TER-AMERICAN INSTITUTE FOR COOPERATION ON AGRICULTURE
-IICA OFFICE IN TRINIDAD AND TOBAGO

REPORT OF THE FOURTH MEETING OF HEADS OF PLANT PROTECTION OF IICA MEMBER STATES OF THE CARIBBEAN HELD IN BARBADOS FROM NOVEMBER 5TH.-8TH., 1984

Edited by

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IICA

PORT-OF-SPAIN, TRINIDAD & TOBAGO
APRIL 1985

REPORT OF THE FOURTH MEETING OF HEADS OF PLANT PROTECTION OF IICA MEMBER STATES OF THE CARIBBEAN HELD IN BARBADOS FROM NOVEMBER 5TH - 8TH, 1984

OFFICERS OF THE MEETING OF HEADS OF PLANT PROTECTION OF IICA MEMBER STATES OF THE CARIBBEAN

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Chairman of the Technical Session:	Dr. Eslie Alleyne Entomologist Ministry of Agriculture, Food and Consumer Affairs P. O. Box 505 Bridgetown BARBADOS
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INTRODUCTION

The fourth meeting of Heads of Plant Protection of IICA member states of the Caribbean was held from November 5th to 8th, 1984 at the Caribbee Hotel, Christ Church, Barbados. The meeting was designed to review the activities of the regional programme and to devise strategies to further strengthen the regional efforts in plant protection. This document represents the edited proceedings of the meeting.

Amended Agenda

MONDAY, 5TH NOVEMBER, 1984

9.30 a.m.		
	CHAIRMAN:	Mr. J. Percival Jeffers
	INTRODUCTORY REMARKS:	Deputy Chief Agricultural Officer Ministry of Agriculture, Food and Consumer Affairs Barbados
9.45 a.m.		
	INTRODUCTORY REMARKS:	Dr. Chelston W.D. Brathwaite Regional Plant Protection Specialist and Director of IICA Office in Trinidad and Tobago
		Mr. Michael Moran Director of IICA Office in Barbados Barbados
10.00 a.m.		
	OPENING ADDRESS:	Dr. Lionel Smith Chief Agricultural Officer Ministry of Agriculture, Food and Consumer Affairs Barbados
10.15 a.m.		Election of Chairman and Rapporteur
10.20 a.m.		Adoption of Agenda
10.30 a.m. - 11.00 a.m.		COFFEE BREAK

11.00 a.m. - 12.00 noon	Review of Plant Protection in the Caribbean
11.00 a.m.	Barbados
11.30 a.m.	Grenada
12.00 p.m. - 1.30 p.m.	LUNCH
	Review of Plant Protection in the Caribbean
1.30 p.m.	Guyana
2.00 p.m.	Haiti
2.30 p.m.	Jamaica
3.00 p.m.	St. Lucia
3.30 p.m. - 4.00 p.m.	COFFEE BREAK
	Review of Plant Protection in the Caribbean
4.00 p.m.	Trinidad and Tobago
4.30 p.m.	Dominica

Presentation by the Heads of Plant Protection of the status of Plant Protection in each country. Presentation to include review of staff facilities, urgent pest disease and weed problems, plant quarantine, pesticide legislation etc.

TUESDAY, 6th NOVEMBER, 1984

8.30 a.m. - 9.30 a.m.	Report of IICA Regional Plant Protection Specialist
9.30 a.m. - 10.00 a.m.	Analysis of Report of IICA Plant Protection Specialist
10.00 a.m. - 10.30 a.m.	COFFEE BREAK
10.30. a.m. - 12.00 noon	Report of Regional and International Organizations involved in Plant Protection (University of the West Indies, CARDI, FAO, USDA/APHIS)
12.00 p.m. - 1.30 p.m	LUNCH
1.30 p.m	Review of Report on entry status of fruits and vegetables into U.S. Market.
2.00 p.m.	Review of Integrated Pest Management Programme for the Caribbean
2.30 p.m.	Preparation of project proposals for a survey of fruitflies in the Caribbean
3.00 p.m.	Preparation of field guides to plant pest and diseases of importance in the Caribbean
3.00 p.m. - 3.30 p.m.	COFFEE BREAK

