern system of information for the Organization. Such system should be oriented to contain more complete information on the epidemiological and economic aspects.

To this end, it will be necessary to find the best form of coordination with other international organizations, particularly IICA, FAO and PAHO, to avoid duplication and to obtain the most effective information mechanism.

According to the agree schedule, the tasks of the group and of the Commission of Specialists should be completed in 1982.

When the conclusions of the Commission have been approved by the International Committee of the O.I.E., seminars shall be organized for the veterinary services of each one of the four large regions to acquaint them with the new information system of the O.I.E.

2. Commissions and Groups of Specialists of the O.I.E.

In the first place, it should be borne in mind that there are at present seven Commissions and two Groups of Specialists.

- Commission on the International Zoosanitary Code;
- Commission on Foot-and-mouth Disease;
- Commission for the study of regulations and standards of biological products;
- Commission on diseases produced by Anaerobes;
- Commission on poultry diseases;
- Commission on fish diseases;
- Commission on apiarian pathology;
- Working group on Echinococcosis-Hydatidosis;
- Working group on equine diseases.

By agreement with the Administrative Committee, we have decided to carry out a dual survey:

- With the Commissions and Groups, which will be requested to make a balance of their current activities and to submit their projects for the future as well as proposals for improving their effectiveness.
- Of the delegates to the Committee who will fill out a questionnaire that will make it possible for us to know the general views on the usefulness of each one of these Commissions, their composition and how they can best provide the services needed by the countries.

I wish to urge member countries of the O.I.E. in the Americas to participate actively in this survey. As a matter of fact, it would be advantageous if delegates attending this meeting would express their views today. I hope that there will be sufficient time.

3. Review of the basic texts

I wish to remind you that the Committee of the O.I.E. adopted last May resolution N°XVIII, which reads as follows:

RESOLUTION N° XVIII

REVIEW OF THE BASIC TEXTS OF THE O.I.E.

See Doc. REDISA III/19
OIE/CRA V/3

FINAL REPORT OF THE 49th. GENERAL SESSION OF THE O.I.E COMMITTEE

It would be also advantageous if all the countries in the Americas adopted a common stand on this matter.

Although I have no wish to influence your views, I must express my opinion on this subject and repeat what I have already stated at the last General Session.

Specifically, the texts dealing with financial matters are inadequate. Therefore, Article 10 of the Organic Statutes should be amended.

This may lead to the temptation to completely amend the Statutes governing the Organization.

In my view, such amendment would be hazardous for the following reasons:

- losing sight of the basic objective;
- endless discussions and delays in obtaining the necessary consensus for the indispensable amendment;
- in a word, the risk that the amendment shall never be made.

It would therefore appear more prudent and more in accordance with our aspiration to be effective if we limit ourselves to the single proposed amendment of the financial provisions in Article 10 of the Organic Statutes and of the provisions in Article 15 concerning the powers of the Committee.

4. O.I.E. Conferences scheduled for 1982

4.1. Fiftieth General Session of the Committee

The Agenda of the Fiftieth General Session of the O.I.E. Committee to be held from 24 to 29 May, 1982, includes, in addition to the zoosanitary status of member countries a study of the following technical subjects:

- (a) Rabies: new developments in vaccines
Rapporteur: Dr. L. ANDRAL (France)
- (b) African swine fever: new developments
Rapporteur: Dr. S. BOTIJA (Spain)
- (c) Respiratory diseases and micoplasmosis in small ruminants
Rapporteur: Dr. MARTIN (Great Britain)

In the Administrative sector, we shall proceed with the elections provided for in the Statutes:

- election of the President of the O.I.E. Committee;
- election of the members of the Administrative Commission;
- election of the Regional Commissions.

4.2. VI Regional Conference of the O.I.E. for the Americas

This Conference will be held jointly with REDISA IV. Provisions should be adopted during this Conference for drafting the Agenda of the V Regional Conference.

4.3. X Regional Conference of the O.I.E. for Europe

This Conference will be held in London from 21 to 24 September, 1982. It will have the following Agenda:

1. Swine vesicular
2. Leptospiroses
3. Methods of identifying proteins of animal origin obtained from different species.
4. The zoosanitary status of member countries.

4.4. XVI Conference on Foot-and-Mouth disease

This Conference, which will be held at the Headquarters of the O.I.E. in Paris, probably in the autumn of 1982, has the following provisional Agenda:

- (a) Biochemistry differences between types and sub-types of FMD virus;

- (b) New developments in the preparation and presentation of FMD vaccines;
- (c) New developments in the vaccination campaigns in South America, Asia and Africa;
- (d) Epizootiological reports on foot-and-mouth disease in member countries;
- (e) Improved methods for the gathering and registration of data on foot-and-mouth disease in member countries.

4.5. IV Symposium on animal diseases produced by Anaerobes

If this Symposium can be organized, it will be held in Paris, probably in November 1982. It will have the following Agenda:

1. Current status of the epizootiology of diseases produced by Anaerobes (Necrotic haemorrhagic enteritis produced by Cl. perfringens; diseases produced by Anaerobes in cattle in feed-lots; clostridial infections of poultry; new developments in the epizootiology of Botulism, etc.)
2. The role of animals as carriers of diseases produced by Anaerobes in human beings;
3. Methods of bacteriological diagnostic of clostridias;
4. Foot rot in sheep and bovines;
5. Immunoprophylaxis and hygiene in diseases produced by Anaerobes.

5. Headquarters of the O.I.E.

Finally, please note that Dr. Luis V. MELENDEZ, a well-known scientist from the Americas, has taken up his post as Head of the Technical Department of the O.I.E., Dr. Melendez is the former Director of the Pan-American Zoonoses Centre (PAHO) located in Buenos Aires, Argentina.



INTER-AMERICAN INSTITUTE FOR COOPERATION ON AGRICULTURE

III INTERAMERICAN MEETING OF DIRECTORS OF ANIMAL HEALTH
Buenos Aires, Argentina, August 5-8, 1981

REDISA III/18
OIE/CRAV/2
Original: English

IVth CONFERENCE OF THE OIE REGIONAL
CONFERENCE FOR THE AMERICAS



**OFFICE INTERNATIONAL
DES ÉPIZOOTIES**

IV CONFERENCE DE LA COMMISSION REGIONALE DE L'O.I.E. POUR LES AMERIQUES

IV CONFERENCIA DE LA COMISION REGIONAL DE LA O.I.E. PARA LAS AMERICAS

IVth CONFERENCE OF THE O.I.E. REGIONAL CONFERENCE FOR THE AMERICAS

RAPPORT FINAL

INFORME FINAL

FINAL REPORT

OTTAWA

2-3 Avril 1981
2-3 de Abril de 1981
2-3 April, 1981

On the invitation of the Government of Canada, the Fourth Meeting of the Regional Commission of the O.I.E. for the Americas was held in Ottawa, Canada, on 2 and 3 April, 1981.

Fifteen countries were represented at the Meeting as well as various international organisations as shown on the attached list (Appendix I).

The Bureau included Dr. Pedro Acha, Regional Vice-President on behalf of Dr. Pierre Chaloux, Dr. O. Valdés Ornelas, Regional Secretary of the Committee Dr. L. Blajan, Director General of the O.I.E., Paris, and Representatives of the Canadian Government, Mr. M. Bossy, M.P. and Chairman of the Parliamentary Standing Committee on Agriculture representing Mr. Eugène Whelan, Minister of Agriculture and Dr. John McGowan, Assistant Deputy Minister of Agriculture, Canada.

The welcoming address was presented by Mr. Bossy who emphasised the importance of cooperation between representative countries in order to successfully combat the important livestock diseases on a regional and worldwide basis. He stressed the economic importance of some of these diseases which incur extensive losses as in the Foot-and-Mouth Disease outbreak in Canada in 1952 which caused an \$800 million loss.

Dr. Acha then thanked the Canadian Government for hosting this Meeting and thanked Dr. McGowan and the Organising Committee for their preparatory work. He outlined the history of the O.I.E. (founded by several countries in 1924. These included five countries from the Americas and O.I.E. Members now total ninety-nine). He stressed that one of the main objectives of this Meeting was the involvement in the O.I.E. of more countries from the Americas. Among the principal functions of the O.I.E. is the dissemination of information on all aspects of economically significant animal diseases. This includes the preparation and distribution of emergency notes, statistical data, monthly bulletins, sanitary regulations and reports on meetings concerning animal diseases.

Dr. Louis Blajan then presented a summary of the functions of the Regional Commission for the Americas. Established in 1962, the first Conference

was attended by fifteen countries. Subsequent meetings followed in 1966 (Caracas), in 1976 (Bogota) and in 1981 (Ottawa), but of the thirty countries in the Americas only thirteen are O.I.E. Members. He stressed that all countries should be Members and hoped that obstacles to this could be removed so as to allow maximum participation. A major stimulus to this end would be to increase the frequency of meetings and to constantly ensure that the O.I.E.'s approach is practical and result oriented. If this is done, a favourable build-up of O.I.E. participation by American countries would take place to our mutual benefit.

Dr. Pedro Acha then conducted the election of officers for this Fourth Meeting of the Regional Commission. Dr. John McGowan, Canada, was elected Chairman, Dr. Emilio Gimeno, Argentina, Vice-Chairman and Dr. O. Valdés Ornelas, Mexico, General Rapporteur.

After the adoption of the Agenda, the Rapporteurs for the Technical Items were nominated as follows: Dr. Rosa Elena Simeón (Cuba) and Dr. F.J. Peritz (F.A.O.) for African Swine Fever; Dr. Jorge M. Benavides (Chile) for Hog Cholera; Dr. Emilio J. Gimeno (Argentina) for Brucellosis; Dr. J. Atwell (U.S.A.) for Newcastle Disease; Dr. O. Valdés Ornelas (Mexico) for Aujeszky's Disease and Dr. Elmer C; Escobar (Colombia) for Rabies.

Dr. Blajan then summarized the O.I.E. Information system, the purpose of which is to:

- (a) act as a warning system for important diseases;
- (b) disseminate information on statistics, incidence, legislation and regulations etc.; and
- (c) disseminate information on scientific progress and procedures through monthly and quarterly reports on technical and various other topics.

He stressed that as far as (a) (above) is concerned, speed is of the essence and must be observed.

In particular, Dr. Blajan described the objectives that the planned zoo-sanitary information system should fulfill, which are to:

- (1) form a group of specialists to compile and update disease lists, to make recommendations on how information can be used at national and international levels, to study the consequences of proposed O.I.E. changes and to make recommendations for the implementation of proposals and for the presentation of the budget;
- (2) set up a statistical data base;
- (3) organise six seminars to present the new information system to Chief Veterinary Officers; and
- (4) as from 1983, organise two short courses devoted to the study of national information systems.

Dr. Blajan summarized the above by stressing that we have reached a time when a modern structure with increased efficiency in disease information collection, forecasting analysis and dissemination should be devised.

A major observation, however, concerned the budget. At present, contributions from Member States are calculated for a period of three years. As a result of cost increases, inflation etc., the 1980-1984 three-year budget has to be increased by about 56% more than the 1979-1981 budget. This budget will be discussed at the General Session of the O.I.E. in May. It is stressed that this budget is for a three-year period and that the increase per year is in the region of 16%.

Dr. Acha stressed that the Americas need greater participation in the O.I.E. This is a very important geographical area and should be more fully represented. Dr. Mario Fernandes agreed with this and endorsed the very important function played by the O.I.E. in disseminating information, citing as an example the recent outbreak of Foot-and-Mouth disease in France and the prompt dissemination of information by Dr. Blajan.

A question was then posed regarding the setting of contributions from participating countries. Dr. Blajan replied that contributions were first set in 1924 when six membership categories were established. The

Dr. McGowan congratulated Dr. Acha on the fine job he had done in organising the proceedings of the Meeting so well. He also thanked all those who had contributed so much to the Meeting.

Dr. Acha then expressed the hope for greater participation at subsequent meetings so that disease control in the Americas could show maximum efficiency. He thanked Dr. McGowan and his staff, the Rapporteurs and the participants as well as the Secretariat and the interpreters.

The Conference was officially closed by Dr. J. McGowan at 6.00 p.m.

member country, not the O.I.E., decides on its own category. For example, contributions for Category 6 are \$6,000 per year. Those for Category 1 are \$48,000 per year. To resolve this problem the Basic Texts should perhaps be revised.

In response to a question posed by Dr. McGowan, Dr. Blajan emphasised that the Regional Commission for the Americas should act as a link between the O.I.E. and the I.I.C.A. (Interamerican Institute of Cooperation for Agriculture). This will result in the efficient control of diseases in Latin America and the Caribbean, will strengthen national veterinary services, will assist in the exchange of information and will establish consultative procedures between the two Organisations.

Item 1 on African Swine Fever and Hog Cholera,

Item 2 on Brucellosis, and

Item 3 on Newcastle Disease

were presented and discussed on Thursday 2 April. Two films were shown after the Meeting had ended on Thursday afternoon. Both dealt with disease control and were of considerable interest. The first concerned a simulated outbreak of a vesicular disease in New Zealand and described methods which would be implemented to combat such an outbreak. The second film dealt with methods used during the importation of European cattle into Canada and described procedures followed to prevent the importation of disease whilst allowing the importation of valuable genetic livestock.

Following the dinner offered to participants by the Ministry of Agriculture on Thursday evening, Mr. Gaëtan Lussier, Deputy Federal Minister of Agriculture, gave an excellent speech in which he notably paid tribute to the action taken by the O.I.E. for the good of countries worldwide. He recalled the effort made by Canada in the control of animal diseases. Emphasis was placed on the importance of zoonotic diseases and the advantages Canada experiences from control programmes against animal diseases which are adopted by more than five hundred veterinarians and a thousand technicians and various assistants.

The morning of 3 April was devoted to the study of Items 4 and 5 relative to Aujeszky's Disease and Rabies respectively.

The Honourable Eugène F. Whelan, Minister of Agriculture, Canada, addressed the Fourth Conference of the O.I.E. Regional Commission for the Americas on 3 April, 1981, during a luncheon he offered in the Parliament Buildings.

Mr. Whelan highlighted the importance of the Agri-Food industry to Canada. Business in the livestock industry amounted to more than \$18 billion worth; meat packing companies in Canada employ more than 34,000 people; and, if the retail industry is included, one in every four Canadians makes his or her living in the agri-food industry.

International sales of Canadian dairy cattle in 1980 included more than 26,000 head and brought in some \$39 million in revenue. Purebred beef cattle exports were in the neighbourhood of 6,000 head at a value of more than \$10 million and frozen cattle semen exports are valued at approximately \$8 million a year. Mr. Whelan spoke of the importance of transferring technology and the cooperation between veterinarians to develop international efforts to isolate, control and defeat livestock diseases.

Mr. Whelan's address was well received by those present.

Adoptions of Recommendations and Conclusions

Mr. Acha read the draft of the proceedings of the Fourth Conference of the Regional Commission of the O.I.E. for the Americas as well as the Conclusions and Recommendations.

Clarification was given to Dr. J. McGowan on the purpose of recommendations regarding the adjustment to the O.I.E. Financial Period making it coincide with the calendar year. After this and following amendments suggested by Dr. W. Pereira (Uruguay) on Brucellosis and by Dr. J. Atwell (U.S.A.) on Newcastle Disease, the Final Report together with the Conclusions and Recommendations, was adopted.

A vote of gratitude was then made to the Government of Canada.

CONCLUSIONS AND RECOMMENDATIONS
ADOPTED BY
THE IVth REGIONAL CONFERENCE
OF THE OFFICE INTERNATIONAL DES EPIZOOTIES
FOR THE AMERICAS

Ottawa, 2-3 April 1981

I

Proposed Work Programme
of the Office International des Epizooties

The IVth Conference:

- Having taken the O.I.E. Director General's Report on the proposed Information Programme (1981-1984) into account and the address given by the Acting President of the Regional Commission on the participation of American countries in the development of the principal functions and in the financing of the O.I.E.;
- Considering the fact that the financial limitations (imposed on the O.I.E. by the total funds available in the budget) hamper the rapid and effective modernisation of the information system (the Organisation's priority function) ;
- Recognising that international disease reporting is an essential element for the marketing of animals and animal products, as well as for the prevention and control of epizootic diseases ;
- Acknowledging that, since its creation in 1924, the O.I.E. has played a significant role in the dissemination of statistical, scientific and regulatory information in the animal health field ;

Decides :

1. To recommend to the international Committee of permanent Delegates to the O.I.E., the approval of the O.I.E. Proposed Programme and Budget for the period 1981 - 1984 as well as the contribution increases proposed by the Director General, at the 49th General Session which will be held in Paris from 25-29 May, 1981.
2. To fully support the O.I.E. Director General's initiative to carry out an extensive examination of O.I.E. data collection systems and of Member Countries' information systems to find ways of improving them, by using modern information collection and handling procedures in order to satisfy Member Countries' and the Organisation's needs.

...

3. To ask the international Committee to examine the point relating to the revision of the O.I.E.'s Basic Texts (International Agreement and Organic Statutes) during the next General Session, to update them and to establish a structure and budget enabling the Organisation to offer more services to its Member Countries.
4. To recommend adopting the calendar year (1 January - 31 December) for the O.I.E. Financial Year, thereby bringing expenses and contributions (generally settled annually by Member Countries) into line. It is also considered necessary that contributions by "categories" be revised more realistically to conform with those of an international Organisation comparable to the O.I.E.
5. To appeal to all American countries to participate more actively in O.I.E. meetings and programmes and to encourage non-O.I.E. Members to join the Organisation in the near future.

II

Proposed Agreement between the International Institute of Cooperation for Agriculture and the Office International des Epizooties

The IVth Conference :

Considering the proposed Agreement between the O.I.E. and the I.I.C.A. (Interamerican Institute of Cooperation for Agriculture), submitted to the Regional Commission for consideration by the O.I.E. Director General,

Decides :

1. To recommend the approval of this Agreement and to ask the international Committee to authorise the Director General to sign this Agreement on behalf of the O.I.E. as soon as possible.
2. To thank the I.I.C.A. for its collaboration in supporting the activities of the Regional Commission, as well as for the willingness it expressed to facilitate coordination and work to be completed jointly by the I.I.C.A. and the O.I.E. in the Americas.
3. To ask the Director General, on the signature of this Agreement by both parties, that the arrangements relative to joint meetings of the O.I.E. Regional Commission for the Americas and the Interamerican Meeting of the I.I.C.A. (REDISA) be introduced immediately.

III

African Swine Fever and Hog Cholera

The IVth Conference :

Considering

- that the control and eradication of Hog Cholera is of great economic importance as it would avoid losses incurred by this disease as well

as any confusion with African Swine Fever ;

- that the ASF Strain which is found in Latin America has very low pathogenicity and its behaviour is comparable with that of Iberian strains ;

Recommends :

1. That countries affected by Swine Fever and which do not carry out control or eradication programmes against this disease, develop and adopt such programmes based on available epizootiological information by officially carrying out systematic, obligatory and controlled vaccination with a view to eradicating the disease.
2. That quality and safety tested vaccines be used in vaccination campaigns and that these campaigns be based on the prohibition of animal movements and the necessary complementary quarantine and disease surveillance measures.
3. That, where possible, diagnosis of outbreaks be confirmed by laboratory tests establishing the differential diagnosis with African Swine Fever.
4. That economic incentives be created to encourage the use of vaccines to control the disease.
5. The Regional Commission takes this opportunity to warmly congratulate the Cuban and Dominican Republic authorities for their successful eradication campaigns against African Swine Fever, as well as to Haiti and Brazil who have initiated eradication and control programmes against this disease.

IV

Brucellosis

Brucellosis remains a problem for countries in the western Hemisphere despite the fact that control programmes have been carried out for decades. Progress achieved by some countries could be used as an example to eradicate the disease, i.e. by maintaining continuous programmes designed with appropriate methods and adequate resources.

In this context, it is important to stress that all Brucellosis eradication programmes should envisage :

1. A progressive plan of action ensuring that all heifers are vaccinated, reactors are identified and separated from the herd for destruction, together with the monitoring of animal movement between demarcated zones.
2. Vaccination with the Strain 19 vaccine is the most efficient method for rapid control of Brucellosis. However eradication necessitates that, at a precise moment, a control and surveillance programme be instituted against

...

the spread of the disease. In this respect, the most opportune moment should be determined to stop vaccination and to set up control systems, accounting for possibilities for applying them and cost/benefit criteria which should be considered in conducting the programme.

3. Control should be carried out in two stages according to the time and place, beginning with farms declared "herds free" to move to areas of "low incidence" which later will become "free areas" and, finally, to draw together areas which are free from the disease with safeguards monitoring this situation against possible re-infection.
4. Control programmes should be based on the use of multiple diagnostic tests including high-technology techniques (which are the most sophisticated), in order to solve, as accurately as possible, individual problems which affect the interpretation of reactions (P.V. reactions or false reactions) and which consequently influence the criteria on which control of the disease is based on farms or in specific areas.
5. All stages of the control programme against Brucellosis should have the active support of the farmer; it will thus be indispensable that sanitary education, social communication and community development systems be instituted to obtain effective results from action taken to eradicate the disease. Brucellosis affects human and animal health hence considerably diminishing the production of animal proteins, essential to the nutrition, development and well-being of man.

V

Newcastle Disease

The IVth Conference recommends :

1. That O.I.E. Member Countries keep the Organisation informed with timely, accurate data to ensure the exchange of information on import regulations.
2. That importers and exporters assume responsibility in contacting the veterinary authorities concerned thereby remaining informed about health certificate requirements.
3. That veterinarians in the country of origin ensure whether export requirements can or cannot be met.

VI

Aujeszky's Disease

During the 1975 General Session of the O.I.E. recommendations were adopted on how countries should respond to Aujeszky's Disease. The IVth Conference

...

considers that these recommendations are still valid.

VII

Rabies

The IVth Conference recommends :

1. That control programmes against Rabies be reinforced by the coordination of Health and Agriculture Ministries.
 2. That the production of anti-Rabies vaccines be increased by using new technology now available.
 3. That information and epidemiological surveillance systems be improved.
 4. That the control of Bovine Rabies be reinforced by intensifying control methods against vampire bats and by vaccinating cattle.
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INTER-AMERICAN INSTITUTE FOR COOPERATION ON AGRICULTURE

III INTERAMERICAN MEETING OF DIRECTORS OF ANIMAL HEALTH
Buenos Aires, Argentina, August 5-8, 1981

REDISA III/19
OIE/CAR V/3
29 Julio, 1981
Original: French

FINAL REPORT

49th GENERAL SESSION OF THE COMMITTEE OF THE
INTERNATIONAL OFFICE DES EPIZOOTIES



**XLIX GENERAL SESSION
SESSION GENERALE
SESION GENERAL**

SG/49/RF

Original: French

FINAL REPORT

The 49th General Session of the Committee of the Office International des Epizooties was held at the Office's Headquarters, 12 rue de Prony in Paris (France) from 25-29 May 1981, in accordance with the decision made by the Committee at the 48th General Session.

The following Member Countries were represented :

Algeria, Angola, Argentina, Australia, Austria, Belgium, Benin, Botswana, Brazil, Bulgaria, Cameroon, Canada, Chile, Colombia, Cyprus, Czechoslovakia, Denmark, Egypt, Ethiopia, Finland, France, Gabon, Germany (Democratic Republic), Germany (Federal Republic), Ghana, Hungary, Indonesia, Iran, Iraq, Ireland, Israel, Italy, Ivory Coast, Japan, Kenya, Korea, Luxemburg, Malaysia, Mali, Mauritania, Mexico, Morocco, Niger, Nigeria, Netherlands, New Caledonia, New Zealand, Norway, Paraguay, Peru, Poland, Portugal, Rumania, Saudi Arabia, Senegal, Somalia, Spain, Sudan, Sri Lanka, South Africa, Soviet Union, Swaziland, Sweden, Switzerland, Taiwan (R.O.C.), Thailand, Togo, Tunisia, United Arab Emirates, United Kingdom, United States of America, Upper Volta, Uruguay, Venezuela, Vietnam, Yugoslavia, Zaïre, Zambia and Zimbabwe.

Observers from the Food and Agriculture Organisation of the United Nations (F.A.O.), the World Health Organisation (W.H.O.), the Interafrican Bureau for Animal Resources of the Organisation of African Unity (O.A.U.), the European Economic Community (E.E.C.), the International Bank for Reconstruction and Development (I.B.R.D.), the Panamerican Health Organisation (P.A.H.O.), the Economic Community for Livestock and Meat (C.E.B.V.), Apimondia, the World Veterinary Association (W.V.A.), the International Equestrian Federation (I.E.F.) and the World Federation for the Protection of Animals (W.F.P.A.) were also present.

The Honorary Presidents Doctors A.E. FRANCA E SILVA (Portugal), C. RUIZ MARTINEZ (Venezuela), A. RAFYI (Iran) and Doctor R. VITTOZ (France), Honory Director General of the O.I.E. also participated in the General Session.

INAUGURAL SESSION

Dr. A. LAABERKI (Morocco), President of the Committee of the O.I.E. was assisted by Dr. L. BLAJAN, Director General and by those Members present from the Administrative Commission : Dr. R.W. GEE (Australia), Vice-President, Drs. A. TRETIAKOV (U.S.S.R.), G.H. ADLAM (New Zealand), Members and Drs. O. VALDES ORNELAS (Mexico) and B. HENRICSON (Sweden), Auditors.*

After welcoming Delegates from Member Countries of the O.I.E. and other Participants to the General Session, the President read a farewell message from Dr. W. ECKERSKORN (Federal Republic of Germany), former President of the O.I.E. Committee and informed Participants of the departure of Dr. P.A. CHALOUX (U.S.A.) who is no longer a permanent Delegate and of Dr. E. MATHIEU (France) who has retired.

The President asked that all stand in the memory of Dr. C. WERDELIN, former Delegate from Denmark and Professor F. LUCAM, Vice-President of the O.I.E. Permanent Commission on Foot-and-Mouth Disease who have recently passed away.

He then submitted the Agenda for the General Session to Delegates for their approval.

In his opening address of the 49th General Session of the O.I.E., Dr A. LAABERKI President of the Committee of the O.I.E., first welcomed Mr. Claude JOLIF, Deputy Director of the United Nations and of International Organisations in the Ministry of Foreign Relations who was representing the French Government.

The President indicated that the O.I.E. had committed itself to tracing a new course for the rapid progress of the Office. He expressed the wish that questions be examined in order of priority. Furthermore, he recalled the fact that the Administrative Commission had ensured continuity in the transition period following the election of the new Director General of the Office, Dr. L. BLAJAN.

Dr. LAABERKI also noted the success of work undertaken during Regional Conferences which took place during 1980 and at the beginning of 1981 : in Budapest (Europe), in Rabat (Africa), in Jakarta (Asia, the Far East and Oceania) and in Ottawa (the Americas).

He informed Participants that, in the interest of all concerned, the Office must provide for the increase of its activities and find the legal and financial means to achieve its aims by adapting structures, the Statutes and the Rules of the Office.

Dr. A. LAABERKI informed the Committee of the Office's active participation in international meetings such as those of the Regional Commission of the F.A.O. for the Near East and of the World Health Assembly of the W.H.O. These international Organisations have shown their determination as has the O.I.E., to fight against disease, hunger and losses.

Despite limited means and the world economic crisis, the President considered that an all-embracing effort be made to encourage solidarity between countries and that the least affected assist those in a more unfavourable position.

In this respect, he expressed his gratitude to the French Government Representative for the subsidy granted by his Government to the O.I.E.

* Dr. I.E. MURIITHI (Kenya), Member of the Administrative Commission, was unable to attend the Inaugural Session but participated in the subsequent proceedings of the General Session.

...

Dr. A. LAABERKI then declared the 49th General Session of the O.I.E. Committee officially open and called on Mr. C. JOLIF, representing the Government of the French Republic, to take the floor.

In his address, Mr. C. JOLIF apologised for the absence of the highest authorities from the French Government at the Inaugural Session but explained that this was due to the very recent change in Government.

He reiterated the constant interest which the French Authorities attach to the activities of the Office and emphasized the willingness of France to further its assistance.

The French Government Representative described that this support responds to the national interest with regard to epizootics which have not yet been controlled on the one hand and, on the other, to action in favour of agriculture and rural development in Third World countries.

He recognised the need to increase the means of the O.I.E., as France had done over the last two years and expressed the wish that the international community offer concrete and effective support to the Organisation.

ANNUAL REPORT OF THE DIRECTOR GENERAL

The President called on Dr. L. BLAJAN, Director General of the O.I.E. to take the floor at the beginning of the First Plenary Session to submit his Report on the Scientific and Technical Activities of the O.I.E.

The Director General outlined work carried out by the Regional Commissions and emphasized the wish expressed by the majority of these Commissions to be more fully represented in the specialist Commissions. He also highlighted the importance of improving the O.I.E.'s information system.

Having recalled the work performed by the specialist Commissions and Working Groups over the past twelve months, he stressed that holding these four Regional Conferences and the Emergency Meeting on Rinderpest had constituted much additional work for the Central Bureau.

Dr. L. BLAJAN also noted the measures taken to strengthen ties between the Office and other international Organisations, particularly with the F.A.O., W.H.O., I.L.C.A. and the W.V.A.

He then presented Appendix 1 of the Report dealing with the Animal Disease Status Worldwide in 1980. He highlighted the outstanding facts showing either a decline or an increase in the occurrence of outbreaks in different countries. Particular note was made of Foot-and-Mouth Disease, Classical Swine Fever, African Swine Fever and Swine Vesicular Disease.

A special description was made of the conditions which led the O.I.E. to request aid from the E.E.C. for the organisation of a vaccination campaign against Rinderpest in West Africa. The management of the campaign was entrusted jointly to the O.I.E. and the C.E.B.V.

Finally, the Director General proposed to the Committee that, on account of its form and content, this Report on the Animal Disease Status Worldwide replace

the annual Statistics, presently published by the Office between September and November each year.

The President thanked Dr. L. BLAJAN for his detailed address on the activities of the Office and then opened the floor to discussion.

Several Delegates requested the Director General to amend and to add more detailed information to his Annual Report and to Statistics published by the Central Bureau in the Report handed to them.

The President adjourned the Meeting at 1 p.m.

TECHNICAL TOPIC I :

Animal Health : Information, Planning and Economics

Dr. A. LAABERKI entrusted the chairmanship of the Second Plenary Session with Dr. R.W. GEE, Vice-President of the Administrative Commission.

Dr. R.W. GEE pointed out that the Session would proceed in a slightly different manner from previous General Sessions. In fact, the Chief Rapporteur was nominated to summarize all reports received on one specific Technical Topic. However, he made it clear that authors of reports or other members of the Assembly could take the floor at the end of the review to give complementary information.

This procedure for the presentation of reports was suggested by the Administrative Commission, on the request of the Committee, so that the reading of lengthy reports could be avoided, thereby allowing more time for discussion.

Furthermore, Dr. R.W. GEE expressed the wish that two or three Delegates be designated by the Assembly to prepare a short report and to draft Resolutions relating to each Technical Topic in collaboration with the Chief Rapporteur.

Dr. GEE then called on Dr. P. ELLIS, Director of the Veterinary Epidemiology and Economics Research Unit at the University of Reading (Great Britain) to take the floor.

Dr. P. ELLIS proceeded with the presentation of a review of "Animal Health : Information, Planning and Economics" using twenty-four reports submitted to the Central Bureau of the O.I.E. on this Topic.

Several countries evaluated economic losses incurred by a disease (i.e. Foot-and-Mouth Disease), by a group of diseases (i.e. parasitic diseases) or even by diseases in general (estimated at 20% of the potential productivity of livestock in Spain for example).

Following this initial approach, economical analytical techniques such as the cost/benefit analysis should be applied. The latter assists in the evaluation of margins of economic progress in comparison with the application of different control methods.

However, an efficient economical analysis is based on firm knowledge of epizootiology and necessitates the standardisation of techniques (in the field and in laboratories).

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In concluding, Dr. P. ELLIS pointed out that information collection should be done at local, regional and national levels, with adequate calculating and management means (mini-computers for example). But firstly, the improvement of information systems necessitates the training of staff responsible for recording data.

The Delegate from Argentina congratulated Dr. ELLIS on his constructive review and reported that, with regard to economic analysis, profit from investments should be calculated according to losses which had not been incurred.

The Delegate from the Federal Republic of Germany considered that all countries should draw up an estimation of costs incurred for the control of any disease and that a uniform recording procedure be adopted by all.

Dr. L. BLAJAN, Director General of the O.I.E. emphasized the Administrative Commission's concern with regard to training and information. He expressed regret that tropical countries had not submitted more reports on the "Animal Health" Topic as their needs in this field are important, particularly in respect of control programmes which they could present to their Governments or to international Organisations.

The Representative of the World Bank also stressed the importance of estimating losses at all levels (nutritional, social, commercial, financial etc. repercussions) thereby enabling them to provide decisive elements which would allow for subsequent planning.

Delegates from Mali and Mauritania gave a different approach to this Topic. Indeed, according to them planning is difficult in their countries due to the very inadequate funds and local resources (linked with desert conditions). They drew attention to the difficulties involved in carrying out programmes and plans due to a lack of reliable data.

The delegate from Italy pointed out that the O.I.E. should propose a series of basic data which would enable an economic evaluation of the costs diseases incur. He emphasized the necessity to train staff and to standardise methodology.

The Delegate from Nigeria spoke of the establishment of a system for disease recording and for analysing control methods against Rinderpest and Trypanosomiasis, in relation with the University of Reading (G.B.).

The Delegates from Colombia and Mexico stressed that evaluation of losses caused by diseases was necessary if governmental authorities and international organisations were to grant financial aid on a continual basis (an essential factor if a real improvement in the health situation is to be achieved).

Following this Session, Drs. ELLIS (G.B.), CAPORALE (Italy) and RENKEMA (Netherlands) then met to draft a proposed Resolution on Technical Topic I.

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TECHNICAL TOPIC II :

RIFT VALLEY FEVER

Dr. R.W. GEE asked two Delegates to prepare a report and resolutions on Topic II. He then called on Dr. R. SWANEPOEL of the National Institute for Virology in Sandringham, South Africa, to take the floor.

Dr. R. SWANEPOEL outlined the principal characteristics of Rift Valley Fever (RVF). After giving the historical background of this zoonosis, first identified in Kenya then in other African countries, he posed several questions on aspects of the disease which remain unclarified.

He described the major ecological and epidemiological conditions in which RVF spreads in its epizootic or enzootic forms. It should be borne in mind, he said, that RVF is a veterinary problem which has serious public health implications. Although the need to collaborate with public health authorities should be taken into account, effective control of the disease can only be achieved in the veterinary sphere. Recent accumulated experience in prevention schemes should be taken into account. Then he explained the main advantages and disadvantages of vaccination methods with inactivated or attenuated vaccines presently in use. He emphasized that countries in Africa and the adjacent Mediterranean area should acquire diagnostic capability. Technology and material assistance (reagents) can be obtained from a number of countries which already have diagnostic capability, e.g., Egypt, Sudan, Nigeria, Kenya, Zimbabwe, South Africa, the United States and possibly other countries. In countries where the virus is not known to occur it may be best to use inactivated reagents in diagnostic tests. Finally, he illustrated his address by showing slides on the RVF situation in Zimbabwe.

Dr. A. SHIMSHONY, the Delegate from Israel, gave complementary information on Dr. R. SWANEPOEL's review and briefly described how his country had set up a reasoned control programme against RVF in the Sinai (Israel) and in territories controlled by Israel since 1978.

Since the official announcement of the diagnosis of this disease in Egypt (March 1978), substantial animal and public health measures (including general ruminant vaccination with inactivated vaccine), as well as extensive surveillance activities, were undertaken and the country remains free from the disease.

The F.A.O. Representative gave further details on a vaccination programme established in Egypt since 1978 by his Organisation and he described difficulties encountered thereon.

Dr. R. SWANEPOEL stated that the attenuated virus vaccines had less efficacy among cattle than among sheep and that the inactivated vaccine should be administered with a booster if effective results are to be attained. Dr. A. PROVOST, Director of the Husbandry and Veterinary Medicine Institute for Tropical Countries (France) stated that RVF had been recognised in West Africa as early as 1935 and that the virus could be considered as existing in its enzootic form in Central Africa. This was then confirmed by Dr. R. SWANEPOEL.

Drs. R. SWANEPOEL (South Africa), A. SHISHMONY (Israel) and EL-KARAMANY (Egypt) constituted the drafting team for Technical Topic II.

The President then adjourned the Session.

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ADMINISTRATION OF THE O.I.E.

The morning of Tuesday 26 May 1981 was devoted to an Administrative Session on the management of the O.I.E. during the 1980-1981 Financial Year and on the Proposed Programme and Budget for subsequent Financial Years.

Dr. A. LAABERKI, President, called on Dr. L. BLAJAN, Director General, to present the Annual Report on the Administration of the O.I.E. for the 54th Financial Year (Document SG/49/4).

The Director General summarised this document by describing relations with Member Countries. He then informed Participants of the new membership of the Government of the United Arab Emirates to the O.I.E.

Dr. L. BLAJAN then gave an account of the most important aspects of the Central Bureau administration. He emphasized that the O.I.E.'s structure was not sufficiently solid to deal with all of its activities.

Having pointed out that changes in staff salaries were very much lower than inflation rises, he proposed the establishment of a new index system and the adoption of new Staff Regulations.

The Director General then mentioned that substantial works were being carried out to modernise the premises and were made possible due to an exceptional subsidy received from France.

The Director General concluded by informing Members of the Committee of the financing of Specialist and Regional Commissions.

The President then called on Mr. Claude de SAINT-VINCENT, Head of the Administrative Department of the Office, to take the floor. Mr. de SAINT-VINCENT presented the Financial Report for the 54th Financial Year of the O.I.E. (for the period 1 April 1980 - 31 March 1981) (SG/49/5).

The first chapter was devoted to the accounting principles of the Office. The programme suggests a new distribution of budget expenses.

Firstly, the Ordinary Budget contains income, mainly constituted from Member Countries' contributions and the special subsidy granted by France. Secondly, expenses are shown, in particular including staff costs and expenses for missions and for the organisation of conferences. The final chapter in the Budget dealt with "Works and Renovations".

Mr. C. de SAINT-VINCENT concluded his Financial Report by indicating that the financial situation of the Office is positive but remains in a precarious position due to substantial arrears in contributions from certain Member Countries. Outstanding contributions presently represent 42% of the Office Budget.

Dr. B HENRICSON (Sweden) speaking in the capacity of Auditor, presented a report on the 54th Financial Year of the O.I.E. He remarked on the good keeping of accounts and emphasised the inadequacy of financial means at the Office's disposal with respect to present inflation rates.

In his conclusion, the Auditor proposed that the Committee approve the 54th Financial Report and the Accounts for the Financial Year of the O.I.E.

The Delegate from Ghana then asked the Director General if all countries were fully aware of the exact amount of arrears in their contributions. The Director General replied that the Countries in question had received several reminders on their respective positions.

Following several requests for further information on the Financial Report, the President proposed that the Committee vote forthwith on Draft Resolution N° 8 proposing the adoption of the Financial Report for the 54th Financial Year.

Draft N° 8 was adopted unanimously with a single 'abstention. (Draft N° 8 appears in the Appendices as Resolution I).

A long discussion followed on the text of Draft Resolution N° 6 which purports the amendment of Article 23 of the General Rules of the O.I.E. concerning the compulsory convening of Specialist Commissions.

The Committee decided to postpone decision on Draft Resolution N° 6 due to the fact that an inquiry will be conducted by the Administrative Commission to enable the Committee to conclude on the structure, composition and tasks of Commissions in May 1982.

Draft Resolution N° 7 concerning the adoption of the Report on the Administration of the O.I.E. for the 54th Financial Year was adopted unanimously by Members of the Committee. (Draft Resolution N° 7 appears in the Appendices as Resolution II).

In his presentation of the Proposed Programme and Budget for the Financial Period commencing 1 April and ending 31 December 1981, and the 1982 Financial Year, together with a preliminary draft for 1983 and 1984, the Director General stressed the fact that he had considered the decisions already adopted by the Committee for 1981 and the proposals which were discussed in 1980 by the Committee for the three-year period (1982-1984). Having emphasized that, under these conditions, the programme prepared according to the Budget (contrary to a logical approach) could only result in limiting its ambitions. He analysed the different elements then closed his address with the four Draft Resolutions submitted to the Committee with regard to the Budget :

- a) Draft Resolution N° 1 which proposes bringing the Financial Year of the Office into line with the Calendar Year ;
- b) Draft Resolution N° 2 concerning the appropriation of O.I.E. budget expenses for the period 1 April-31 December 1981 ;
- c) Draft Resolution N° 3 fixing expenses and their appropriation for 1982 ; and
- d) Draft Resolution N° 4 setting contributions for 1982.

The Delegate from Peru, supported by the Delegate from Mauritania, indicated that the O.I.E. Financial Year should coincide with the calendar year, as it does in other international organisations. This decision will enable Governments to receive and analyse financial documents in good time before the General Session.

Resolution N° 1 was unanimously adopted. (It appears in the appendices as Resolution III).

The Delegate from the Federal Republic of Germany asked the President if the previous procedure for the Financial Year was based on any regulatory texts.