3.30 p.m.	Development of Third Regional Plant Quarantine Training Course
3.45 p.m.	Survey of the incidence of Mango Seed Weevil in the Caribbean
4.00 p.m.	Workshop on the detection of pest and diseases of fruits in the Caribbean
4.30 p.m.	Proposals for a joint meeting of the Society for Plant Protection in the Caribbean and the Organization of Tropical American Nematologists
5.00 p.m.	Establishment of Regional Training Programme in Pesticide Safety
	Establishment of an Animal and Plant Disease Reporting System at the Hemispheric level

WEDNESDAY, 7TH NOVEMBER, 1984

8.30 a.m. - 10.00 a.m.	Analysis of Programme goals and activities for 1985
10.00 a.m. - 10.30 a.m.	COFFEE BREAK
10.30 a.m. - 12.00 noon	Recommendations
12 noon - 1.30 p.m.	LUNCH
1.30 p.m. - 3.00 p.m.	Preparation of draft report
3.00 p.m. - 5.00 p.m.	Review of final document and Closing Session

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OPENING SESSION

Speech delivered by Dr. Chelston W.D. Brathwaite, Regional Plant Protection Specialist and Director of the IICA Office in Trinidad and Tobago.

Mr. Chairman, distinguished delegates, Ladies and Gentlemen:

I am indeed pleased to have the honour and privilege to address this distinguished audience on this the occasion of the fourth meeting of heads of Plant Protection of IICA member states in the Caribbean.

I remember very vividly four years ago attending the first meeting of this group in a room not very far from here and I recall the proposals which were put forward and the suggestion which were made for improving plant protection activities in the Caribbean.

Four years is a short time in the life of a nation or a group of nations yet it is long enough to provide the kind of insights that are necessary to assess and evaluate whether the objectives of a programme have been achieved, whether the strategies were right or should be changed and if so what changes should be made. You, the Heads of Plant Protection are very much like the Board of Directors and Auditors of a new business who must now determine whether the business is profitable or should it be closed down or altered in some way.

During the recent past, the foundations of Caribbean Agriculture have been shaken and it has now become necessary to find new foundation stones on which to continue to build. The traditional markets for the principal export crops, sugar, bananas, cocoa, nutmeg etc. have become increasingly uncertain and the prices for these commodities continue to decline. In addition, the cost of domestic production continue to increase and now far exceeds the current market prices. Added to this, the countries have been experiencing increasing food import bills, now

estimated for the region at 1 billion (U.S.) dollars. Faced with these two very grave sets of circumstances the Governments have redirected their attention and policies to improving and increasing domestic food production and at the same time to the diversification of their production of export crops. In the case of the remaining sugar producing countries (Jamaica, Barbados, Trinidad and Tobago, and Guyana) the new policies have been oriented to the rationalization and consolidation of the industries, whereas the smaller Eastern Caribbean Countries, traditionally dependent on banana production, are addressing their agricultural policies to other potential export crops.

Associated with this new emphasis and production have been the efforts to identify and exploit new external market opportunities in Europe and North America for the new commodities, including fruits, selected vegetables, exotic flowers and plants.

The success of the latter initiatives will depend on the ability of these countries to grow the products on a commercial basis (some of these have only been backyard crops) and secondly to export products that are free of pests and diseases and of the highest quality.

Effective plant protection is important for the success of those initiatives for three principal reasons:

a. Firstly, it must be possible to trade in agricultural produce and to transfer germplasm from one country to the other, without the risk of transferring dangerous pests and diseases.

b. Secondly, agricultural produce from this region destined for extra-regional markets must be free from pests and diseases and of a sufficiently high quality to preserve those markets.

c. Thirdly, there is the need to reduce the losses both pre-harvest and post-harvest that are caused by pests and diseases in each country.

On the basis of these three requirements, the justification of a regional strategy in plant protection rests on:

1. The similarity of agricultural interprises
2. The dissimilarity in the distribution of pests and diseases
3. The close social and commercial contacts
4. The uneven distribution of manpower and technical expertise

The similarity of agricultural interprises

The recent outbreak of mango seed weevil in St. Lucia is of concern to the entire region as the mango is either produced for local consumption or for export throughout the region. In Haiti, mango is a major export crop and consequently the similarity of agricultural interprises makes the need for a regional strategy justifiable.