After consulting the texts of the O.I.E.'s General Rules, the President stated that in fact in Article 46 (Chapter VI), the Rules specify that "The provisional Agenda of a General Session shall include :

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- h) The Report of the Auditors for the Period ending on 31 March ;
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Dr. R.W. GEE, Vice-President of the Administrative Commission, proposed the amendment of Article 46 to conform with the adopted Resolution. The President agreed that an amendment of the Rules be proposed by the Director General after consultation with the Office's legal adviser.

Draft Resolution N° 2 was then submitted to the Committee concerning O.I.E. Budget expenses for the period 1 April - 31 December 1981.

The Delegate from the German Democratic Republic congratulated the Director General on the clarity of his presentation of the report on the Programme and Budget. The Delegate from the German Democratic Republic pointed out that this was a direct result of the Director General commendable willingness to adapt to the imperatives created by the modern world and he acknowledged that the increase in expenses were due to inflation in part, but also to the growth in Office activities. However, he did show some reserve on the proposed three-year programme in that the suggested budget increase was too substantial for countries to sustain. By the same token the Delegate from the Federal Republic of Germany expressed some doubt on the anticipated recruitment of personnel. He justified this by explaining his Government's decision to oppose the increase in the O.I.E. Budget.

The Director General then pointed out that expenses in the O.I.E. Budget for O.I.E. Staff were particularly low if a comparison was made with those of similar international organisations. Furthermore, a substantial increase in the inflation rate in France over the next few years had to be anticipated.

The Delegate from the United States expressed his thanks to the Director General of the Office for the excellent presentation of documents submitted to the Committee. He did however consider that the budget increase could not be based on the inflation rate alone and that, due to the very commitments of his Government on this point, the increase in his Country's contribution could only be strictly limited.

Dr. A. LAABERKI, President of the O.I.E., explained to the Committee that all international organisations had to cope with difficulties emanating from the world economic crisis but that the Office should nevertheless have the minimum financial means at its disposal to carry out its task successfully.

Several Delegates supported the three-year programme for activities and for the Budget proposed by the Director-General.

Notably Dr. GEE (Australia), Vice-President of the Administrative Commission supported the proposed Budget, despite the fact that his country anticipates a decrease of 10% in Administration costs. He also emphasized the necessity that certain countries settle their outstanding contributions.

In the same tone, the Delegate from the United Kingdom indicated that the Office's capacity to act should be maintained. The authorities from his country wish to be assured that other countries do not take advantage of not settling their arrears.

The Delegates from Austria, the Federal Republic of Germany, the German Democratic Republic, the Netherlands and Spain informed the Meeting of the wishes of their Governments not to increase the Office's budget expenses. Dr. L. BLAJAN then provided further details on his proposed Programme by indicating in particular that he was concerned by efficiency and not prestige, mainly in the information field. He reminded the Committee that the Budgets voted in 1973 and 1976 were increased by 52% and 48% respectively, at a time when inflation was below 10% in France.

The President proposed to the Committee that Draft Resolution N° 2, concerning the budget expenses of the O.I.E. for the period 1 April -31 December 1981 be put to the floor for voting.

The Resolution was adopted unanimously, with the exception of four votes: the Delegates from Austria, the Federal Republic of Germany, the German Democratic Republic and Uruguay abstained. (Resolution N° 2 appears in the Appendices as Resolution IV).

Draft Resolution N° 3 concerning the budget expenses of the O.I.E. for the period 1 January - 31 December 1982 was then presented for voting and was adopted by a majority :

- (i) votes "for" : 54
- (ii) votes "against" : 2 (Federal Republic of Germany and the U.S.A.)
- (iii) abstentions : 9 (Algeria, Angola, German Democratic Republic, Ethiopia, Kenya, Korea, Spain, Sweden and Uruguay).

(Draft Resolution N° 3 appears in the Appendices as Resolution V).

The Delegate from Uruguay explained his abstention by pointing out that he had received instructions from his Government not to vote for an increase in financial expenses for his Country beyond 1981.

For his part, the Delegate from Sweden explained that he found it abnormal that the Budget be reflected in its entirety on the first Financial Year of the three-year Programme.

Before voting took place on Draft Resolution N° 4, several delegates (Australia, Cameroon, Ghana, Sweden, U.S.S.R.) asked the President that contributions for 1982 remain unchanged for the two subsequent financial years (1983-1984).

Dr. L. BLAJAN acknowledged that the clauses of Article 14 of the Organic Rules should be reviewed.

In actual fact, whilst the Budget should be adopted on an annual basis, the total amount of contributions is fixed on a three-year basis, in accordance with the said Article 14.

The President then requested the Committee to present Draft Resolution N° 4 concerning financial contributions of Member Countries of the O.I.E. for 1982 for voting.

The Resolution was adopted by a majority :

- (i) votes "for" : 47
- (ii) votes "against" : 2 (Federal Republic of Germany and the U.S.A.)
- (iii) abstentions : 17

(Draft Resolution N° 4 appears in the Appendices as Resolution VI).

The Director General informed the Committee that a revision of the financing system of the Office had been forecast for the 1982 General Session.

The President then proposed that the Committee present the following Draft Resolution for voting :

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Draft Resolution N° 4b)

In accordance with Article 14 of the Organic Rules of the O.I.E., the Committee decides that the Financial Contributions of Member Countries for 1982, as provided for in Resolution N° VI, shall remain the same for 1983 and 1984.

This Draft Resolution was adopted on a majority :

- (i) votes "for" : 57
- (ii) votes "against" : 2 (Federal Republic of Germany and U.S.A.)
- (iii) abstentions : 7 (Algeria, Czechoslovakia, German Democratic Republic, Mexico, Peru, Spain and Uruguay).

(Draft Resolution N° 4b) appears in the Appendices as Resolution VII).

The President then proposed that the Committee present Draft Resolution N° 5 concerning Allowances paid to Members of the Committee of the O.I.E. for voting.

Draft Resolution N° 5 was adopted unanimously with one abstention (Somalia). (It appears in the Appendices as Resolution VIII).

The President proposed that the application of this Resolution only take effect as from the 1982 Financial Year. He then closed the Session at 5.30 p.m.

TECHNICAL TOPIC IV :

ZOO-SANITARY SITUATION IN MEMBER COUNTRIES

On opening the Fourth Plenary Session, the President of the O.I.E. asked Delegates from Member Countries to present very brief comments to the Committee on the zoo-sanitary situation in their countries. The essential points raised by speakers are included in the reports they had previously sent to the Central Bureau. Most of these reports were assembled in the General Session document.

Delegates from the countries mentioned below took the floor in the following succession : Malaysia, Netherlands, Taiwan, Bulgaria, Belgium, Cyprus, Ivory Coast, Austria, Sweden, United Kingdom, Finland, Switzerland, Ireland, Rumania, Cameroon, Denmark, Zimbabwe, Czechoslovakia, Australia, Angola, Israël, France, German Democratic Republic, Kenya, Zambia, Canada, Tunisia, Senegal, Mexico, United States, Portugal, Italy, Sudan, Algeria, Indonesia, Chile, Iran, Nigeria, New Zealand, Botswana and Swaziland.

The Delegates gave information either on new outbreaks of diseases and control measures enforced or on preventive measures taken. Mainly List A Diseases were referred to (particularly Foot-and-Mouth Disease, Classical and African Swine Fever, Rabies, Contagious Bovine Pleuropneumonia and Anthrax) but certain List B Diseases were also discussed (mainly Brucellosis, Bovine Tuberculosis and Enzootic Bovine Leukosis).

Among important topics considered, Delegates from Algeria, Cameroon, Ghana, Kenya, Mauritania, Tunisia, Zambia and Zimbabwe reported on the growth of Rabies occurrence as well as increasing difficulties to control this disease. Zambia and Zimbabwe had recorded substantial livestock losses caused by diseases transmitted by ticks.

Dr. Z. MATYAS, the Representative from the W.H.O., informed Members of the Committee on the development of the W.H.O. Veterinary Public Health Programme.

He explained that the most important objective of the W.H.O. was to attain health for all by the year 2000 and that veterinarians could do much to contribute to the improvement of primary health care.

Dr MATYAS continued by announcing the expansion of several zoonoses centres, notably the one in Athens for the Mediterranean area, which provide essential technical cooperation on an international level. He concluded that the latter should be strengthened and developed as far as possible.

His comments were followed by those of Dr. R.M. TALL, Representative of the C.E.B.V., who emphasized the very fruitful collaboration between the C.E.B.V. and the O.I.E. during the Emergency Campaign against Rinderpest which is being carried out (1980-1981) in nine West African countries. The Campaign is being funded by the E.E.C. under the aegis of the O.I.E./O.A.U.

He pointed out that the C.E.B.V. intended to develop the control of six major zoonoses in sixteen African States.

Dr. Y. OZAWA, Representative of the F.A.O., then indicated that his Organisation hoped to support O.I.E. action in various fields where collaboration is both feasible and desirable. Indeed, the F.A.O. intends expanding its activities in the emergency control programmes for livestock diseases.

The Delegate from the Ivory Coast described the disadvantages of joint aid as is sometimes proposed by development organisations. Supported by the Delegates from Mali and Mauritania, he suggested that this assistance to developing countries be offered with a stronger spirit of solidarity and that be more appropriated to the immediate priority needs of the countries concerned. These Delegates did in fact point out that there was often a discrepancy between these control programmes against diseases and the logistic support in the field.

The President of the O.I.E. thanked Delegates for their valuable comments and Representatives of International Organisations for their contributions to the debate. He concluded that in the future more extensive action should be envisaged in all respects. He then closed the Session.

Due to the prolongation of the Administrative Session on the afternoon of 26 May 1981, the Third Plenary Session concerning Topic III was postponed to the morning of 28 May.

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TECHNICAL TOPIC III :
INFECTIOUS LARYNGOTRACHEITIS OF POULTRY

Dr. R.W. GEE, (Australia) Vice-President of the Administrative Commission, chaired the Technical Session on Infectious Laryngotracheitis of Poultry (ILT).

He asked Dr. J.E. LANCASTER, President of the Permanent Commission of the O.I.E. for the Study of Avian Diseases and Chief Rapporteur on Technical Topic III, to propose two Rapporteurs who would prepare the texts of Resolutions with him.

Dr. G. MEULEMANS (Belgium), Secretary General of the Avian Diseases Commission and Dr. J. MELVILLE (Australia) accepted this task.

Dr. J.E. LANCASTER summarised his report, based on fourteen papers which had been submitted to him by the Central Bureau.

Although ILT has been recognised since 1920, it has developed substantially in certain countries over the last ten years.

This disease, due to a Herpes virus, exhibits extremely variable symptomatology which is linked with important variations in the virulence of field strains.

It affects chickens and pheasants mainly in areas of dense poultry production.

ILT generally incurs heavy losses either by death or reduced egg production. In its asymptomatic form ILT can only be diagnosed by appropriate laboratory methods.

ILT control is mainly based on vaccination and on hygienic measures.

Several administration routes were proposed but the eye-drop vaccination method generally gives the best results.

Dr. J.E. LANCASTER emphasized that the level of protective immunity among birds varied considerably according to the vaccinal strain and dose as well as the methods for testing vaccines.

The Delegate from the Netherlands, assisted by the Delegates from Belgium and Great-Britain, pointed out that aerosol vaccination provided a lower level of protection than the eye-drop method and that it could intensify the virulence of certain vaccinal strains.

Dr. J.E. LANCASTER considered that presently only one serological and antigenic type of the ILT virus exists in the world. However, the Delegates from Italy and the Netherlands expressed the wish that research be conducted on the variations in the virulence of field isolates from one country or epizootic to another.

In concluding the Session, Dr. J.E. LANCASTER briefly commented on the recent International Symposium held on Avian Influenza in which he chaired the Panel 2 entitled "Development of uniform international understanding concerning import-export requirements". This Commission proposed four objectives which directly concerned the O.I.E. Commission for the study of Avian Diseases.

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COMMISSIONS FOR THE INTERNATIONAL
ZOO-SANITARY CODE, FOR NORMS
AND FOR ANAEROBES

Dr. H. GASSE (France), President of the International Zoo-Sanitary Code Commission, chaired the Fifth Plenary Session. He opened the Session by reminding the Committee that the Report on his Commission's activities had been included in the General Session document (SG/49/CS 2 and 3). This Report had been prepared after the Commission's Meeting held at the O.I.E. Headquarters from 2-4 December 1980. He pointed out that the principal topics examined by the Code and Norms Commissions during their Meeting on 26 May 1981, would be submitted to the Committee.

After indicating that Professor B. TOMA (France) was preparing a standardisation of diagnostic methods for Aujeszky's Disease, the President called on Professor TOMA to describe study in progress and the risks of the disease's transmission by live animals or animal products during transportation.

Professor B. TOMA stated that it was extremely difficult to rely on vaccination of breeder boars before transportation as the latter could be simultaneously infected. On the contrary, infection of pigs by waste food appears unlikely. This point was confirmed by Dr. A.C.L. BROWN (G.B.) Vice-President of the Code Commission.

The second item was presented by Dr. A.C.L. BROWN (G.B.) on methods for examining animal semen. Dr. PAREZ (FRANCE) then informed the Committee of difficulties encountered by laboratories when blood samples are exchanged for studying animal blood groups.

Dr. H. GASSE noted that the Commission planned submitting a draft Recommendation to the Committee on this subject.

Professor A. FLORENT (Belgium), President of the Norms Commission, reported that a paper had already been published on this matter in Vol. 61 of the O.I.E. Bulletin (1964) (Labelling of Parcels and Postal Conventions).

Dr. H. GASSE then asked the Committee to approve the Code Commission's proposals to amend certain texts in the Code. These concerned bovine Tuberculosis, Equine Influenza, Enzootic Bovine Leukosis, Contagious Equine Metritis and Newcastle Disease.

The Delegates from Australia and Cameroon refused the proposed amendment concerning Bovine Tuberculosis; the Delegates from Australia, Canada and New Zealand asked that different wording be used for the proposed Equine Influenza amendment.

A new text on Enzootic Bovine Leucosis remains under study following discussion during the Meeting of the Code Commission on 26 May.

The President then decided that the proposals in question be re-examined at a later date.

New texts were presented to the Committee on certain diseases caused by Anaerobes, Equine Piroplasmiasis, Echinococcosis-Hydatidosis, hygienic precautions concerning the carrying-out of diagnostic tests and vaccinations for horses, the International Certificate of Vaccination against Rabies, the drafting of which was made after consultation with the W.H.O. and F.A.O.

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These texts were approved. An amendment on the anthelmintic treatment of Echinococcosis with 'praziquantel' was suggested by Dr. R.W. GEE (Australia), but the President stated that no trade mark should appear in regulatory texts.

In the closing stages of the Session, Dr. H. GASSE announced that after twenty years of developing and adapting texts, it was now opportune to edit the International Zoo-Sanitary Code. He suggested that it be circulated worldwide as it serves as a reference document for all countries. He informed the Committee that upon the request of the Director General, he had accepted to extend his term of Presidency of the Code Commission for one more year but thereupon he wished to retire.

Dr. J. JANSSEN (Netherlands), Secretary General of the Commission expressed gratitude to Dr. H. GASSE on behalf of himself and Dr. A.C.L. BROWN (G.B.). He spoke of the admiration they had for his devotion and their appreciation of the confidence he had placed in them during the many years they had worked together to establish the Code which, thanks to him, has become a valuable working instrument.

Dr. L. BLAJAN, Director General, who has had long working experience with Dr. H. GASSE both in the French Administration and in the Code Commission, expressed his respect and sincere friendship towards Dr. GASSE.

The President, Dr. A. LAABERKI also thanked Dr. H. GASSE on behalf of the Committee on his highly commendable work.

COMMISSION FOR THE AGENDA

During the Plenary Session, the President of the O.I.E. proposed the Recommendations of the Agenda Commission for the 50th General Session to the Committee. The three Technical Topics selected by the different Commissions were :

- (i) Rabies : new developments for vaccination
- (ii) African Swine Fever : new developments
- (iii) Respiratory Diseases of small ruminants.

On the request of several Delegates, the 3rd Technical Topic was limited to :

Viral Diseases and Mycoplasmosis of Small Ruminants.

The Director General gave details on the Calendar for O.I.E. International Conferences in 1982 :

- a) 4th Symposium on Anaerobes.
- b) Conference for Europe in London
- c) Conference for Africa (venue to be finalised).

He then submitted a proposal from the Administrative Commission to the Committee. This came from Dr. B. HENRICSON (Sweden) on the new procedure for dealing with Technical Topics at the General Session. The proposal asks that a scientific specialist prepare a comprehensive review on the disease. The Central Bureau will distribute this proposal in Autumn to all Delegates so they can examine it with their respective specialists. The latter will possibly then prepare a technical paper on the disease and all documents received thereon will be analysed and reviewed by a second Chief Rapporteur. Where possible, the aforementioned review will be sent to Delegates before the discussion commences at the General Session. This proposal was welcomed favourably by the Committee but most Delegates hoped

that the same rapporteur prepare the scientific review and the review on control methods received in technical papers submitted by Countries.

The Delegate from the Federal Republic of Germany, with the support of several other Delegates, suggested to the President that the technical topics be assembled at the beginning of the week to facilitate the participation of specialists from all countries. This suggestion was accepted.

Among the specialists proposed by Delegates were : Professor MARTIN (Great Britain), Drs. ANDRAL, ATANASIU (France), KOPROVSKI (U.S.A.) for Rabies, Dr. A. PROVOST or an American Research scientist for Viral Diseases and Mycoplasmosis of Small Ruminants and Dr. J. KELLERS (U.S.A.) for African Swine Fever. These proposals will be examined shortly by the Administrative Commission.

REGIONAL AND SPECIALIST COMMISSIONS

REPORTS ON MEETINGS, RECOMMENDATIONS AND CONCLUSIONS

During the Sixth Plenary Session, the President proposed that firstly, the Committee analyse the Draft Resolutions which had already been prepared.

Draft Resolution N° 11 concerning an Agreement between the Office International des Epizooties (O.I.E.) and the Interamerican Institute for Cooperation on Agriculture (I.I.C.A.) :

The President and then the Director General indicated the Administrative Commission's wish that the Agreement signed between the O.I.E. and the I.I.C.A. be adopted as a model agreement for the future.

This was adopted unanimously with one abstention (Somalia). (It appears in the Appendices as Resolution IX).

Then, Draft Resolution N° 12 concerning the Report on the Animal Disease Status worldwide :

The above Resolution implies that this Report replace the "Annual "Statistics" document only with the tables presented as an Appendix to the Director General's Report for 1980.

In fact, the Working Group on Zoo-Sanitary Information systems which will be formed in the near future, should decide on the definitive form that publications should take.

The Resolution was adopted by a majority :

- a) votes "for" : 66
- b) votes "against" : 1 (U.S.S.R.)
- c) abstentions : 8 (Brazil, Cameroon, Chile, Gabon, Ghana, Ivory Coast, Niger and Sudan).

(It is presented in the Appendices as Resolution X).

Draft Resolution N° 13 concerning the Nomenclature of Animal diseases and Zoo-Sanitary information systems :

In this respect, several Delegates asked that, in the first paragraph of the first recommendation, the reference "in collaboration with the F.A.O." be replaced by "in collaboration with other international Organisations concerned".

Indeed, the Delegates indicated that several international Organisations (W.V.A., F.A.O., W.H.O.) were presently studying similar nomenclature systems, thereby justifying collaboration with them.

Draft Resolution N°13 together with the abovementioned amendment was then submitted to the Committee for voting.

The Resolution was unanimously adopted with one abstention (Somalia).

(It appears in the Appendices as Resolution XI)

Draft Resolution N° 15 concerning the Approval of the Annual Report of the Director General on the Scientific and Technical Activities of the O.I.E. :

The President proposed that "Representatives" be replaced by "Delegates of Member Countries" in the second part of the Decision.

The Delegate from Malaysia suggested that the corresponding sentence be placed above decisions and that "and adopted" be included after "approved".

These amendments were accepted by the Committee.

The Resolution was adopted unanimously. (It appears in the Appendices as Resolution XIII)

Draft Resolution N° 16 concerning Rift Valley Fever was presented to the Committee by the Delegate from Israel, in the capacity of rapporteur on Technical Topic II.

Various amendments were proposed :

- a) The Delegate from Algeria asked that "immediate" and "adjacent" be deleted from the first paragraph as they did not seem justified ;
- b) The Delegate from Cameroon, with the support of other African Delegates, proposed that the first recommendation be deleted and that recommendation 3 (which would become 2) be worded as follows :

"3. That Countries in which the disease exists or which are at risk, be equipped and strengthen their cooperation and technological control means against this disease" ; and

- c) Finally, the Delegate from Peru proposed that recommendation 4 (which would become 3) be added to, at the end of the paragraph by "as well as the financing thereof".