The dissimilarity in the distribution of pests and diseases

An analysis of the distribution of dangerous plant pests in the Caribbean region indicate that the major pests are discontinously distributed. Moko disease of banana occurs in Trinidad and in Guyana and more recently in Grenada but not in any other part of the region although bananas are widely grown.

The close social and commercial contacts

This needs little explanation.

The uneven distribution of manpower and technical expertise

Technical expertise in plant protection is more easily available in the larger territories and consequently there is need for technical cooperation and technology transfer between countries.

Realising these justifications, the programme has taken a regional approach and have carried the following regional actions in its efforts to improve plant protection in the Caribbean.

1. A regional training course in plant quarantine was inititated in 1982 in collaboration with Animal and Plant Health Inspection Service (APHIS) of the United States Department of Agriculture U.S.D.A. This course was held in Trinidad and Tobago in 1982 and in Barbados in 1983. As a result of these courses, twenty seven plant quarantine inspectors who were never trained in plant quarantine before were trained. This training assisted in increasing the capability of the officers to detect pests and diseases which threaten the economies of countries in the region.

2. Steps have been taken to prepare data sheets on pests that are considered of major importance. Sheets for Moko disease of banana and plantains and for coffee berry borer have been prepared and should be released soon.

3. A regional plant protection newsletter has been introduced by IICA which keeps plant protection personnel informed on the incidence of pests and diseases in the region and the biennial meetings of Heads of Plant Protection and the Society for Plant Protection in the Caribbean have contributed to the information flow on plant pest and disease incidence in the region.

In addition to these actions, there are plans afoot to:

1. Carryout a survey of the incidence of fruit flies in the region.
2. To survey the incidence of mango seed weevil in the fruit growing areas.
3. To hold a seminar on the detection of pests and diseases of fruits in the Caribbean.

There is however the need in the Caribbean for good post-entry quarantine facilities. Jamaica is currently building a small post-entry station and there are plans to establish a post-entry station for cocoa in Barbados but outside of these efforts, there is a lack of post-entry facilities in the region.

It is my view, however, that at this stage the programme should initiate in collaboration with other plant protection organisations in the area, a comprehensive review of the status of quarantine pests of the region.

This programme should consist of a survey of the region to determine those pests which pose potential threats to the agriculture of various areas and the development of safeguards for their restriction. The preparation of brochures on the quarantine pests has been initiated. There is now the need to prepare an emergency programmes manual which details the nature of these pests and what actions should be taken in emergency situations. We hope that with the cooperation of regional and international agencies this programme can become a reality in the near future.

I take this opportunity to welcome all of you to this meeting and hope that we shall have useful and constructive suggestions for the future of plant protection in the Caribbean.

Speech delivered by Mr. Michael Moran,
Director of the IICA Office in Barbados.

It is a pleasure to say a few remarks on behalf of the Director General of IICA to such a distinguished group of professionals at this fourth meeting of Heads of Plant Protection in the Caribbean.

Without a doubt, I am convinced that the on-coming intensification of crop diversification efforts particularly fruits and vegetables production and increased pathways between the Caribbean countries through trade, will increase the probability of pest and disease outbreaks. This will in turn effect nutritional and economic life lines of many producers, middle men and consumers.

Every effort must be made to exercise effective control and to coordinate international action with national initiatives.

The Ministers of Agriculture recommended to IICA in 1978 to study a proposal aimed at the establishment of a mechanism for the coordination of efforts to fight pest and disease problems affecting plants and animals. As a result IICA established a Hemispheric Plant Protection Program.

In 1979 in Costa Rica and again in 1980 in Barbados the Heads of Plant Protection in the Caribbean met. I am sure some of you were present. A plan of action was formulated for the Caribbean within the Hemispheric Plant Protection Program of IICA.

The meetings identified four (4) priority areas for joint action among countries through the regional plant protection program of IICA. These priorities included:

1. Training courses in Plant Quarantine and General Plant Protection.

2. Establishment of a Society for Plant Protection in the Caribbean.
3. Control and eradication of new pest and diseases.
4. Establishment of a Regional Newsletter.

What has transpired from then?

- Regional Plant Quarantine Training Courses have been held involving cooperative action among countries, APHIS and IICA. Twenty-seven (27) participants from ten (10) countries were trained. Additionally IICA cooperated with FAO in training another fifteen (15) inspectors in 1984.