The President proposed that Draft Resolution n° 16 be presented to the Committee above amendments, for voting :

The Resolution was adopted by a majority :

- (i) votes "for" : 74
- (ii) votes "against" : 1 (Mali)
- (iii) abstention : 1 (Niger)

(it appears in the Appendices as Resolution XIV)

Draft Resolution N°17 was presented by Dr. P. ELLIS, Chief Rapporteur on Technical Topic I :

"Animal Health : Information Planning and Economics "

on the request of the Delegates and of the Representative of the World Bank, the following amendments were made :

- a) in the second line of the first paragraph "costs/social benefits" be replaced by "costs/benefits and social benefits" ;
- b) on the third line of the first paragraph of the second recommendation, "production and" should be added before "animal health" ;
- c) in the fourth recommendation, which would become the third as follows :
"3. That the O.I.E., in collaboration with other international organisations draw up a list of existing resources and zootechnical and veterinary infrastructures in each country" ; and
- d) in the third recommendation (which would become N°4), the adjective "concerned" be added after "international".

Dr. J. CROSNIER, Representative of the World Bank, indicated that this draft Resolution constituted an excellent programme on a short, medium and long term basis. He considered that for the O.I.E. it represented a remarkable working instrument for the future.

The amended Draft Resolution N° 17 was adopted unanimously with the exception of one vote (Federal Republic of Germany). (It appears in the Appendices as Resolution XV).

Draft Resolution N° 18 concerning Avian Infectious Laryngotracheitis was presented by Dr. J.E. LANCASTER, President of the Commission for the study of Avian Diseases and Chief Rapporteur on Technical Topic III.

This Draft Resolution was adopted unanimously without amendments being made. (It appears in the Appendices as Resolution XVI).

REGIONAL COMMISSIONS

The adoption of Resolutions was followed by a hasty examination of reports by rapporteurs from each Regional commission on the major topics discussed during their Meetings held on 27 May 1981.

The President asked each Rapporteur to read his report to the Committee before it was submitted for approval.

Reports were presented in the following order :

- a) the Commission for Africa, by the Delegate from Ghana (CR1) ;
- b) the Commission for Asia, the Far East and Oceania, by the Delegate from Sri Lanka (CR2) ;
- c) the Commission for Europe, by the Delegate from Czechoslovakia (CR3) ; and
- d) the Commission for the Americas, by the Delegate from Mexico (CR4).

The President adjourned the Session at 6.45 p.m.

SPECIALIST COMMISSIONS

The end of the Sixth Plenary Session concerning the examination of activities and recommendations of specialist Commissions took place at the beginning of the Session on Friday 29 May.

The President called on Rapporteurs from Commissions who presented the Reports from Meetings held on 26 and 27 May :

- a) Commission for Foot-and-Mouth Disease (CS1) ;
- b) Commission for the Study of Diseases caused by Anaerobies (CS4) ;
- c) Commission for the Study of Avian Diseases (CS6) ;
- d) Commission for Bee Diseases (CS7) ;
- e) Working Group on Echinococcosis-Hydatidosis (CS8) ; and
- f) Working Group of Specialists on Horse Diseases (CS9).

Brief comments were exchanged at the end of the presentation of each Report. In particular, Dr. Z. MATYAS, Representative of the W.H.O. indicated that his Organisation actively participated in collaboration with the F.A.O. in epidemiological surveys on Echinococcosis and expressed the wish that the O.I.E. establish greater collaboration ties.

On the subject of Avian Diseases, Dr. J.E. LANCASTER presented the principal conclusions from the Bureau of his Commission concerning the vaccination against ILT and the definition of "Fowl Plague".

EXAMINATION OF THE BASIC TEXTS OF THE O.I.E.

During the second Administrative Session, held on Friday 29 May, Dr. A. LAABERKI, President of the O.I.E. Committee, called on the Director General to present proposals for the revision of the Basic Texts of the O.I.E., as drafted by the Administrative Commission.

Dr. L. BLAJAN first described the periods of financial difficulties encountered by the O.I.E. since its creation and explained the inadequacy of Article 11 of the Internal Statutes.

The Organic Rules and General Rules adopted in 1974 have not provided for the solution of these financial difficulties. He noted that the Committee should be authorised not only to vote the Budget but also to decide on the division of contributions according to a scale which it would determine.

In this context, he presented Draft Resolution N°9 concerning the Revision of the Basic Texts of the O.I.E., amending in particular Article 11 of the Internal Statutes.

The President stated that in the first paragraph of the Draft Resolution, at sub-para. a), it should read as follows :

"The Budget of the O.I.E. shall be adopted by the Committee each year on a majority of two-thirds of present and voting Members, and shall be financed by Member Countries' Contributions. The contributions of each Member Country shall be fixed according to the procedure determined by the Committee on a majority of two-thirds

of present and voting Members, in accordance with modern international practice, as in the United Nations system." (The rest remained unchanged.)

Several Delegates announced that they could not vote on such a resolution without prior consultation with their Governments. Nevertheless, the principle of amending Art. 11 of the Internal Statutes was accepted by most Delegates.

However, it seemed premature to submit the text of Article 11 of the Internal Statutes, as worded in Draft Resolution N°9, to Governments of Member Countries.

In the closing stages of the Session the President considered it necessary to propose a new draft resolution on this point to the Committee.

Draft Resolution N°19, concerning the Approval of the proposed Staff Regulations of the O.I.E. was then presented and commented by Professor BARDONNET, Legal Adviser to the O.I.E.

This text, taken in application of Article 15 of the Internal Statutes, which provide that the Committee decide on the Staff Regulations, communicate them to Member Countries, provides a very necessary framework which reiterate the main clauses of Staff Regulations in force in other large international organisations.

It will be followed by detailed regulations which will be submitted to the Committee for adoption, and shall repeal the 1958 Staff Regulations which is inadapated at the present time.

Draft Resolution N°19 was adopted by a majority :

- (i) votes "for" : 52
- (ii) votes "against" : 4
- (iii) abstentions : 5

On the application of this Resolution (which appears in the Appendices as Resolution XVII), the proposed Staff Regulations presented to the Committee shall be communicated to Governments of Member Countries, accompanied by draft Regulations prepared in accordance with the proposed Staff Regulations.

During the closing Session, the new draft Resolution N° 9b concerning the Revision of the Basic Texts of the O.I.E. was proposed to the Committee by the President. The Delegates from Algeria and Malaysia asked that the draft include the Basic Texts as a while. The President accepted this proposal and presented the then amended draft for voting. It was adopted unanimously with a single abstention.

The President of the Committee of the Office International des Epizooties and the Director General of the O.I.E. signed the Final Report (in French), the original copy of which will be deposited in the archives of the Office and copies of which will be distributed in French, English and Spanish to the Governments of Member Countries of the O.I.E.

Signed in Paris on 29 May 1981

Dr. A. LAABERKI
President

Dr. L. BLAJAN
Director General



INTER-AMERICAN INSTITUTE FOR COOPERATION ON AGRICULTURE

III INTERAMERICAN MEETING OF DIRECTORS OF ANIMAL HEALTH
Buenos Aires, Argentina, August 5-8, 1981

REDISA III/20
OIE/CAR V/3
29 Julio, 1981
Original: French

GENERAL AGREEMENT BETWEEN THE OIE AND IICA
FOR COOPERATION ON ANIMAL HEALTH

GENERAL AGREEMENT BETWEEN THE OFFICE INTERNATIONAL DES EPIZOOTIES AND
THE INTER-AMERICAN INSTITUTE FOR COOPERATION ON AGRICULTURE

The Office International des Epizooties, hereinafter O.I.E., represented by its Director General, Dr. Louis Blaján, and the Inter-American Institute for Cooperation on Agriculture (hereinafter I.I.C.A.), represented by its Director General, Dr. Jose Emilio G. Araujo, enter into the present General Agreement, subject to the following preambular paragraphs and clauses:

WHEREAS:

1. The OIE is the world organization entrusted with gathering and distributing statistical data on epizootics and the implementation of the international zoosanitary code;
2. The IICA is the Specialized Agency of the Inter-American System on Agriculture and Rural Development;
3. The OIE, recognizing the importance of the veterinary activities carried out by the IICA in Latin America and the Caribbean;
4. The IICA, recognizing the role played by the OIE in the international struggle against epizootics;
5. Both institutions deeming it necessary and expedient to join efforts in the struggle against animal diseases within the framework of their respective mandates and rules,

AGREE:

FIRST. OBJECTIVES.

To join efforts for the general purpose of making a more effective contribution to the struggle against animal diseases in Latin America and the Caribbean.

SECOND. NATURE OF THE JOINT ACTIVITIES.

To comply with the aims set forth in the previous clause, the parties:

(a) Shall cooperate with the countries in Latin America and the Caribbean in their efforts to combat animal diseases;

(b) Shall cooperate in strengthening the national institutions entrusted with combatting animal diseases and producing statistical data on epizootics in Latin America and the Caribbean;

(c) Shall exchange information on projects and working programs, and technical documents of mutual interest; and

(d) Shall establish consultation mechanisms on matters of mutual interest for the purpose of making operative the aims of the present General Agreement.

THIRD. RECIPROCAL REPRESENTATION.

The IICA shall invite representatives of the OIE to attend the meetings planned by the Director of the IICA Animal Health Program and to participate in the debates, without a right to vote; the OIE, for its part, shall invite representatives of the IICA to participate, without a right to vote, in the meetings of the OIE General Committee and in the Conferences of the Regional Commission for the Americas.

FOURTH. ORGANIZATION OF THE MEETINGS.

By common agreement, and insofar as possible, the parties can organize joint meetings of the Regional Commission of the OIE for the Americas and of IICA Directors of Animal Health.

FIFTH. FORMALIZATION OF THE AGREEMENT.

The present agreement shall be formalized through specific agreements which will define the aims of the joint activities, the technical, administrative and financial obligations of the parties, the place and date of performance of the activities, the logistical and supporting personnel and other related aspects.

SIXTH. COORDINATION.

Each party shall appoint a Coordinator of the agreement through whom the institutional relations between the IICA and the OIE shall be channelled.

SEVENTH. DURATION.

The present agreement shall enter into force on the date of its signature by the last party and shall remain in force for a period of five years. By special agreement, the parties hereto can renew it for a similar period, or for any other period agreed upon by the parties.

EIGHTH. AMENDMENTS.

The parties can introduce such amendments to the present agreement as may be agreed upon in Addenda hereto.

NINTH. RESCISSION.

Any one of the parties can terminate the present Agreement, giving the other party sixth months notice of its intention, without detriment to completing the activities planned and in progress deriving from this agreement or from a specific agreement entered into as a consequence hereof.

In testimony of the above, the parties signed six copies of the present General Agreement, two in Spanish, two in French and two in English.

FOR THE OFFICE INTERNATIONAL DES
EPIZOOTIES

FOR THE INTER-AMERICAN INSTITUTE
FOR COOPERATION ON AGRICULTURE

Dr. Louis Blaján
Director General

Dr. José Emilio G. Araujo
Director General



INTER-AMERICAN INSTITUTE FOR COOPERATION ON AGRICULTURE

**III INTERAMERICAN MEETING OF DIRECTORS OF ANIMAL HEALTH
Buenos Aires, Argentina, August 5-8, 1981**

**REDISA III/21
OIE/CAR V/5
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**ANIMAL HEALTH: INFORMATION, PLANNING
AND ECONOMICS**

Dr. PETER R. ELLIS

ANIMAL HEALTH; INFORMATION, PLANNING and ECONOMICS

Peter R. Ellis, Director,
 Veterinary Epidemiology and Economics Research Unit,
 Department of Agriculture and Horticulture,
 University of Reading.

The application of economic analysis to veterinary activities is proving useful in a rapidly increasing number of countries in the developing world, and is also yielding unexpected benefits. Among many studies on schemes for the control of major diseases, benefit/cost ratios of 6:1 for foot and mouth disease control in India and 5:1 for trypanosomiasis control in Nigeria are not exceptionally high. While such results are impressive in themselves, the deeper understanding that is obtained of how production systems really operate and could be improved, and how disease patterns differ in different areas of the same country, is probably of greater long-term importance. This understanding fosters a much more comprehensive approach to the health needs of livestock owners and provides new and more realistic orientation to livestock development schemes.

Month by month we hear of more countries, among them India, Pakistan, Sri Lanka and Indonesia, setting up Units or Sections to assist in the planning and appraisal of animal health programmes, and seeking training for staff. FAO, WHO, OIE and the World Bank, and such regional organizations as AFCAR, the Inter African Bureau of Animal Resources and the Pan American Health Organization are all lending their support to these efforts.

Social Benefit-Cost Analysis

Over the past ten years excellent progress has been made with the development of techniques. The economic evaluation of animal health and productivity programmes involves many complex considerations. However, if the problem is thoroughly defined by epidemiological analysis, treatment and control measures can be grouped into a series of "strategies" which should induce improvements, at different rates, according to the intensity and efficiency of each strategy. There are always at least two strategies to examine - to do nothing or to intervene - but for most problems several alternative types of intervention can be devised. Professional judgement, combined with factual evidence of the responses to the measures combined in each strategy, make possible projections of the rate of progress that could be expected. On this basis, the rates at which benefits - both economic and social - are gained can also be projected and a value summed for each strategy.

In Figure 1 the sequences of steps in this process are shown. This chart was first developed by a WHO Study Group on the Economics of Zoonoses (WHO 1972) but applies equally well to the generality of animal disease. It will be noted that quantitative calculations are based on a "Unit". The behaviour of most diseases varies significantly with the size and type of animal group. The effects of each disease vary accordingly as if the socio-economic implications of the disease are to be assessed for a whole country or region they must be measured or estimated in representative groups of animals. Rarely, as in some areas of Latin America, there is a stable population of herds of a similar size managed in a similar fashion and the whole population can be treated as a single Unit and losses averaged for many thousands of animals. More commonly, the population needs to be grouped or stratified according to size and type of holding - farm, village or typical nomadic herd - and then for each group a typical unit can be described.

The 'normal' herd structure and pattern of production are determined by feeding, management, climate, housing, replacement policy and a background series of health problems such as mastitis and parasitism in some of its many forms. If a new disease problem is added or an existing one is to be reduced or eliminated, changed birth rates, growth, output and mortality or culling will affect the herd size and structure. Thus, by recording or measuring certain key parameters in the normal and the affected herd and calculating all the other relationships it becomes possible to demonstrate in financial terms the changes in costs and income for each representative unit. Such changes can be summed under four headings which make up a convenient equation:-

Costs saved		Costs added		Net financial
+		+	=	effect for the
	—			unit.
Income gained		Income lost		

Once this series of calculations is set up for the representative herd or flock, a model is available for estimating a variety of effects and the costs and benefits of new control measures can be assessed.

Once the costs and benefits for each control strategy have been worked out for each representative "Unit" the figures can be multiplied up to give totals for a whole Region or Country. They are built into estimates for many years into the future and values for such factors as labour may have to be changed to reflect the benefit of increased employment, while the figures for each future year are brought to "present values" by a procedure known as "discounting". Results are expressed as benefit-cost ratios, internal rates of return and net present values. To these results may be added evaluations or commentaries on social considerations such as human health effects through disease and nutrition, and on animal welfare. The decision maker can then choose more fairly between the various schemes proposed and decide more fairly between animal health and other obviously worthy uses for funds at his disposal.

Cost-effectiveness analysis is a technique used where a policy decision has already been made, as in the case of rabies control, and the decision maker needs to know what reductions in incidence can be anticipated from different levels of investment in control measures. Definitions for these terms and details of technique can be found in the Reports of the International Symposium on Veterinary Epidemiology and Economics held in Reading in 1976 and Canberra in 1979.

Inter-disciplinary Cooperation

As more production units and problems are examined it becomes evident that health, nutrition, breeding and management are so inter-related that cooperative efforts by the corresponding specialist groups are essential if the benefits of improvement in any one of these fields is to be obtained. It is clear, for example, that the dairy development programme in India has doubled small-holder income but that much greater inputs of feed and health-care will be needed if the new generations of more productive animals are to achieve their potential outputs. Integration of crops and livestock is undoubtedly the trend that has to be followed but it is a slow and sometimes risky process which needs careful supervision, particularly where the survival of a family depends on a small amount of land. An inter-disciplinary extension programme is required, therefore, to analyse the needs of stock owners and advise on the additional needs and attention that must be provided. By aggregating the findings from such analyses, cooperatives and official agencies can learn how supply and support services should be changed and integration of crop and livestock production safely achieved.

The veterinarian must become much more heavily involved in preventive medicine and the avoidance of insidious problems like parasitism and nutritional deficiencies, while cropping patterns are changed to provide additional animal feed. Governments must intensify control schemes for the major infectious diseases like foot and mouth disease and brucellosis while genetic selection and progeny testing takes place and new provisions are made for marketing. Thus the veterinarian is becoming a vital member of the livestock development team. To be fully effective team members must all share the use of herd models of the type that have been developed for benefit cost analysis.

Information Systems

As all this work has progressed it has become increasingly clear that much greater use must be made of data and information. A great deal of data is routinely gathered but it is generally incomplete and inaccurate.

Until work began on the intensification of foot and mouth disease control in India less than 10% of the outbreaks were reported. In parts of East Africa almost all calf deaths are attributed to East Coast Fever. Such problems as metabolic disease, parasitism, lameness and mastitis are grossly under-reported, though they probably cause more consistent and far greater losses than do most of the major infectious diseases nowadays. Over the past thirty years almost all countries have made remarkable progress on these long standing scourges - and the veterinary profession can be justly proud of its efforts. Now we must look forward to new tasks and to do so we must re-examine veterinary priorities.

New recording and analysis schemes are needed, therefore, and these must be built upward from the producer level. They must start with veterinarians and their collaborators who are dealing with the day-to-day problems of farmers. Preventive medicine and veterinary extension activities are more important in most developing countries than clinical care because they provide vital keys to higher productivity. To achieve results, however, the veterinary adviser must first convince the farmer of the reasonableness of his proposals and this can only be done by analysing recent productivity patterns and setting targets of more output or more progeny which could be obtained if new measures were introduced. Such calculations, demonstrating changes in likely cash flow over coming months, may lead to immediate management changes. A farmer with only three dairy animals can be persuaded to replace a cow, if he realises that he will lose money on every litre it produces when next it calves. This has happened in such a situation in Sri Lanka.

Assistance to farmers: The recording system for these types of activity will stay mainly on the farm but it can provide a firm base for continuous recording of a selection of "Indicator Herds" which represent the different types of production system and different areas in each country. They can provide data on inputs, breeding, productivity and disposals, as well as a balanced view of health problems including the incidence of major diseases. Systematic sampling and testing should add knowledge of underlying problems. Numbers of herds need not, indeed should not, be large and a proportion of herds - and flocks - in the sample should be changed each year so as to avoid too much bias from the effect of professional advice that will have to be given to the collaborating owners. Calculator aids for these activities are already in hand and small computers costing around £7,500.00 are beginning to play a part in such recording schemes - in developing as well as developed countries.

General Monitoring: Periodic surveys can also be used to monitor a limited range of conditions of particular interest to veterinary policy-makers in larger samples of the population. Brucellosis, trypanosomiasis and tick infestation are among many problems that can be investigated by sampling at assembly points for livestock such as dipping centres, markets and slaughter-houses. What authorities need is evidence of prevalence and trends on significant problems which can be followed, as necessary, by structured surveys.

Official Reporting: Routine reporting must continue, of course, but the process could be speeded up and made more useful. Computing will undoubtedly revolutionise procedures within the space of five years. At last it should be possible to build herd and population data banks into the system so that reports can take the form of incidences. When this becomes possible, economic analysis of regional, and even local or within herd, problems will become very simple procedures. Success will depend on rapid feed-back of findings to field officers - and, of course, to research centres - so that all findings can be used to adjust field control and advisory programmes. It will soon be feasible to maintain a series of decentralised but inter-linked data banks which can maintain the necessary flexibility, speed and efficiency and yet allow the aggregation of data for policy-making and research when necessary.

International implications are obvious. The epizootiological work of O.I.E., F.A.O. and W.H.O. and Regional Agencies will take on new meaning. However, we should not contemplate, for a decade at least, automatic access to National disease data banks. Security and confidentiality risks will only allow transmission of required material in computer-readable form, on discs or tapes. Voluntary searches of national data banks, also, could be made on request from an international agency. The potential for new levels of speed, extent and usefulness are still enormous.

The emphasis should be on the collection of appropriate data and conversion into useful information. Quality should be given priority over quantity. Techniques for questionnaire survey, strategic sampling and limited herd investigations can be used to define patterns of disease and their effects, to use in models, while routine recording and reporting is curtailed. Such information systems must inevitably involve all aspects of the livestock industry, since calculations of disease incidence require the same data on population size and structure as do estimates of feed requirements, future output and processing needs.

The way ahead

Now that the seeds of these concepts have taken root, a combination of orientation, applied research and active development is urgently needed.

In-depth education is needed for small numbers of veterinarians and associated specialists, at such Universities as Reading, Melbourne, James Cooke, California, Louisiana and Minnesota. Hopefully some of the developing country Universities and Institutions will soon be added to this number. Intensive short courses, such as those already started at Reading, are needed for professionals who have begun to move toward senior positions, while short seminars and workshops like the ones sponsored by F.A.O. in Rome (1978) and Bali (1979) are required to orientate the leaders in livestock development.

A vital part of this process must be the continuing study and research into real situations and problems in a widening range of socio-economic and ecological environments, within developing countries. Epidemiological techniques now being developed are revitalising the great pioneering work of our veterinary forefathers who identified causes and solutions for disease problems before the germ theory became acceptable, an aid which was under-utilised amid the astonishing micro-biological innovations which followed.

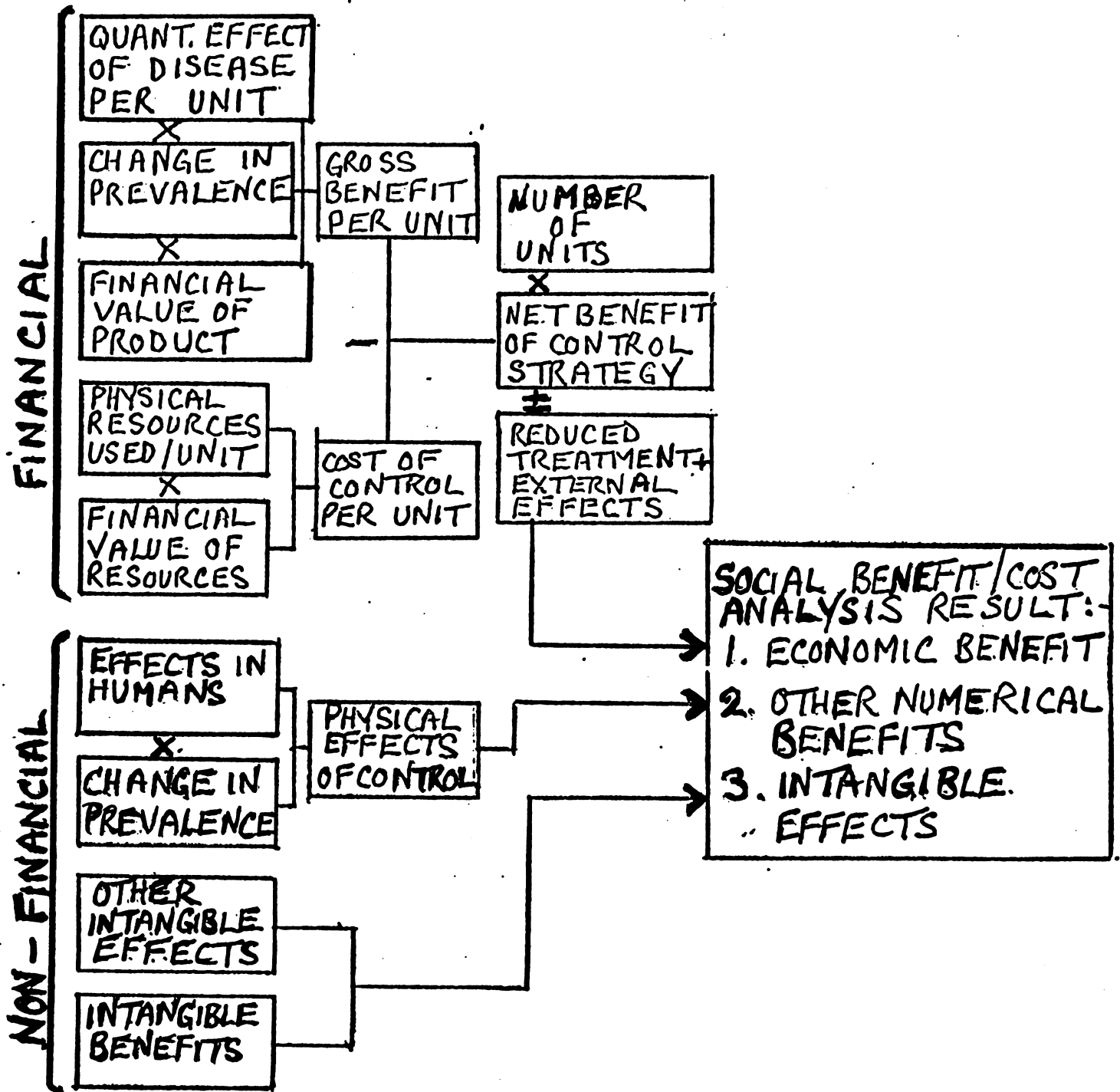
New initiatives are certainly needed within countries and at the international level:-

1. Planning, evaluation and monitoring Units are needed initially within veterinary departments and they should eventually help to coordinate all the information control services of a country's livestock sector.

2. Orientation, training and applied research schemes are needed to prepare staff, define appropriate (non-computerised as well as computerised) systems to establish dynamic data management procedures on animal health and productivity.
3. International agencies can take the lead in aiding in the design and implementation of new information systems, probably with far higher returns to the money involved than is obtained from all other efforts. These agencies can also provide incentives for the national developments by creating new scope and efficiency in international exchange of animal health related information, on trade and movements as well as disease, for example.

Only in these ways shall we find the most effective means for achieving and maintaining the higher standards of animal health and productivity which the developing world so urgently needs.

FIG 1 SOCIAL BENEFIT-COST ANALYSIS OF DISEASE CONTROL





INTER-AMERICAN INSTITUTE FOR COOPERATION ON AGRICULTURE

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ANIMAL HEALTH: INFORMATION, PLANNING AND ECONOMICS.
REVIEW OF PAPERS

Dr. PETER R. ELLIS



XLIX GENERAL SESSION
SESSION GENERALE
SESION GENERAL

SG/49/T.I

ANIMAL HEALTH : INFORMATION, PLANNING AND ECONOMICS

REVIEW OF PAPERS

by

Peter R. ELLIS^o

The author was given an opportunity to review papers submitted by the delegations from Canada, Cyprus, Great Britain, Hungary, Ivory Coast, Lebanon, Netherlands, New Zealand, Malaysia, Spain, Turkey and the U.S.A. All these papers add to our knowledge of how to plan and assess, in economic terms, the prevention and control of animal health problems.

Gains from Major Disease Control Schemes

In Hungary a programme for the eradication of bovine Tuberculosis has been brought to a successful conclusion over 17 years, at an estimated total cost which approximates the actual loss from the disease in a single year prior to the programme. The various components of the loss were calculated for the year 1964. This enormous benefit is not surprising when it is understood that 25% of all cattle and 42% of all cows were considered to be reactors at the time.

In a paper from Cyprus the planning, economic evaluation and implementation of a programme to control Echinococcosis is discussed. The nature of losses and the impact on human health are assessed and compared with costs. Despite the insidious character of this disease it could be deduced that annual losses exceeded C£200,000 while annual costs started at C£70,000 and could later be reduced to C£40,000.

No adjustments appear to have been made for the changing value of money over the years in these different assessments and it would probably have been easier (and perhaps more accurate) to integrate the animal losses from the diseases into a series of dynamic herd models in order to demonstrate changes in profitability. Such financial models are sure to be available for herd planning and management purposes in each of

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University of Reading.

the countries and their use avoids the risks of double-counting some aspects of loss. Even more helpful is their potential for models in demonstrating repercussions over a number of years.

Other countries reported varying levels of loss from a range of infectious diseases. Intensification of Foot-and-Mouth Disease control in Turkey at an overall cost of 203 million Turkish L (TL) has brought down estimated losses in meat and milk from 551 million TL in 1976 to 141 million in 1980. A major scheme has also started to reduce the estimated 5,500 million TL loss from parasitism. A vaccination scheme costing about 30 million TL prevented the re-establishment of Bluetongue when it reappeared in Western Turkey in 1977. The disease could have led to losses as high as 5,000 million TL if it had spread uncontrolled. A similar disaster was avoided by Malaysia through emergency programmes to eliminate Foot-and-Mouth Disease in 1973 and 1978. The last outbreak in 1978 cost M\$4.5 million in indemnities and strategic vaccination. However, Haemorrhagic Septicaemia continues to be a source of loss, as elsewhere in Asia, despite vaccination. Poultry diseases are also a major source of loss in Malaysia, and in Lebanon they are the main focus of attention because of the very high dependence of the country on poultry for meat supplies. Spain sums animal disease losses at 100,000 million pesetas per year, representing 20% of potential animal productivity. The authorities have used this economic evidence of loss to secure increased funding for control measures and have been able to reduce African Swine Fever outbreaks from 1,058 in 1979 to 457 in 1980 and to increase testing for Brucellosis and Tuberculosis by 400% in two years. Budgets for these campaigns and control measures for Foot-and-Mouth Disease, Mastitis and parasitism are expected to exceed 6,000 million pesetas in a new ten year plan.

Introduction of Economic Analysis Techniques

These, and many other estimates of costs and losses that have been given, represent a useful step forward but still do not appear to take full advantage of economic analysis techniques. To take the further step using benefit-cost analysis, would not only highlight more clearly the benefits to be obtained from different approaches to control, but also provide a basis for measuring progress and enable financial decision makers to compare veterinary activities with other potential investments more fairly. The paper from the U.S.A. illustrates the kinds of results that can be obtained in recording benefit-cost ratios, ranging from 1:1 for Trichinosis control, through 8:1 for Brucellosis and 20:1 for Screwworm control, to 99:1 for cattle tick control.

A majority of the papers, in fact, do deal at length with techniques for evaluating control measures for individual problems. The communication from Great Britain draws attention to increasing demands for economic evaluation of animal health proposals due to economic recession within the country and increasing competition for limited resources. Veterinary services in the U.S.A., Canada and New Zealand are among many others experiencing similar pressures.

The Wider Considerations that are Revealed

The highly constructive contributions of such economic analyses also become apparent from the work in Britain. Effective economic analysis depends on sound knowledge of the epidemiology of the problem under consideration and this knowledge must extend to the probable behaviour of the disease in response to changes which occur in the size structure and management of the various species involved. Findings from 1973 which suggested that strategic vaccination against Foot-and-Mouth Disease was uneconomic now need re-evaluation in the light of very much larger herd sizes and the problems of rapid elimination of focuses of infection if such herds become affected. The commentary on Swine Vesicular Disease control in Britain draws attention to the fact that swill feeding makes an important contribution to the economy of the pig industry and avoids serious problems of disposal which could exacerbate disease hazards. Such considerations only began to receive due valuation when economic appraisal was introduced. The problem of Aujeszky's Disease in Britain raises the question of risk and uncertainty as did the appraisal of the Brucellosis problem in humans : the significance of fear of contracting the disease must be added to projected losses for those who could reasonably be expected to become affected. The British paper adds a note of caution on discrepancies that can arise as happened with respect to Enzootic Bovine Leucosis (EBL) control plans, when slightly different assumptions are multiplied up over as long a time scale as 25 years. Different discount rates and different intensities of control activity can widen the final results so it is important to work from the soundest possible epidemiological data and to conduct sensitivity analyses to demonstrate the possible effects of errors in assumptions.

The Need for Standardisation of Techniques

A plea is made for the standardisation of techniques, and this is certain to be echoed by other delegations. Papers from Canada on E.B.L., the Ivory Coast on Trypanosomiasis and Brucellosis and New Zealand on Brucella ovis, give excellent illustrations of the systematic procedure required for economic evaluations. In each case a thorough, statistically based, survey provides data for quantification of the losses that are occurring for scheduling a work programme at one or more rates and for predicting levels of achievement. Results from the study on Trypanosomiasis and Brucellosis in the Ivory Coast offer the prospect of excellent returns but the findings on E.B.L. in Canada and on Brucella ovis in New Zealand do not appear to justify an investment in generalised eradication. Despite the negative findings, however, the studies have thrown important new light on the epidemiology of both problems.

Implicit in all these detailed studies are models of the behaviour of the disease concerned. More and more workers are finding that projections of trends in disease incidence and disease loss are achieved most realistically when they are made in a series of mathematical models representing the types of production system which operate in the country or area concerned. Evaluations must also be made of between herd spread and here too, mathematical models are clearly helpful. The paper from the U.S.A. discusses the stratified triple binomial model now used by the Department of Agriculture to predict the possible spread of a disease in areas with different types of production system, different prevalences within herds and different rates of movement between herds. With the readily available aid of computers, harmonisation and standardisation of such techniques for regular use in planning, evaluation and adjusting animal health schemes must become an urgent priority.

Herd Health Schemes

Most of the review, up to this point, has related to major disease control schemes. However, many papers also mention such problems as parasitism and mastitis, which involve combinations of management, hygiene and treatment. The contribution from the Netherlands raises the whole important issue of preventive health schemes. This latter paper discusses the provision and economic evaluation of regular veterinary support to improve general productivity of dairy herds. Fertility, calving problems, udder disease, lameness and metabolic conditions were the main problems encountered and a favourable response was obtained from the less productive of the study herds. Careful recording was a key factor in securing essential data and dynamic models proved useful in assessing effects of change.

Further Development

From this review it is clear that the scope of animal health activities is both deepening and widening. Economic appraisal techniques are leading us into securing a deeper understanding of the ecological and managerial factors which affect the behaviour of major diseases. Thus, we can become more skilled in selecting and evaluating control strategies. Meanwhile, we are gaining new insight into the prevention and control of the so-called "production diseases".

As leaders in veterinary policy formation, participants in this meeting should consider how these new techniques can best be promoted and utilised.



INTER-AMERICAN INSTITUTE FOR COOPERATION ON AGRICULTURE

III INTERAMERICAN MEETING OF DIRECTORS OF ANIMAL HEALTH

Buenos Aires, Argentina, August 5-8, 1981

REDISA III/23
29 Julio, 1981
Original: Spanish

FINAL REPORT

SECOND INTER-AMERICAN MEETING
OF DIRECTORS OF ANIMAL HEALTH
(REDISA II)

FINAL REPORT

The Second Inter-American Meeting of Directors of Animal Health (REDISA II) was held at the Inter-American Institute for Agricultural Sciences (IICA), in San José, Costa Rica on the 8th to 12th of September 1980, according to the declaration made by the Director General of the Inter-American Institute for Agricultural Sciences, following the Resolution IICA/RAJD/Res. 94, approved by the Board of Directors in their XVIII Meeting.

ELECTION OF OFFICERS

On 8th of September the Chief of Delegations of the participating countries met at a preliminary Session to elect the officers for the meeting. The following were proposed and unanimously elected.

President - Dr. Oscar Valdés Ornelas
Director General of Animal Health
Secretaría de Agricultura y
Recursos Hidráulicos of
México.

Vice President - Dr. Humberto Olmos
Director Animal Health
Ministry of Agriculture of
Venezuela

Rapporteur - Dr. Patrick McKenzie
Principal Agricultural Officer
(Veterinary Livestock Science)
Ministry of Agriculture
Georgetown, Guyana.

Dres. Francis Mulhern and Pedro N. Acha acted as Secretary ex-officio.

PARTICIPANTS

The following Governments were represented at the meeting: Argentina, Barbados, Bolivia, Canada, Costa Rica, Chile, Dominican Republic, Ecuador, El Salvador, Grenada, Guatemala, Guyana, Haiti, Jamaica, Mexico, Nicaragua, Panama, Paraguay, United States of America, Uruguay and Venezuela.

The following International Organizations were also represented: Agency for International Development of the United States (AID/ROCAP), Pan American Health Organization (PAHO), Food and Agricultural Organization (FAO), Inter-American Development Bank (IDB), International Office for Epizootics (OIE), International Regional Organization for Animal and Plant Health (OIRSA) and observer of the Netherlands was also present.

The complete list of participants is provided as document REDISA 2/18.

PLENARY SESSIONS:

The inaugural session took place on 8th September and following his introduction, Dr. José Emilio G. Araujo, Director General of IICA extended a welcome to all the participants at the Second Meeting.

Dr. Araujo expressed his pleasure at the effective development of the Animal Health Programme for IICA in fulfilment of the recommendations of the respective Member Governments of the Inter-American Institute of Agricultural Sciences.

Based on the recommendations of the First Meeting of the Directors of Animal Health, IICA had put into place the minimum structure required for the program. He told the meeting that during the last few weeks, the staffing of professional Veterinarians considered in the budget for the year 1980 had been completed.

The Animal Health Program of IICA has been incorporated as an integral part of the priority line of the Institute of production and productivity. We consider, he said, animal health as an essential component of animal production.

Dr. Araujo emphasized that the total regular budget increase for the year 1981 for IICA, had been placed in support of the Animal Health

Program which would therefore become in the future one of their major activities.

He expressed his commitment to give every possible support to the new program. There were tremendous tasks to be accomplished and so little time for them. He reiterated the need for a more active coordination among International Organizations to increase the support for Animal Health Programs in the Americas.

The representative of the Minister of Agriculture and Livestock of Costa Rica Enge. Oscar Echandi Murillo, on behalf of his Government extended a warm welcome to the meeting. He expressed his hope for an effective success to the conclusions from the deliberations of this very important meeting. He gave full support to the concept of animal health and production, considering the great importance health had to production. He requested the meeting to consider programs to increase fertility of livestock by controlling disease, in order to provide a most efficient stimulus to the Animal Industry and to the production of food.

At the commencement of the working sessions the participants were requested to ratify the proposed Agenda as outlined. There were no dissensions.

Dr. Francis Mulhern, Director of Animal Health IICA, reported on the development of the Program according to the recommendations from the first meeting. Already he had visited several countries where he had

been encouraged by the full support he had received. Several projects would be developed in various countries especially in Tick Control, screw-worm, Hog Cholera and African Swine Fever. Projects were also being prepared for development of diagnostic laboratories and even at this present time in IICA, assistance was being provided to initiate a data bank on Animal Health utilizing computer services. He made special mention of the need to establish an Animal Disease and pest emergency fund. He outlined the principal aspects of the activities of the program for 1981, 1982 depending on the approval of the participants of the meeting.

Dr. Pedro N. Acha, Advisor to the Director General of IICA gave a report on the evaluation following the recommendations based on the First meeting (REDISA 1). This evaluation showed that much had taken place in a very short time with very few resources. One of the projects that had been recommended was in the field of human resources. He announced the promotion in Argentina of the Post Graduate School for Animal Health at the University level where philosophy as well as veterinary medicine and technology would be emphasized.

Both presentations received the acclaim and support of the meeting. OIRSA offered full collaboration of their data bank and similarly other international organizations and countries offered their help to IICA in support of the new program. Equally certain countries requested help from IICA to solve certain problems in Animal Health.

The representative from Argentina was afforded the opportunity to read a letter from the Director General of Animal Health expressing best wishes for the success of the meeting and offering his country on behalf of the Minister of Agriculture as the site for the 3rd REDISA Meeting.

At the Second Plenary Session Agenda Item 2, the Panel Discussion on Babesiosis and Anaplasmosis of Cattle was held. Presentations were given on Epidemiology by Dr. Ronald Smith; Progress in Immunization by Dr. Kenneth Kuttler; Immune Responses to Babesia Bovis by Dr. Miguel Osorno this was followed by outlook and future needs for research by Dr. Andrew Carson; and Epidemiological and Feasibility Studies in Costa Rica by Dr. Manuel Guardia.

The Panel presentations were followed by an active discussion and interventions by several participants.

The Third Plenary Session took place on the morning of September 9; Agenda Item 3, was presented by Dr. Norvan Meyer, who introduced the subject of "Programs for Screworm Eradication", describing the experiences of the succesful program in the United States of America.

The experiences of the equally successful program in Mexico was presented by Dr. Nazario Pineda. Following these presentations, Dr. Francis Mulhern made a brief summary of the REDISA 2/11 Document "The Feasibility of Eradicating Screworm from Central America and Panama", that had been prepared by a group of Consultants hired by IICA for this purpose. The

subject of screwworm eradication provoked a very active discussion on the part of the Representatives and observers. The speakers were requested to enlarge their presentations with more detailed information concerning eradication procedures, equipment, pesticides and administrative problems.

At the fourth plenary session Dr. Orlando Sánchez presented "The Program for Eradicating African Swine Fever (ASF) from the Dominican Republic", he described in detail the methodology and procedures utilized in the eradication process, indicating that the swine depopulation will be completed in a few weeks. Following this presentation Dr. Francis Mulhern, described the plans that are being prepared jointly by the Government of Haiti and IICA for the eradication of African Swine Fever in that country. Both presentations raised questions and comments from the participants. Special recognition was extended to the animal health authorities of Dominican Republic for their excellent performance in the eradication of this disease. The FAO Representative, at the request of the plenary made a report of the information that has been made available to his Organization regarding the present situation of ASF in the countries of the Americas. This information will appear in the ASF News Letter that is being published by FAO.