- The establishment of a Regional Plant Protection Newsletter which is sent to four hundred and fifty individuals and organizations throughout the region. It provides important up-date information on new developments, publications and conferences.

- Publication of a Bibliography of Plant Diseases Investigations in the Caribbean from 1880 - 1980. - 100 years of research.

- Preparation of Guidelines for the Harmonization of Pesticide Legislation.

- Training in Integrated Pest Management.

- Establishment of a society for Plant Protection in the Caribbean as requested by Heads of Plant Protection to assist in coordination and harmonization of plant protection activities.

What about direct Technical Cooperation Support Services? Well, the following are a few examples.

- Establishment of a surveillance system for Mediterranean Fruit Fly in Jamaica.

- Technical Assistance to Trinidad and Tobago in the detection of pest and diseases in containerised cargo.

- Control of smut of Sugar Cane and lethal yellowing disease in Haiti.

Presently IICA is cooperating in new initiatives to support alternatives to EDB and the determination of the fruit flies in the Caribbean. The efforts of the past has been positive but much more needs to be done.

For the past twenty (20) years, I have been working jointly with countries in confronting the ever-changing food and agriculture marketing problems. I can speak from first hand experience that it is imperative to control disease and pest if we are to have the quality and quantity of food available and acceptable to meet domestic and/or international market requirements.

Almost all governments in the Caribbean and increase number of private firms are seeking new opportunities related to the production and development of domestic, inter and extra-regional markets for Fruits and Vegetables.

The time is literally "ripe" for inter-country cooperation and inter-disciplinary efforts are needed especially those related to post-harvest marketing problems to attack the ever prevalent plant pest and disease problems. Med-fly and mango seed weevil are just two vivid examples.

Your task at hand is to review past progress and constraints and the identification of future priority action areas for 1985 related to plant protection in the Caribbean. This effort is critically important to all of us.

In the name of IICA, I wish you a most productive meeting and once again reiterate that our Institute stands ready to cooperate with you in your efforts to control and/or wipe out pest and disease in the region.

Address presented by Dr. Lionel Smith, Chief Agricultural Officer, Ministry of Agriculutre, Food and Consumer Affairs, Barbados.

Mr. Chairman, Director of IICA, Distinguished Guests and Participants, Ladies and Gentlemen:

It gives me great pleasure to welcome you to this Fourth Regional Meeting of Heads of Plant Protection in the Caribbean. May I also take this opportunity to welcome those of you who are visiting Barbados for the first time and hope that your stay is both profitable and enjoyable, and to those who have been here before, I hope it will be even better than the last time.

I see from your proposed Agenda that you will be discussing matters of significance not only to us in Barbados, but to the region. These discussions are in keeping with the objectives of IICA Plant Protection Programme which are to promote and support the efforts of countries to prevent and reduce crop losses caused by pests, diseases and weeds.

To this end, previous meetings of Heads of Plant Protection of IICA member countries have been held in Costa Rica, Barbados and Venezuela in 1979, 1980 and 1981 respectively. At these meetings programme activities were analysed and priorities were established. I note that among these priorities are training and regional coordination.

We in Barbados, Mr. Chairman, consider training in the area of Plant Quarantine to be of paramount importance. It makes sense to keep

out a potential pest, disease or weed rather than to allow it in and then expend great efforts, time and money to try and eradicate the problem. I note with pleasure that IICA has already been involved with three training courses and that Barbados has benefitted by having seven persons attend these courses. These courses must continue until we have a cadre of well trained effective and responsible Plant Quarantine staff throughout the region.

At this time, emphasis is being placed on the production of fruits in Barbados. The question of pests and diseases of fruit then assumes major proportions. We in Barbados have been fortunate so far in being free from the major Fruit Fly pests, so feared in the United States, and to-date, as far as our surveys have shown we are also free from the Mango Seed Weevil. We are only too well aware that the presence of these pests in a country can effectively debar entry of its fruit into other countries which are free from these particular pests. I take it that these will be among the urgent pest and disease problems to be discussed on your agenda and I look forward to your proposals for dealing with them.

In the area of regional coordination I note with pleasure the joint efforts of the FAO/IICA Plant Quarantine Course held earlier this year in St. Lucia. At a time when financial resources continue to be scarce as they are, it behoves us to act together in order to get the maximum benefit from our resources both human and financial. In keeping with this objective I note with gratification and pleasure, the cooperation between the UWI, IICA and Barbados in the establishment of an Intermediate

Cocoa Quarantine Facility in Barbados. The cocoa producing world is indebted to IICA for allowing their staff in Ecuador to examine that priceless collection of Germplasm in order to satisfy the phytosanitary conditions for its transfer via Barbados to a permanent site. It is to be hoped that collaborative venture like this and the joint FAO/IICA Plant Quarantine course will not only continue in the future but expand to include surveys, quarantine and other preventative programmes against such pests as the Fruit Flies, Mango Seed Weevils, Rust and Smut in sugar cane, to mention but a few areas of concern.

Pesticides are being used more and more as our efforts to increase food production increase. In an attempt to regulate their use and protect our people, we have a Pesticide Control Board which regulates the importation and use of pesticides in Barbados. I note from your agenda that pesticides are to be discussed, and I recall that IICA had a regional meeting on pesticides last year. I feel the time has come for there to be some harmonisation of the licensing arrangements for pesticides in the region. It is not very satisfactory from a regional standpoint for a product to be restricted or banned in one country and be freely available in others with similar agricultural products.

There is also need for educational programmes in this area as has recently come to light here in Barbados. Dealers in pesticides must realize that they owe a responsibility not only to the principals and shareholders of the pesticide marketing firms they represent but also to the public. Moreover, to the extent that a license holder is

responsible for the importation of a restricted pesticide, he must also be held responsible for any indiscriminate distribution of it. Therefore, we must jointly adopt such measures as will bring about more effective and safer use of pesticides. These will include promoting such educational programmes in our communities as will make all concerned sufficiently aware of the value of proper pesticide handling. The dangers of carelessness cannot be over-emphasised.

Mr. Chairman, it is not my intention to take up too much of your valuable time nor to try single-handedly to work out the problems on your agenda. I have mentioned some areas of concern to us here in Barbados and I trust you will consider them.

In closing, I wish to emphasise the importance which we in Barbados place upon plant quarantine matters; I know that you too take your responsibilities quite seriously, and I am encouraged to look forward to the results of deliberations which will promote our common interests in service of our countries' economic future. Once again, I wish you a pleasant stay in Barbados, and success in your deliberations.

I now declare the meeting open.

BARBADOS

ENTOMOLOGY - J. Jones

Research Projects

(i) Sugar cane

Sugar cane thrips (Fulmekiola serrata) continued to be the focus of attention. Surveys were again continued throughout the island. Two varieties, B62163 and B63118, were selected since these make up about 75-80% of commercial varieties in Barbados. Results indicate that both varieties are susceptible. Greenhouse trials are presently in progress to determine the effect of these insects on overall yield; as it is still not clear whether there is a correlation between these two factors.

(ii) Sweet potatoes

The West Indian sweet potato weevil, Euscepes postfasciatus is by far the most serious insect pest affecting sweet potato. Earlier trials have indicated that the insect is very resistant to the insecticides locally available; although some of these chemicals have never been used against the insect.

The emphasis has been shifted to a more integrated approach in which insecticide treatments are omitted; and timing of planting and harvesting.

In the past 2 years trials on two different rainfall zones of the island have been conducted. Twenty-one older varieties and 29 new ones bred at the Central Agronomic Research

Station have been used in these trials. Of these 15 of the best in terms of yields, consumer appeal and weevil resistance have been selected for further trial.

(iii) Cockroach program

A joint project between bio and chemical control sections of the Entomology division has intensified. Poison baits are being examined as well as the efficiency of traps.

(iv) Stored product pests

An ongoing program has been established to examine the use of selected insecticides against stored product pests. Legume trials have been conducted over the last two years and weekly sprays with pyrethroid insecticides have been applied. Weekly spray applications are commenced as soon as the pods show sign of yellowing. Synthetic pyrethroid insecticides are used. So far it appears that the level of damage has been significantly reduced. Trials are continuing.

(v) Mango seed weevil (Sternochetus mangiferae)

Reports of the discovery of the mango seed weevil (Sternochetus mangiferae) in mangoes in St. Lucia and Martinique; prompted an examination of all mangoes arriving from these two islands. Both adults and larvae were collected from them and a ban has been imposed as a result.