Also, a document entitled "FAO's Programme of Technical Collaboration to Prevent the Spread and Introduction of African Swine Fever (ASF) in Latin America". LARC/80/INF/5, July 1, 1980, was distributed. The session continued with the presentation of Dr. Jorge Benavides of "The Program for Eradicating Hog Cholera from Chile". The speaker described an

indepth planning process that has been utilized for the implementation of this program in 1981.

The Representative of Paraguay indicated that his country is giving high priority to the control of Hog Cholera and that a proposal for technical cooperation of IICA, in this respect, has been submitted to the Director General.

The fifth plenary session took place Wednesday 10 in the morning under the chairmanship of Dr. Humberto Olmos. The Agenda Item 6, "The Need and Potential for Coordinating Veterinary Institutes and Laboratories for Diagnosis and Research in the Hemisphere", was presented by Dr. Carlos Arellano who described the needs for diagnostic capacity in the programs of animal health in the Region and the importance to establish reference laboratories using the excellent facilities that existed in some countries of the Americas. A status report on laboratories was introduced by Dr. Pedro N. Acha in which the distribution of trained human resources was outlined as well as available laboratory facilities. The observer from OIRSA reported that a feasibility study for the creation of a Regional Laboratory in Guatemala had been conducted. A suggestion was made for IICA to promote the establishment of such a laboratory as well, as to improve existing national laboratories.

The problems associated with laboratory facilities were discussed by several Representatives. Emphasis was placed on the need for support by the livestock industry, continued research and struggle for resources. The

Representative of the United States of America called for the establishment of an expert commission to study the problems, needs, and capabilities of the veterinary laboratories in the Americas and report back to the meeting at REDISA 3. The observers from IDB noted that with the financial assistance of the Bank several countries of the Region have increased their number of animal health laboratories in the last 10 years. He emphasized the need for technical expertise in support as well as projects to utilize these laboratories.

The session continued with a special presentation of Dr. Louis Blajan, Director General of OIE, who reviewed the history and strategy of the development of the International Office of Epizootics. He promoted the new strategy of the Office to improve the information services of the Animal Health Programs in the world and requested the support of the American Region.

A special session requested by the Director General of OIE took place at 12:30 p.m. on Wednesday September 10, under the chairmanship of Dr. Pierre Chaloux and with the participation of the Representatives of the member Governments of OIE and other Representatives attending REDISA 2.

The group reviewed the preparations for the meeting of the American Commission of the OIE that will be held next year at Canada around the same dates of the RIMSA meeting in Washington D.C. Dr. Blajan made a plea to those countries of the Region that have not yet joined OIE to do so in the near future and recommended the maximum attendance at the meeting in Canada.

The meetings for Planning and Coordination in these countries were held in the afternoon of Wednesday September 10, 1980. Those groups were constituted:

- Northern and Central American Region, composed of: Canada, Costa Rica, El Salvador, Guatemala, Mexico, Nicaragua, Panama, and United States of America.
- Caribbean Region, composed of: Barbados, Dominican Republic, Grenada, Guyana, Haiti, Jamaica.
- South American Region, composed of: Argentina, Bolivia, Chile, Ecuador, Paraguay, Uruguay and Venezuela.

The sixth plenary session commenced with Dr. Pedro N. Acha discussing "Animal Health Training Program". He noted that in the short time IICA had conducted an in-country Seminar in Guyana for the Veterinarians in the Caribbean and that a project was being designed for animal health training at the University of La Plata, Argentina.

He emphasized IICA's high priority on training for the successful implementation and completion of Animal Health Programs of the Americas.

He made special reference to the need for the training of laboratory personnel.

Delegates and observers pointed to the need for training to be up-graded in quarantine and epidemiology. It was also noted that emphasis should be placed on trained persons being placed in the areas in which they were trained.

The observer of IDB stressed that the bank was willing to increase its contributions to adequately documented and justifiable requests for training.

The delegates then assembled according to regions to continue the meetings for planning and coordination in the countries.

There was a concensus of the delegates that Directors of Animal Health should plan for the training and development of their human resources and particularly as they relate to the programmes and projects in Animal Health and that further they should ensure the cooperation of their respective governments and funding agencies.

The seventh plenary session met Thursday 11, after the deliberations and discussions of Item 8 of the Agenda "Meetings for Planning and Coordination in the Countries". The following groups presented their comments and recommendations: 1) Northern and Central American Region; 2) South American Region; and 3) Caribbean Region. Each region, reported its recommendations to the plenary. These were discussed and are included as Document REDISA2/17.

The chairman open the discussion of Agenda Item 10, the offering of the Ministry of Agriculture of Argentina to host the 3rd. Inter-American Meeting

of Directors of Animal Health, was unanimously approved by the plenary who recommended to the Director General of IICA to organize REDISA 3 in Buenos Aires, Argentina around September of 1981.

The Representative of Ecuador presented to the chairman an official letter of his government offering the city of Quito, Ecuador as the place for the meeting of the Subregional Animal Health Committee Meeting of the Andean region.

The 8th Plenary Session took place on September 12, in order to continue the discussion of Agenda Item 10. The Representatives suggested different subjects for the program of REDISA 3. Document REDISA2/17 "Recommendations of the Meetings for Planning and Coordination in the Countries" was distributed.

The closing session was held immediately with the following program: reading and approval of the final report; message from the IICA Representative; message of the chairman of REDISA 2, Dr. Oscar Valdés Ornelas.

COMMENTS AND RECOMMENDATIONS

SCREWWORM ERADICATION

REDISA 2/20
Page I

The successful progress of the programs to eradicate screwworm (Cochliomya hominivorax) in the United States of America and in Mexico has given rise to the potential of successfully eradicating screwworm from all of the countries of Central America, Panama and some Caribbean countries such as Jamaica, where the infection has become established.

An expert group of consultants united by IICA, knowledgeable in the eradication of screwworm, carefully reviewed the situation in each of the Central American countries and Panama as to the technical feasibility of eradicating screwworm from this area employing techniques and methods which have been so successful in progressively eradicating the disease in the United States of America and Mexico. It is consensus of the expert group that screwworm eradication is technically feasible in the region. Although the group did not specifically review the situation in the Caribbean, there is reason to believe that comparable techniques and methods could be successfully applied to the infected islands of the Caribbean, as was done in Curaçao, Puerto Rico and the Virgin Islands.

With the successful progress of screwworm eradication in Mexico, officials estimate that the goal of the joint Mexico-American Screwworm Eradication Commission to eradicate screwworm in Mexico north and west of the Isthmus of Tehuantepec will be achieved by 1982.

Given this estimate for the successful completion of the joint program in Mexico, the countries of Central America and Panama should begin now

to plan and prepare for the extension of the screwworm eradication program into their countries. To this end it is recommended that:

1. At least one veterinarian and entomologist from each country of Central America and Panama and interested countries in the Caribbean receive comprehensive training at the screwworm laboratories in Mexico or the United States of America to assist in future field and laboratory studies to be conducted in collaboration with experienced screwworm officials, scientists and technicians assigned to work in the region.
2. An Inter-American Commission for eradication of screwworm, comprised of representatives from Panama, the Central American nations, Mexico and the United States of America be established to coordinate the interests and future efforts of this multinational region in their common pursuit of eradication of screwworm.

The positive attitude of each of the countries contacted by the expert group was reinforced by supportive commitments from the representatives of Guatemala, Panama and the Minister of Agriculture of Costa Rica, whose message to the Inter-American Meeting of Directors of Animal Health reiterated that nation's endorsement of an extension of the screwworm eradication program into Central America and Panama.

The progress and success realized in the screwworm programs in the United States of America and Mexico, clearly demonstrate that countries

acting in close collaboration and with the support of their livestock industries can accomplish animal disease eradication.

ANAPLASMOSIS AND BABESIOSIS

There is a critical need for the implementation of safe effective immunizing agents and control systems for the prevention of livestock losses due to anaplasmosis and babesiosis.

Presentations and discussions centered on vaccination concepts, procedures for production of vaccines and associated tests for efficacy and safety. Research has provided the basic information and techniques, which when properly utilized can reduce and in some instances eliminate losses due to these diseases. Even so, there are not yet available perfect immunizing agents or control procedures which will work under all circumstances. The need for comprehensive, reliable epizootiologic data was emphasized.

Whole blood vaccines are good in theory but should be employed with great caution. Though live immunogens are present giving protection for years the biological material may not have been produced in the same area and there are risks of introducing other diseases. The attenuated A. marginale, A. centrale or dilute stabilates should safely fill the need for preimmunizing agents when properly used. Improved adjuvants and better antigens should lead to more effective non-viable A. marginale vaccines. The techniques to attenuate the babesias are well known and these

agents can be used where premunition is indicated. Evidence is rapidly accumulating to suggest that non-viable adjuvant vaccines against B. bovis and B. bigemina are possible. Some therapeutic agents (Imiducarb) have been found to have a sterilizing effect and prophylactic activity for extended periods of time.

As future field studies confirm the present favorable evidence of efficacy and safety, vaccines will become more readily available to prevent livestock losses due to Anaplasma and Babesia.

Prior to the initiation of an anaplasmosis or babesiosis control program, it is recommended that:

- 1.- Government authorities obtain the technical assistance for the establishment or development of laboratory competence to conduct epizootiologic studies of anaplasmosis and babesiosis. These studies should determine the incidence and regional prevalence of these diseases and, as well, the socio-economic impact of these conditions on national and livestock interests.
- 2.- Based on the need and country competence technical assistance should be employed for the development of safe and effective control programs for tick and tick-borne diseases utilizing appropriate vaccines, chemotherapeutic agents and tick control techniques.
- 3.- The disease control program must be based on a comprehensive plan

tion, as necessary, to enforce the control measures should be enacted. Adequate funding to fully sustain the projected program must be secured.

Recognizing that present techniques available for the control of these diseases have yet some deficiencies further investigations and research should be encouraged for the development of more effective methods for prevention and control of these diseases.

AFRICAN SWINE FEVER

A lengthy comprehensive discussion took place regarding the problem of African Swine Fever in the Dominican Republic and Haiti. The delegates unanimously expressed a decision to commend the Dominican Republic and Cuba for the positive action taken by them to eradicate the disease and thereby protect all the other countries.

A unanimous conclusion reached was that their success was due to the unqualified support by the President and all branches of their Government to accomplish the objective.

At the same time great concern was expressed about the existence of the disease in Haiti and its threat to the other nations, especially

the Dominican Republic. The disease could spread to and from Haiti and negate the effective action that has been taken by them to date.

IICA discussed a proposed plan for eradication of African Swine Fever in Haiti. The delegates expressed their support for a program provided it has the approval of Haiti as being feasible to reach the ultimate objective of eradication.

Indemnization to the owners of the swine in Haiti who voluntarily sacrificed their hogs in the border area near the Dominican Republic frontier was considered essential before any national eradication program could be supported by any other country. The delegates felt that Haiti should propose an evaluation program and identify their level of support before they would commit their resources to such a program.

IICA and FAO agreed to work with the Haitian Government to develop a program that would have the best chance for success. Delegate urged that such a program be initiated as soon as possible in order to eradicate the disease in Haiti and thus eliminate the threat of the disease spreading to other countries.

Despite the initial hardships that would be encountered by the swine owners in Haiti the Government should recognize the opportunity of improving the genetic and health status of the national swine herd. The experience to date in the Dominican Republic has shown that the swine imported for testing premises have acclimated very well. Therefore, through

the process of eliminating the disease they feel that have made a substantial step forward in developing a more reliable swine industry that will provide not only pork for their people but one of much higher quality.

Representatives of IICA and FAO agreed to meet with the Government officials in early October to determine what type of a program would be proposed by them and the degree of participation that could be expected. Following such a meeting and provided there is an agreement on the program, contacts would be made with donor countries and organizations to seek their support by IICA and FAO.

It is hoped that such a program would begin no later than January 1, 1981.

HOG CHOLERA

Because of the improved vaccines for hog cholera prevention and the possibility that the disease could mask the introduction of a disease like African Swine Fever and the animal losses caused by hog cholera, several countries expressed interest in an eradication program. Canada and the United States are free of the disease and Mexico has an active program under way.

Chile presented a comprehensive report indicating the need to acquire extensive data in order to develop a project that will be acceptable to donor organizations. Since it appears that Chile has

eradicated foot-and-mouth disease they are confident that they will accomplish the same result with hog cholera.

The disease was eradicated from the United States in 1978 though it had been in that country since the 1830's and was considered the most serious disease of swine in that country before it was eliminated. Before the program began, all types of potential reservoirs that would prevent eradication was cited. However, none of them had any major adverse effect in the eradicating the disease in those countries that have eliminated the disease.

At this time when more consideration is being given to the needs of the small farmer, swine are recognized as one of his major possessions providing money in time of need or animal protein. Losses to him from hog cholera can often be a tragedy. Larger owner tend to vaccinate their hogs against the disease but often the smaller farmer does not have the funds to do it or recognize the need.

Therefore eradication of the disease would be of great importance to the small farmer as well as the substantial economic benefits to the large producer. Based on the comments of the delegates, several countries will undoubtedly submit requests for assistance to control and eradicate the disease within their nations.

TRAINING IN ANIMAL HEALTH

Training was a topic of major importance to the delegates. It was established that this is a major deficiency in animal health programs of many countries.

The representative of IDB stressed the importance of overall training of veterinarians with special emphasis on epidemiology. It was suggested that this training be expanded to also include program administration and management.

The IICA Veterinary representatives within each zone will contact each director of animal health in their countries assigned, in an effort to develop overall training needs.

Epidemiological training should vary in length depending on the countries needs and the individuals involved. It was urged that IICA develops a proposed plan for training for veterinarians engaged in Animal health programs.

The planning for the training and development of human resources through the cooperative of the respective Governments and funding agencies was stressed.

DIAGNOSTIC LABORATORIES

It was recommended that IICA select a Commission of diagnostic laboratory experts, the terms of reference of which will include, an evaluation of the competency of all the laboratories of the Hemisphere. In doing so, it should identify the laboratories that can and will serve as reference laboratories to other countries.

This Commission should present its report and recommendations at IICA's next annual meeting of the Directors of Animal Health of the Hemisphere on 1981.

EXPERT COMMITTEES

It was recommended that IICA establish committees made up of experts on certain diseases of major importance to all of the countries. This would provide directors of animal health with an opportunity to hear evaluation by the experts as to the latest most important information available in relation to these diseases at the time of each annual meeting.

GENERAL RECOMMENDATIONS

To thank the Government of Argentina for the generous offer to host the Third Inter-American Meeting of Directors of Animal Health, and to recommend to the Director General of IICA to organize REDISA 3 in Buenos Aires, Argentina in 1981.

To express appreciation to the speakers for the excellent papers presented that have gave great scientific relevance to REDISA 2.

To express appreciation to the Government of Costa Rica for its cooperation in the organization of REDISA 2.

To express recognition to the Director General of IICA and his staff for their cooperation and collaboration in the organization and conduction of REDISA 2.

RESANDINA III/30.2
8 August 1981
Original: Spanish

REPORTS ON THE REGIONAL MEETINGS
ON COORDINATION AND PLANNING

MEETING OF THE SOUTHERN AREA COUNTRIES

In accordance with the program of REDISA III, the meeting of the countries of the Southern Area of IICA was held on August 7, 1981. It was attended by representatives of Argentina, Brazil, Chile and Paraguay.

Dr. Carlos Hugo Caggiano of Argentina was appointed Chairman and Dr. Ruben A. Lombardo, IICA Animal Health Specialist for the Southern Area, acted as Secretary ex-officio.

Following a prolonged discussion of items of the agenda proposed by the Chairman, the meeting adopted the following resolutions:

1. Taking into account the report presented at REDISA III by Dr. F. Mulhern, Director of the Animal Health and Production Program of IICA on the last year's activities, and the plan of work for 1982, the meeting resolved:

- (a) To express its satisfaction with the tasks completed until this date and with the technical assistance received by the countries.
- (b) To approve the working plan for 1982.
- (c) To recommend that IICA and the countries provide the financial and administrative assistance needed by the Animal Health and production Program for the 1982/83 biennium in order to consolidate the activities that have been initiated and to give greater assistance to the countries.

2. With regard to the Animal health Operations Program for the Southern Area in 1982, the meeting resolved to recommend that the Area Specialist approach the country Directors before November 1981 to determine the technical

assistance and training needs for 1982.

3. With regard to the RESASUR II meeting to be held in Porto Alegre, Brazil, in 1982, the meeting resolved that it should be held during the second fortnight of April. It was considered of special importance that an item should be included in the agenda on hog cholera and infectious equine anemia control programs, with special emphasis on the epidemiology of these diseases and the application of these measures to the prevention, control and eradication of these diseases.

4. The meeting agreed on the expediency and need of holding a Seminar for Directors of Animal Health Diagnostic Laboratories of countries in the Southern Area, to unify standards, standardize regulations and take steps for the establishment of a coordination system of laboratories in this area of the hemisphere.

It was also agreed that the Seminar should deal with topics related to the administration and organization of laboratories, safety measures, continued training programs and the exchange of information and experiences and with the maintenance of equipment.

5. Taking into account Resolution V of RESASUR I on Sanitary Norms Governing Trade Among Countries and Control Programs, in which the establishment of a subcommission is recommended, it was agreed that such a subcommission should be formed by representatives of Argentina, Brazil and Uruguay. The subcommission would meet on the date and in the frontier city to be established later. During its meeting, the subcommission will draw up regulations and submit them to the Directors of RESASUR II for consideration.

There being no other matters to discuss, the meeting of the Southern Area countries was adjourned.

MEETING OF THE NORTHERN AREA COUNTRIES

Representatives of the North Zone met on 7 August. The following countries were represented: México, Guatemala, Honduras, El Salvador, Costa Rica and Panama. The representative of Nicaragua was unable to attend the REDISA III. In his absence the representative of OIRSA provided information of this country.

Dr. Arcadio Carrizo, representative from Panamá, was elected President and Dr. Héctor García of Guatemala was elected secretary.

The recommendations and conclusions made by the Director of Animal Health of the North Zone in Mexico, 24 to 25 April 1981 were reviewed and these recommendations and others, as noted below are recommended for approval in the Plenary Session:

1. Caution by all animal health officials on permitting the introduction of vaccines for anaplasmosis or piroplasmosis into their countries. Equal caution should be applied to the introduction of any new biological product for the potential damages which products of limited useage or experience may cause in livestock.

2. Continued efforts on the part of IICA to explore and encourage a program for eradication of screwworm from Central America and Panama.

Consisted with:

- (a) Each of the goverments of Central America and Panama should ratify their interest in the Program.
- (b) Each Director of Animal Health should forward to IICA the information requested on their respective countries on the situation concerning screwworm.

(c) That coordination between the veterinarians of OIRSA and IICA developed employing a cooperative agreement between the two institutions.

(d) That the governments solicit from OIRSA whatever assistance is necessary to help resolve this situation.

3. Regarding the development of a program for training in the laboratory diagnosis of anaplasmosis and piroplasmia, each government should express its interest to IICA regarding training of its personnel in the diagnostic laboratories for anaplasmosis and piroplasmia.

4. Regarding the establishment of an international committee on eradication of Screwworm, appropriate actions should be taken to complete the establishment of this Committee.

5. In view of the losses occasioned by parasites it is required that IICA take actions with the objective of establishing an exchange between the countries on information with respect to investigations and research conducted on these diseases as well as meetings or seminars which will unify the methods for control among the countries.

6. That IICA review the organizational structure in the field of animal health in Central America and Panama and that it propose or suggest to the governments the administrative techniques and organization appropriate to the animal health services.

7. Encourage governments to create a laboratory network to assist the animal health program.

MEETING OF THE ANDEAN ZONE

Representatives of the countries of the Andean Zone, namely the Directors of Animal Health of Bolivia, Colombia, Perú and Venezuela reviewed the resolutions and recommendations of RESANDINA I, which took place in Bogotá, May 1981.

They recommended that the resolutions form the basis for the activities to be implemented in the immediate future. These activities relate to bovine rabies, hemoparasites, tick-borne diseases, hog cholera, prevention of African swine fever.

The representatives of the Andean Zone believe that funds that each country provides for the international organizations working in animal health, should be used according to the priorities established by each country.

The delegates of the Andean Zone noted that resolution of RESANDINA I regarding Bovine rabies to be included as a topic in REDISA III was not possible and recommends that consideration be given for inclusion in REDISA IV.

The representatives recognized that bovine leukemia is a problem in the regions and request IICA to organize a workshop in order to analyze and develop systems to control this disease.

The Directors of Animal Health also endorsed training as an essential component in the development of control programs in animal health.

The Delegates recognized the importance of the FAO project for

training in laboratory techniques and field services in relation to animal disease emergencies and request IICA to work in close collaboration with this project. They also stressed the importance of the poultry industry which has been developed rapidly. However Salmonellosis was identified as a problem and recommends that IICA provides assistance for the control of this disease.

The representative of Bolivia invited consideration for his Government to act as host for RESANDINA II in the city of Santa Cruz.

MEETING OF THE ANTILLEAN AREA

Present at the Meeting of the Antillean Zone were representatives of Barbados, Canada, Dominican Republic, Grenada, Guyana, Haiti, Jamaica and U.S.A. Dr. Clifford L. Grey was nominated chairman and Dr. Ernest Caesar, rapporteur.

PART I

AFRICAN SWINE FEVER

The Area considers African Swine Fever to be the most important disease entity in the Region and recommends that the highest priority be given its eradication from Haiti. As this disease constitutes the single greatest threat to animal health.

TRAINING

Training in the fields of epidemiology, cost-benefit analysis, prevalence studies, laboratory methods and organisation is needed in order to undertake animal health programmes effectively and IICA is requested to support these programmes with continued assistance in the area of training.

ANIMAL HEALTH DIAGNOSTIC LABORATORIES

The Antillean Zone would like IICA to extend the valuable work started in the assesment of laboratory

capability to assisting in the improvement of the Diagnostic capability of the countries by helping to obtain funds for improving physical facilities. Supplies of biologicals and reagents and training of personnel.

TICK AND TICK-BORNE DISEASES

Since tick infestation and tick-borne diseases take such a heavy toll of our livestock. The representatives of the Antilles Zone recommend that IICA assists in the implementation of programmes on the area of tick control and/or eradication and diagnosis and control of haemoparasites.

SCREWWORM

In addition to the work being undertaken in moving the barrier for screwworm eradication to the Panama-Columbia border, we recommend that IICA supports the efforts of countries in the Antillean Zone to control and or eradicate screwworm using such techniques that are appropriate and feasible.

DATA BANK

The Antilles Zone wellcomed the data collection programme initiated by IICA and asked that efforts be continued to develop the system into a data bank for information in animal health.

ANIMAL PRODUCTION

The Antilles Zone recommends that IICA seeks funds for studies in interested countries for the encouragement of the production and productivity of small ruminants as a source of protein for low income groups.

PART II

Recommendations made by Resantillas I, were considered. It was decided to omit Resolutions 4 and 6 of that meeting.

Resolution I - Accepted as presented

Resolution II - Accepted as presented

Resolution III - Preamble accepted as presented.

Resolution to be amended as follows. "To recommend that each country, with the possible assistance of an international organisation, undertake to implement with some urgency the recommendations of that team contained in the Manual".

RESOLUTION V - Preamble accepted as presented.

Resolution to be amended as follows:

"That upon request, IICA renders technical assistance to Directors of Animal Health in the preparation of such documents".

RESOLUTION VII - Accepted as presented.



INSTITUTO INTERAMERICANO DE COOPERACION PARA LA AGRICULTURA-OEA

III REUNION INTERAMERICANA DE DIRECTORES DE SALUD ANIMAL
Buenos Aires, Argentina, Agosto 5-8, 1981

REDISA III/25
August 8, 1981
Original: Espa-English

LISTA FINAL DE PARTICIPANTES

FINAL LIST OF PARTICIPANTS

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I.I.C.A.

III INTERAMERICAN MEETING OF ANIMAL HEALTH DIRECTORS

REDISA III

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**III REUNION INTERAMERICANA DE DIRECTORES DE SALUD ANIMAL
Buenos Aires, Argentina, Agosto 5-8, 1981**

**REDISA III/30
August 8, 1981
Original: Spanish**

FINAL REPORT

III INTER-AMERICAN MEETING OF DIRECTORS

OF ANIMAL HEALTH

(REDISA III)

The Third Inter-American Meeting of Animal Health Directors (REDISA III), was held at the Hotel Bauen, Salon Cascada, on the 5th. of August, 1981, according to the convocation made by the Director General of the Inter-American Institute of Cooperation on Agriculture.

Election of Officers

On the 8th of September, at 9am. the Heads of Delegations of the countries met to elect the officers of the Meeting and the following were elected:

President: Dr. Emilio Juan Gimeno
Director General of the Animal
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Husbandry of Argentina

Vice President: Dr. Clifford L. Grey
Acting Director Veterinary Services
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Rapporteur: Dr. Benjamín Jara Guillen
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Dr. Francis Mulhern, Director of Animal Health of IICA and Dr. Pedro Acha, Special Advisor to the Director General of IICA acted as Secretaries ex officio.

Plenary Sessions

The Opening Session was held on the 5th. of August at 9:30 am. Dr. José Emilio Araujo, Director General of IICA cordially welcomed all participants and thanked them for attending the meeting. He underscored the importance of the Third Meeting and thanked the Minister of Agriculture and Animal Husbandry of Argentina for the assistance rendered in the organization of the Meeting. Dr. Araujo emphasized the importance of the Animal Health and Production Program of IICA according to the new strategy of the Institute, and of the new convention (1980) whereby the Inter-American Agricultural Board became the highest organ of IICA. He also referred to the attainments in the field of Animal Health and to the expansion of the program to include animal production, mentioning that a number of program activities have been initiated following the establishment of regional offices of the program in each Area of the Institute in the Hemisphere. He spoke of the urgent need to direct efforts in order to increase the production of animal proteins, recalling that in 1979.

Eight per cent of the world production (111.000.000 tons) were produced in Latin America and that this figure constitutes 6% of the total value of agricultural exports. Such diseases as Foot-and-Mouth disease, African swine fever, Hog cholera, Babesiosis, Anaplasmosis, Brucellosis and

many others are the real barriers to livestock development in the Americas, he said, IICA works directly with the Governments helping them to solve their problems. In this connection, he mentioned the Agreement recently signed with Haiti for eradicating African Swine Fever with the help of the United States of America, Canada and Mexico.

He spoke of some of the activities completed within the framework of the program of Animal Health of IICA in the short time since this Program has been established, such as the training of human resources in epidemiological methods and animal health planning; the establishment of a Data Bank in order to cooperate with the OIE in gathering and disseminating world zoosanitary data; the evaluation and classification of animal health diagnostics and research laboratories in the Hemisphere and the progress achieved in coordinating Animal Health activities in the different geographical areas of the Program.

He also high lighted the importance of the topics of the meeting, especially the one referred to the development of a new foot-and-mouth disease vaccine by genetic engineering technology, the presentation on the progress made in eradicating African Swine Fever in the Americas, the control of the Brucellosis, the progress made by Government Agencies working in the field of Animal Health and

the assistance granted by International Organizations, such as the PAHO/WHO, FAO, OIE, OIRSA, IDB and the IBRD.

In conclusion, he wished the Meeting the greatest success in its deliberations.

Dr. Louis Blaján, General Director of the OIE thanked Dr. Araujo for the invitation extended to the OIE and expressed his gratitude to the Minister of Agriculture of Argentina, Dr. Jorge Aguado for receiving the delegates from member countries of the OIE at this Conference. He took advantage of the occasion to report the signature of a mutual assistance agreement between IICA and the OIE which would be presented to the Fifth Regional Conference of the OIE for the Americas, to be held this week.

The Minister of Agriculture and Animal Husbandry of Argentina welcomed the delegates and all other foreign and local guests and thanked IICA for its effort to organize this important event. He urged the specialists participating in the Meeting to make an increased effort to control animal diseases, stating that progress could not be made or techniques implemented while health problems that constitute unsurmountable barriers to the exchange of trade between countries still existed. He specially noted that technical and technological knowledge developed by industrialized countries should be shared and help given in its use. He urged international organizations, such

as IICA, PAHO/WHO and FAO to work together, united and not divided, to attain the desired goals. Dr. Aguado further stated that Argentina was willing to place all its technical capacity at the service of countries in the region and gave as example some of the joint projects being drawn up with the help of IICA, such as the INTA Reference Laboratory, Animal Health Training Centre at the University of La Plata and the support given to the Pan-American Zoonosis Centre which has been furnished with the suitable physical installations. In conclusion, he opened the Meeting and wished the delegates success in their task.

During the First Plenary Session Dr. Francis Mulhern, Director of the Animal Health Program of IICA presented his report on the development of the Program previously expressing his thanks to the Director General of the Institute for the support given the Program and to all Animal Health authorities of the countries for their goodwill, without which the goals of the Program could not have been attained.

In his presentation, quoted in detail in documents REDISA III/3, and REDISA III/3.1, he referred to the evaluation of the Animal Health Diagnostic and Research Laboratories in the Hemisphere that will be the starting point for the establishment of conditions to make possible

the development of national Animal Health Diagnostic and Reference Laboratory systems and their coordination on a continental scale. He emphasized the importance of the eradication program of African Swine Fever in Haiti carried out on the basis of an agreement recently signed with that country, with the assistance of the United States of America, Canada and Mexico. The eradication campaigns launched by the Governments of the Dominican Republic and Cuba have met with success, and he praised the Animal Health Services in these countries for their ability to carry out such campaigns. He also referred to the Meetings of the Area Directors of Animal Health during which the parameters for the activities of the IICA technical cooperation program in every region have been established.

Dr. Mulhern underscored the fact that the IICA Animal Health Program will become increasingly effective in the measure that Directors of Animal Health in the countries cooperated in its development and use.

The President of the Meeting submitted Dr. Mulhern's Report to the delegates for consideration.

Dr. Prieto Busto, Director of Animal Health of Paraguay then reported on the support given by IICA to his country's Program and on the cooperation agreements between his Government and the Institute on Hog cholera, Infectious equine anemia and new castle disease programs.

Dr. Reinaldo Peña de la Cruz expressed his pleasure that the eradication program of African Swine Fever had been initiated in Haiti and pledged his unconditional support of this program and its implementation.

He stated that this activity would also facilitate replacement of the swine population in the Dominican Republic.

Continuing with the program Dr. Y. Ozawa, the FAO representative, presented item 2 of the Agenda, "Status of African Swine Fever in Latin America and the progress made in its control and eradication", which has been issued as document REDISA III/10. He then described some of the activities of his Organization in the field of technical assistance on Animal Health in the Americas.

Dr. Reinaldo Peña de la Cruz, of the Dominican Republic again took the floor to report on the situation in his country. He stated that the possibility of new cases of African Swine Fever in domestic and wild animals has been investigated in different parts of the country and samples have been taken from 30 hogs and sent to the laboratory; however the results obtained from tests were negative.

Dr. Pedro Acha requested the President to give the floor to Dr. Mario V. Fernandes, Chief of the Special Animal Health Program of PAHO to completed the review presentations of the representatives of International

Organizations participating in the Meeting. Dr. Fernandes would report on the Training Program on Epidemiology and on other aspects of Animal Health to be carried out shortly by the PAHO with financial assistance of the Inter-American Development Bank.

Dr. Mario Fernandes thanked the participants for giving him the opportunity to participate in this important Meeting and stated that an Agreement was signed between the PAHO and the IDB in connection with the PROASA (Animal Health Training Program). The training of agricultural technical staff at the level of Inspectors of Ports, Airports and Frontiers will be carried out in Central America by the OIRSA. PAHO will also strengthen its Training Programs for veterinarians on Administration, Quarantine, Epidemiologies and oleous vaccines against the Foot-and-mouth disease. He reported that the Government of Argentina will shortly furnish the Pan-American Zoonosis Centre with new installations and that some of the professional positions that had been eliminated due to financial problems will be reinstated. He said that the application for funds presented by the Ministers of Agriculture during the REDISA II Meeting held in March in Washington has been approved.

The Meeting continued in the afternoon with the Second Plenary Session on the topic of Brucellosis. Dr. Casimiro García Carrillo opened the discussion with the paper on the "Present status of Bovine Brucellosis in the Americas", document REDISA III/5. He reported on the information available in the Americas that includes the distribution of the biotypes of *Brucella Abortus*, typified by CEPANZO, isolated from cows, human beings, sheep, foxes, etc., and on the prevalence of Brucellosis in the countries. The President submitted the topic to the Delegates for consideration. The Delegate of Argentina stated that during the training courses for Veterinary Doctors, samples have been obtained in different parts of the country for diagnosis and to assess the status of Brucellosis, which showed a lower incidence of this disease than that reported by Dr. García. The Representative of the Dominican Republic stated that in his country only the B. Suis had been isolated before 1979, but in 1980 they have also been able to isolated B. Abortus. The national control program was initiated in 1974, and an incidence rate of 10-12% has been observed; in 1977, this rate became reduced to 4,4%; it became further in 1979, 2.74% and in 1980, it reached 2.25%. He explained, however, that this information had been obtained from the Diagnostic Laboratories, not from statistical surveys.

Dr. Paul Becton, took the floor to speak on the "Control program of Bovine Brucellosis in the United States of America" (document REDISA III/6). He stated that the program had been

initiated in his country in 1934 and had continued to operate since that time with relative success. He stated that this disease could be eradicated with the help of the livestock producers and through scientific advance in this field.

B. Abortus and B. Melitensis have also been found to be present in cattle in the United States. He reviewed some basic aspects of the characteristics of this disease related to its clinical form, transmission and the conditions prevailing on the cattle ranches. Immunity obtained with Strain 19 is relative, as it causes the appearance of agglutinins that cannot be distinguished in agglutination tests because it is impossible to determine if their presence is due to vaccination or to the existence of infection. In conclusion, he said that the incidence of the disease could only be reduced through the use of effective vaccines. The President then submitted the topic to the representatives for consideration.

Dr. Nelson Magallanes presented the next topic on the Agenda, "Control of Bovine Brucellosis in Uruguay" (document REDISA III/7).

He reported on the campaign carried out in Uruguay stating that since 1964, when the Control program of Bovine Brucellosis was initiated based on the vaccination of heifers, favourable results have been obtained and the incidence of infection in herds considerable reduced.

He said that Brucellosis has been almost completely eliminated in humans and that the system used is inexpensive and easily implemented.

Dr. Raul Nicoletti then spoke on "Vaccination in the Control of Bovine Brucellosis". He referred to the results obtained in adult cattle with reduced doses of Strain 19. Chemotherapy has not been found to solve the problem of the disease, but served as prophylaxis because the most serious part of this problem is abortion. Dr. Nicoletti proposed that tube tests should be discontinued and substituted by others, such as the rivanol, complement fixation and card test. The line of research followed by the University of Florida includes: a) search of antigens for antidermal tests; b) immunization of cows with Strain 19 cultures mixed with food, with subsequent exposure, and with a pathogenous strain administered in the same form; c) search of antibiotics strengthened by isozomes, for use in chemotherapy. He considered that it would be difficult to reach conclusions based on the incidence of the disease in the countries because of the variety of methods employed. The best weapon was prophylaxis, not the system of testing and slaughtering animals with positive reactions, because these animals are already infected. He stated, in conclusion, that the best method was to continue training the specialists who participated in these campaigns in the countries, and to make possible the adoption of the necessary measures.

The President of the Meeting then announced that Dr. Robert K. Anderson had been unable to arrive on time because of air transportation problems. His presentation was postponed until the Friday morning meeting. A panel was then formed, to answer to the questions asked by the Delegates.

The Delegates of Colombia, Paraguay, Chile, Jamaica, Trinidad and Tobago, Argentina, México, Perú, Venezuela and Canadá, intervened with questions on the different aspects on simultaneous vaccination and using other antigens, the use of the card-test as a screening test, the value of rivanol in field tests, the use of reduced doses of vaccine evaluation of control programs, comparison between the Huddleson and card-test, vaccination of adult cattle in field campaigns with reduced doses the use of Strain 45/20 epidemiological maintenance and surveillance, immunity of a cellular type, multiple vaccinations, the usefulness of vaccinating males, and campaign tests ending in the slaughter of animals showing positive results.

When all the questions have been answered, the President closed the session.

The Third Plenary Session was held on Thursday, August 6, at 9.15 a.m. and opened with the presentation by Dr. Jerry Callis of his paper on "Foot-and-Mouth Disease Vaccine based on Genetic Engineering Techniques" (documents REDISA III/16).

Dr. Callis explained that the Foot-and-Mouth Disease virus has 60 units of protein around the capsule that surrounds the genetic material RNA. The units are divided into 4 sub-units. One of these sub-units, the VP3, gives the virus its immunogenic property. The VP3 protein sub-unit is codified by a gene of the ARN virus which is extracted with enzymes and recombined with a chromosomic plasmid of E. coli K-12. In the process of multiplying, this bacteria within the plasmid produces proteins VP3 which are extracted with enzymes in quantities suitable for the production of Foot-and-Mouth disease vaccine by genetic engineering methods. These tests are important and promising, but until further tests can be made, traditional vaccines should continue to be used in the programs implemented in the countries, especially in Argentina.

Several representatives and observers commented on the paper presented by Dr. Callis, including the representatives of Colombia, Honduras and Trinidad-Tobago and observers from PAHO and IICA.

Continuing with the program of the meeting, Dr. Carlos Arellano presented topic 4 of the Agenda, the "Report of the Commission on the Evaluation and Study of the situation of Animal Health Diagnostic Laboratories in the Americas", published in document REDISA III/11. He thanked all Directors of Animal Health in the Hemisphere for their help in supplying the information contained in his report. The Evaluating Commission was

formed, in addition to himself, by Drs. Vaughn Seaton, Julius Frank, Jack Howarth, Carlos Palacios, Thomas Murnane and Pedro N. Acha. The Commission, having established the evaluation standards and after visiting 53 laboratories in 26 countries, presented the report on its activities and made the recommendations which are contained in document REDISA III/11. Following up a proposal made by the Delegation of Argentina, the delegates approved the recommendations made by the Commission.

The Delegate of Mexico proposed that an additional recommendation be made to establish a training centre for laboratory technicians and assistants whose help would be needed to improve the diagnostic services in Latin America and the Caribbean. This proposal was also approved by the delegates.

The Director of Animal Health of IICA proposed that the actions recommended by the Commission should be coordinated through a program of assistance to the Veterinary Diagnostic laboratories in the Americas.

The Delegate of Mexico explained that, in his country, diagnostic laboratories have been developed with the cooperation of organized producers. The Delegate of Venezuela stated that his country was planning to incorporate epidemiological units in the animal health laboratories, and taking steps to develop some laboratories jointly with the producers. The possibility

of giving permission for the establishment of private, officially supervised laboratories was also being considered. He also referred to the assistance to be rendered by IICA in a course on the maintenance of laboratory equipment that will be given this year in Venezuela. The Delegate of Jamaica requested a copy of the report on the evaluation of laboratories prepared by the evaluating group that visited his country.

The Fourth Plenary Session held on Friday, August 7, was presided by Dr. Clifford Grey. Dr. Robert K. Anderson presented the topic "Evaluation of Control Programs and/or Eradication of Animal Diseases", document REDISA III/9.

He thanked the IICA for its invitation and described, during his presentation, the methods available for the assessment of zoosanitary activities and related to their aims and goals, as well as the indicators that make it possible to determine their cost, effectiveness and benefits.

He made special reference to the evaluation of the National Program for the Eradication and Control of Brucellosis in the United States of America.

In conclusion, he recommended that these methods should be "adapted" to the needs and conditions of each country and should not be "adopted" indiscriminately.

During the ensuing discussion of the paper, the President of the Fifth Conference, Dr. Gimeno, praised this important

contribution to the guidelines for evaluation processes that will help the Veterinary Services to use more effectively the cost-benefit methods in planning their campaigns.

Dr. Becton then made reference to the paradoxical situations that arise in the fight against diseases such as the Brucellosis. In the United States of America, as the incidence of this disease decreases it becomes more difficult to find diseased animals, while the funds available for this purpose increase.

The President then gave the floor to the Delegate of Haiti, Dr. Fred Calixte, who informed the participants of the decision adopted by his country to initiate an eradication program of the African swine fever in Haiti with the help of the Governments of the United States of America, Canada and Mexico and with the technical assistance of IICA. Dr. Calixte made special mention of the international cooperation and assistance obtained by his country through IICA and of the efforts made by Dr. Mulhern to crown this task with success. He gave a brief description of the different stages of the program and of its component parts.

The President welcomed Dr. Patrick Mc Kenzie, the Delegate of Guyana and Dr. Francisco Bobadilla, the Minister of Agriculture of Guatemala who had just arrived to participate in the meeting. He also introduced Dr. David Broadbent, the FAO/UNDP Project Director in the Dominican Republic, who expressed the desire to

be informed of the training needs of veterinary services in each country.

Regional Reports on Animal Health were also presented at this meeting.

The President then gave the floor to Dr. Thomas Murnane, the IICA Animal Health Specialist for the Northern Area, who presented the final report of the First Meeting of Directors of Animal Health in the Northern Area which had been held in Mexico City on April 24 and 25. Dr. Murnane praised the resolutions adopted by the Delegates from the seven countries that conform the Northern Area who attended that meeting. The resolutions referred to the questions detailed in document REDISA III/12.

Dr. Ruben Lombardo, the IICA Animal Health Specialist for the Southern Area was then introduced. Dr. Lombardo made reference to document REDISA III/13 which details the activities of the First Meeting of Directors of Animal Health for the Southern Area held in Buenos Aires from April 22 through 24, 1981. He praised the interest and enthusiasm, characteristic to countries that form part of this Area, and employed in developing, coordinating and implementing their established Area program.

During the discussion of Dr. Lombardo's report, the Delegate of Paraguay requested the inclusion in the Report of REDISA III of a resolution proposed by the Southern Zone, asking the Inter-American Board on Agriculture which will meet in Buenos Aires

during the next week, that it consider the possibility of increasing the budget of the IICA Animal Health Program and recommend that the Institute should approach international financial organizations in order to channel the funds to countries interested in fighting animal diseases, with special attention to those diseases that restrict production and marketing.

Dr. German Gomez, IICA Animal Health Specialist for the Andean Area took the floor to present the Report of the First Meeting of Directors of Animal Health for that Area, held in Bogota from May 5 through 8, 1981. The exhaustive review of common problems and the adoption of important resolutions during that meeting are described in document REDISA III/4. Dr. Gomez stated that positive results were obtained with the assistance of IICA. Following the consideration of the report from the Andean Area, the President introduced Dr. Frank Alexander, IICA Animal Health Specialist for the Antilles Area. This area is formed by seven countries and its Directors of Animal Health Services held their first meeting in Bridgetown, Barbados, from April 27 to May 1, 1981. Dr. Alexander gave a full description of the activities in this Area and of the status of diseases in the countries that form a part of it, as well as of the resolutions adopted, which are detailed in Document REDISA III/15. With this report, the Session on Area Reports was adjourned.

Meetings on programming and coordination in the countries took place starting at mid-day on Friday, August 7, 1981. Four Regional groups were constituted:

Northern Area: Costa Rica, El Salvador, Guatemala, Honduras, Mexico and Panama.

Andean Area: Bolivia, Colombia, Peru and Venezuela.

Southern Area: Argentina, Brazil, Chile, Paraguay and Uruguay.

Antilles Area: Barbados, Grenada, Guyana, Haiti, Jamaica, the Dominical Republic, and Surinam. The United States of America and Canada participated in this meeting.

The Fifth Plenary Session was held in the afternoon, on Friday 7, following the meetings and discussions of the programming and coordination groups. The regional groups presented their reports and recommendations which were discussed in the Plenary and which are included in Document REDISA III/30.2.

The Fifth Plenary Session was held on Friday afternoon following the meetings and discussions of the programming and coordination groups. The regional groups presented their reports and recommendations which were discussed in the Plenary and which are included in Document REDISA III/30.2.

The Report of the Northern Area was presented by Dr. Arcadio Carrizo (PANAMA) and was approved without objections or comments. The report from the Southern Area was presented by Dr. Hugo Caggiano (Argentina) and approved with reservations on the part of the Brazilian Delegate, who stated that the recommendation on Laboratories would have to be discussed with the Director of the Laboratory Services (LANARA) that operates as an autonomous bureau in the Office of the Secretary of Agricultural Defense.

The Delegate of Uruguay stated that he would await the presentation of the final document before adopting a position on this matter. Dr. Esteva (Venezuela) presented the report of the Andean Area which was approved without objections. The report of the Antilles Area was presented by Dr. Clifford Grey (Jamaica), who stated that the resolutions of RESANTILLAS I ~~I~~ had been closely studied some of them being amended and others voided and that some other recommendations have been made for the Area program.

The President then declared open the discussion of conclusions and recommendations. The Delegate of the Dominican Republic presented a draft recommendation on the establishment of a close cooperation between IICA and the FAO on technical assistance in the area of animal health. The proposal on the draft recommendation was seconded by Guyana and unanimously approved. The Plenary agreed to express its satisfaction and to congratulate the Minister of Agriculture of Peru for having established,

within the new structure of his Ministry, the Office for Animal Health, giving it the status and authority needed by Animal Health services in that country. The Secretary then presented a draft recommendation on development procedures and methods of animal disease control programs. This led to an interesting discussion in which the Delegates of Argentina, Chile, Venezuela, Paraguay, Colombia and the Dominican Republic participated. The recommendation was unanimously approved.

The Sixth Plenary Session was held on August 8, 1981. Item 8 of the working program was discussed. The Secretariat reported that the Government of Mexico offered to host REDISA IV.

This offer was unanimously approved by the meeting which recommended that the Director General of IICA organize REDISA IV in Mexico City. The representatives then proposed different items of agenda for the next meeting. Before the meeting was adjourned, the Final Report (REDISA III/30) was distributed as well as the final list of participants (REDISA III/25).

The Closing Session, which was held upon the adjournment of the Plenary, dealt with the following: lecture and adoption of the Final Report; address by the IICA Representative and address by the President of REDISA III, Dr. Emilio Gimeno.



REDISA III/30.1
8 August 1981
Original: Spanish

CONCLUSIONS AND RECOMMENDATIONS



BRUCELLOSIS

Brucellosis is a serious economic disease of cattle in many Latin American countries. In addition there are large losses in human productivity and medical costs.

The present knowledge of bovine brucellosis in areas of immunology, diagnostic techniques and epidemiology makes it possible for each country to implement effective control measures. These measures will vary because of agricultural practices, and availability of resources for replacement animals, technical support and delivery of services.

Brucellosis control and eradication programs in the Americas are in different stages of development. While the United States and Canada are very advanced in the eradication process and their effort is mostly concentrated on problem herds, the Latin American and Caribbean countries with limited human and material resources are mostly interested in the control of the infection by vaccination with Brucella abortus strain 19 vaccine. Only a very few Latin American and Antillean countries may be in position to undertake eradication procedures but still vaccination would be valuable in some herds as depopulation of whole herds is not feasible.

In Latin America the principal control tool is still calfhood vaccination aimed as the highest coverage possible of the calf population during 7 to 8 years in order to obtain a resistant bovine population and a reduction of the brucellosis prevalence rate. Adult vaccination with a reduced vaccine dose may have a place in Latin America in some herds under controlled government conditions.



This procedure may be a valuable adjunct in the control and should be experimented under Latin American conditions. In some areas of the Latin American countries with low prevalence of the infection and where incentives for test and slaughter can be established, eradication of the disease can be achieved in many herds. It has to be stressed however that calfhood vaccination in such herds should not be discontinued due to the deficiencies in the control of animal movement in most countries.

Many serological tests are available for brucellosis diagnosis. None of these tests will discover 100% of the infected animals. Every test has a place in a brucellosis program, especially when a test and slaughter policy is in force. It has to be kept however in mind, that simple agglutination procedures, were used in the United States, Canada and many European countries and were instrumental to the clearing of the infection of great many herds. Whenever feasible and necessary several tests should be used to clarify the status of suspected animals or suspected herds.

In general, the initial procedures in a control program are to determine the prevalence of the disease and to educate cattle producers and others on planned activities. The goal must be to reduce the incidence. Surveys will mostly include specimens of slaughtered cattle and marketed milk. It is very important that standardized reagents and techniques are used and results properly evaluated.

If test and slaughter of infected cattle is a part of brucellosis control, adequate facilities and personnel are necessary. The proper

performance of procedures and interpretation of results depend upon well-trained workers.

Quarantine of infected herds are a necessary procedure in an effective brucellosis eradication program. Infected cattle should be slaughtered where it is economically feasible.

A most important part of any disease control effort is the training of workers in diagnostic and epidemiologic techniques. Assistance from other countries and from international organizations may prove to be a very important phase of any planned or current program.

In general terms it is recommended:

1. To established planned control and/or eradication brucellosis programs in the member countries and to seek if necessary financial and technical assistance of international organizations.
2. Such programs should be based on systematic calfhood vaccination with or without adult vaccination, and whenever feasible test and slaughter of infected cattle should be a part of the program.
3. The cooperation of cattle owners is of the greatest importance and every effort should be done to educate them on the planned activities.
4. Every program should comprise the training of laboratory personnel in diagnostic techniques and of field personnel in the epidemiology and control procedures.

5. An adequate animal health infrastructure should be established to control brucellosis or any other transmissible disease.
6. Sufficient funds have to be sought from the governments for adequate human and material resources.
7. Every program should be evaluated and evaluation procedures should be adapted to each country. A cost-benefit relation should be established at the beginning of the program and at different stages of development of the same.
8. In order to be able to evaluate the program, baseline surveys on prevalence should be undertaken as well as at periodic intervals.
9. Uniform rules and procedures are necessary for the success of the program and manuals of procedures should be made available for every veterinarian involved in the control program.

AFRICAN SWINE FEVER (ASF)

The Dominican Republic eradicated ASF by eliminating the total swine population in the country. The depopulation campaign was completed by September 1980. Only a few hundred head of pigs have been found and slaughtered since the, and specimens taken from those animals were all negative for ASF and H.C. Repopulation programme in the Eastern and Central Regions is progressing smoothly.

In Cuba ASF was confirmed in February 1980 and there were a total of 53 cases in three eastern provinces. The last outbreak occurred on 4 March 1980. A total of 166.000 pigs were sacrificed or died during this second eradication campaign. The sintinelization of infected premises was completed in 1980 without recurrence of the disease.

In Brazil, there is some evidence that ASF could have been in the country before the first clinical outbreak was reported in April 1978 in the State of Rio de Janeiro. The last clinical case with Laboratory confirmation was in December 1979, in the State of Para. Since then only serological evidence of ASF has been detected. The Federal Ministry of Agriculture formulate a programme for the eradication of ASF and the control of hog cholera aiming to establish ASF free areas in the States of Rio Grande do Sul, Santa Catarina and Parana. By May 1981 a total of 44.000 pigs from abbatoirs and pigs farms in those states had been tested for the detection and elimination of

possible residual sources of infection.

At present, in Haiti, clinical cases of ASF area are rarely reported, however, it is considered that the disease is enzootic throughout the country as revealed by the serological surveillance being carried out under the FAO project in 1979/80 (approximately 7% of sera tested were positive to ASF). The USDA declared an animal health emergency for the United States in January 1981, and the U.S. Government authorized USDA to use its emergency funds in cooperation with the government of Haiti and other governments and international organizations to eliminate the disease. An ASF eradication and restocking programme which includes financial and technical support by the Governments of Canada, Mexico and the United States was formulated by IICA and the Government of Haiti. The Programme was approved in July 1981 and the first phase of the Programme will start soon. FAO's support for the program consist of an ASF diagnostic Laboratory.

In addition of the above review of the situation, Dr. Yoshihiro Ozawa, Chief of Animal Health Service of FAO, summerized FAO's activities on ASF in 1980/81.

- a) Publication of the ASF Newsletter on be-monthly bases and consultancy on public education.
- b) Provision and distribution of ASF diagnostic reagents produced by the Plum Island Animal Disease Centre with financial support from the USAID.

- c) Training programme through FAO's TCP projects and the FAO/UNDP Regional Project "Regional Training for Emergency Animal Disease Control" with Emphasis on ASF" which become operational in March 1981.
- d) Support to the Subregional Project "Strengthening of Veterinary Services for the Prevention of ASF, in the member countries of the Agreement of Cartagena",
- e) Technical collaborations in the eradication of ASF in Haiti and Brazil under FAO/TCP projects.
- f) Development of Reference Laboratories for ASF as recommended by the Expert Consultation on Emergency Disease Control which was held in November 1980.
- g) Expert Consultation on African Swine Fever Research to be held in Italy in September 1981.

IICA has been negotiating with a special Committee of the Department of Agriculture of Haiti, for the past ten months to establish a working document to provide a basis for conducting a program for African Swine Fever Eradication and a Swine Industry Development in that country. In addition to that document they developed an agreement that was signed by the Government of Haiti and IICA on July 21, 1981.

One of IICA's major area of responsibilities was to seek funds for this project. At this time the United

States is committed to 14.500.000, Mexico 2.300.000, Canada 300.000, and processing a proposal that could provide 10.400.000.

The Government of Haiti and IICA are in the process of initiating the project. It is estimated that it will take two years to eradicate the disease and three additional years to complete swine industry development phase.

GENETIC ENGINEERING OF FMD VACCINE

The Assembly learned of the successful production of a genetically engineered polypeptidic vaccine against type A-12 foot-and-mouth disease virus in the bacterium E.coli. The technology was described as the taking of genetic material from one organism, the virus, and putting it into another, a bacterium, to create new life forms able to produce non-bacterial proteins to be used as vaccines against the virus. This particular success was the result of cooperation between the USDA-Plum Island Animal Research Center, an agency of the U.S. Government, and a private industry laboratory, Genentech Inc., of South San Francisco, California. The pooling of the joint knowledge was probably a principal reason for the early success of the project.

A genetically engineered polypeptidic vaccine produced in the bacterium E.coli seems to have several distinct advantages over whole virus vaccines. Since ours is not working with the whole virus, there is no chance of escape of the virus from the production laboratories, and the problem of infectious virus in the vaccine, as a result of improper inactivation is also avoided.

The bacterium E. coli has a generation time of 20 minutes and propagates to 10^{12} cells within 16 hours, producing 1 to 2 million molecules of protein per bacterial cell, meaning 1 gram of protein per liter of culture.

This level of production makes the process commercially feasible.

One small group of animals, 6 cattle and 2 swine, were immunized with the engineered vaccine. Each dose of vaccine consisted of a solution with 150 micrograms of protein mixed with an equal volume of incomplete Freund's adjuvant. The animals received two doses each, 28 days apart, and their immunity was challenged by contact exposure to susceptible cattle and swine which had been inoculated with infectious virus, and which, of course, came down with the disease. In the test described, the steers and pigs developed a high level of neutralizing antibodies; all of the cattle, except one which developed a lesion in one foot, as well as both swine, resisted development of lesions of the disease.

While the described technology is exciting, the speaker carefully explained that there remained the job of engineering additional types and sub-types of the virus, and that the vaccine process has yet to be commercialized. These developments are expected to require one or two years. In the meantime, the speaker requested the delegates not to slacken efforts currently underway using whole virus inactivated vaccines, whose quality has improved considerably in some countries in recent years. There should be no diminution of the current programs just because another type of vaccine which is expected to offer several advantages

over presently used products, is in the offing.

The delegates enthusiastically received information on this new technology and showed great interest in the future availability of the product from the just described source or from one of several other groups known to be engaged in similar research.

VETERINARY DIAGNOSTIC LABORATORIES

After the presentation of the "Report of the Commission for the Evaluation of Veterinary Laboratory Diagnostic Services in the Americas", the delegates, acting upon a proposal made by the Directors of Animal Health of Argentina, approved the following as a recommendation of the Third Inter-American Meeting of Directors of Animal Health:

- 1.- It is recommended that each country develop a veterinary diagnostic laboratory with full service capabilities or a diagnostic laboratory network providing such capabilities, sufficient to protect the animal industry of that country.
Such a laboratory, or network of laboratories, will have the capability of safeguarding the food supply of animal origin, of providing public health surveillance of diseases communicable between animals and man, of carrying out surveillance for foreign animal diseases and of insuring the health of the livestock population.
- 2.- It is recommended that consultations be held regularly between members of the veterinary profession, the animal health regulatory authorities, the livestock owners' association and the administrative officials of the schools of veterinary medicine to stimulate interest in, promote the use of, generate support for, and make meaningful to the public at large, the diagnostic laboratory capabilities of each country.
- 3.- It is recommended that human resources which are fundamental for the conduct of excellent diagnostic services, be the primary

consideration given by Animal Health Directors when planning laboratory diagnostic improvements. Particular attention should be paid to the following:

- a. Representation should be made to the schools of veterinary medicine to devote more time and effort to the training of personnel in laboratory disciplines as applicable to diagnostic veterinary medicine.
- b. Salary schedules and incentives should be developed which would encourage dedication to a meaningful veterinary diagnostic laboratory career. Individuals should be evaluated and paid on the basis of their productivity and of those activities and functions for which they are responsible in the laboratory.
- c. Systematic programs of training for professional and technical personnel employed in diagnostic laboratories should be established to update and provide professional growth in the new techniques which are involved in the laboratory disciplines.
- d. Provide current scientific periodicals and other informational materials, capable of stimulating technical development and growth of personnel.
- e. The laboratory should be located in areas conducive to desirable living conditions for the professionals and their families.

4.- With regard to material resources, it is recommended that:

- a. Regular maintenance schedules should be established for all equipment in the laboratory. One person should be designated to perform maintenance functions and he or she should be encouraged,

and given an opportunity, to take adequate training in this work.

b. Programs for reagent development should be initiated nationally and internationally. Support should be provided to institutions providing diagnostic reagent to other countries. Within each country reagents.

c. Facilities for diagnostic laboratories must be professionally designed to best meet the needs of the laboratories.

5.- With regard to financial resources and administrative control, it is recommended that:

a. Each laboratory must have a specific and accessible budget over which the administrator of the laboratory has control,

b. Training must be provided to the laboratory administrator in administrative procedures and techniques and also in personnel management.

Furthermore, the Delegates approved a recommendation proposed by the Representative of Mexico to provide assistance in the establishment of a training course for laboratory technicians and assistants, as there are no teaching institutions in this field in Latin America and the Caribbean.

Dr. Francis Mulhern, Director of the Animal Health and Production Program of IICA proposed that the necessary actions to improve and optimize the operations of diagnostic laboratories, stated and approved as a recommendations of REDISA III, should be coordinated and given priority status to make possible their planning, since these actions themselves constituted

a program of assistance to the veterinary diagnostic laboratories in the Americas.

Therefore, it is recommended that the Animal Health and Production Program of IICA should draw up, as soon as possible, a project for the implementation of the approved recommendations, in order that within a period of five years a basic structure of animal health diagnostic laboratories may be established in all the countries in Latin America and the Caribbean. It is also recommended that this program be initiated in 1982 and its progress evaluated during the next meetings on a Regional and Hemispheric level (REDISA IV).

The Plenary approved the following general recommendations:

RECOMMENDATION I
FINANCING OF ANIMAL HEALTH PROGRAM

In consideration of the importance of animal diseases to the economy as well as public health of a nation and the possibility of spread of animal diseases because of the increased travel between countries.

In consideration of the risks to the Western Hemisphere for the introduction of exotic animal diseases for the reasons as previously mentioned.

In view of the necessity to increase the trade between livestock countries, augment exportation of animal products, the principal economic source of our countries which has been limited because of quarantine restrictions of the developed countries.

In consideration that these problems are the special responsibility of the agricultural sector of the countries, and for different reasons the financial resources destined for conservation of animal health are being curtailed in the countries as well as in the international agencies which cooperate in the area.

The representative of Paraguay recommends the following:

1. That REDISA III recommend to their countries that they review their budgets appropriated to control animal diseases with the objective of locating funds which would enable the resources to be increased.
2. Request the Interamerican Agricultural Board that in its meeting to be held 10-14 August in Buenos Aires that it consider revising the biennial budget of IICA for the years 1982 and 1983 and increase the funds

assigned to the Animal Health and Production Program to permit financial support of these requirements requested by the governments in this field.

3. That IICA consider the possibility of establishing contact with international financial organizations to orient resources assigned to assist activities in those countries interested in controlling animal diseases with special emphasis on those that seriously limit production and trade.

RECOMMENDATION 2

COORDINATION BETWEEN IICA AND FAO

Considering that FAO has been and will continue to assist its member governments in various animal production and health programmes in particular in emergency animal disease control and in the control of ticks and tick-borne diseases through ongoing FAO projects and regular programmes.

RESOLVES

To request consideration that the coordination and collaboration between IICA and FAO be strengthened in order to avoid unnecessary duplication of efforts and to make the best use of available resources.

RECOMMENDATION 3

EVALUATION OF PROGRAMS FOR CONTROL AND ERADICATION OF ANIMAL DISEASE

It is recommended that evaluation should be an important and integral part of all programs on animal health, proposed, current and completed.

It is recommended that evaluation teams include specialists in epidemiology and economics and have representation from the livestock industry, universities and national and/or international agencies.

It is recommended that evaluations should be multipurpose and provide for adaptation to particular programs, proposed, current, or completed, and should include opportunities to:

1. Establish the need for an activity or program of disease control and/or eradication in relation to defined objectives and goals.
2. Establish the feasibility of a program in relation to the defined objectives and goals.
3. Test alternative program strategies, methods and inputs.
4. Test alternative methods of design, collection of data and analysis.
5. Measure or estimate outcomes (impact) of proposed, continuing or completed programs in relation to the objectives and goals.
6. Measure or estimate effectiveness, efficiency and benefit/cost ratio of one or several programs, strategies, methods, procedures in relation to objectives and goals.

GENERAL RECOMMENDATIONS

To thank the Government of the Republic of Argentina for the magnificent cooperation in the organization of REDISA III.

To thank the Government of Mexico for the kind offer to host REDISA IV in México City in 1982.

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PRESENTACION DEL DIRECTOR GENERAL DEL IICA

DR. JOSE EMILIO G. ARAUJO

IIIa. REUNION INTERAMERICANA DE DIRECTORES DE SALUD ANIMAL

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