(vi) Two trials were set up to test the efficacy of most insecticides against cabbage pests; Plutella xylostella; diamond back moth; Ascia monuste, cabbage white butterfly, and cabbage budworm, Hellula phidelialis. Of the insecticides tested, Padan gave best control.

Integrated control programs in co-operation with the Bio-control division are planned.

1. Control of sugar cane pests

(a) Moth borer: An ongoing biological control programme seeks to maintain mothborer activity below the present 4% infestation level. Further attempts to reduce damage to plant canes by parasite manipulation and releases.

(b) Root borer: Investigation of the population cycle was initiated since 1980; yearly sampling and monitoring of adult populations, as well as the expression of larval damage in cane fields would hopefully give predictive data on population outbreaks. Low numbers collected every year have halted evaluation of natural enemies.

(c) Sugar cane thrips - Orius sp of predators introduced in 1982 and 1983 failed to establish itself, although some multiplication on its host Fulmekiola serrata was achieved under greenhouse conditions. Further screening of natural enemies will continue.

2. Control of food crop pests

(a) Diamond back moth

- Apanteles plutellae established here in the late 70's was extensively investigated for improving parasite manipulation and increased efficiency in the field.

(b) Cabbage white butterfly: Pteromalus puparum was one of 4 parasites introduced for control of Ascia. It was

recovered up to one year after its initial release in the field. Its numbers subsequently declined, and efforts to select for strains adaptive to the local conditions failed.

(c) Lacebug - Corythuca morrilli

This bug maintained its pest status during the last 2 years. Investigations on the biology and ecology were completed. Twenty-one varieties of sweet potatoes screened showed different levels of tolerance to lacebug attack. Further screening continues.

3. Fruit tree pest control

(a) Attempts were made during 1983 to diagnose the major pests and the causative agents of sooty mold on fruit crops. Forty-two percent of the plants (particularly citrus) surveyed were afflicted with sooty mold. A biocontrol programme is being planned against the major pests.

(b) Investigations were made to determine the presence or absence of the mango seed weevil in Barbados following its discovery in St. Lucia; the results have so far been negative.

4. Household & storage pests

(a) Rearing facilities and biocontrol techniques were improved for control of Periplaneta americana and Blatta orientalis. Field experiments continued to give good results in terms of increased parasitism of oothecae with parasite releases. An octogonal baited trap for adults and nymphs was designed and tested indoors and outdoors with very satisfactory results.

PLANT PATHOLOGY PROGRAMS FOR BARBADOS

by

Omer S.L. Thomas

The plant pathology programs in Barbados encompass three major areas. All these areas are covered with the aim of providing day to day assistance to the Agricultural Community. These areas are:-

1. Research
2. Diagnostic Services
3. Public Service (outreach programs)

1. RESEARCH

The general aim of the programs in research are to provide answers for the major constraints to production in so far as diseases are concerned. Also, to develop systems or set of alternatives that can lead to greater efficiency and productivity. The projects that are currently in progress are:

1.1 Introduction, and screening of new varieties, cultivars or lines of vegetable for their resistance or tolerance to endemic diseases.

1.1.1 Project in Progress:

Top Crop Bean

Green Crop Bean

(The popular varieties of string bean)

) are evaluated in respect of bacterial blight and bacterial spots on legumes and leaves. These tests are carried out in three ecological areas: Home St. Philip; Graeme Hall, in Christ Church and Crab Hill in St. Lucy.

This project is still in progress so no conclusive results are yet available.

1.1.2 Tomato

Thirteen varieties of tomato were evaluated for their

susceptibility tolerance or resistance to the major diseases known to afflict damage during the wet season.

The varieties tested were:

1. Spring Giant
2. Sunlight pole
3. Roma
4. Walter
5. Ultra Boy
6. Ultra Girl
7. Calypso
8. Floridell
9. Duke
10. Beef Steak
11. Elan
12. Marglobe
13. Marmande

The test were conducted between November 1983 and March 1984. Results taken from the observation of plots show that there were no resistance nor tolerance to the following diseases:

1. Scleretia wilt
2. Bacterial spots
3. Anthracnose
4. Phoma Rot
5. Phytophthora Rot
6. Damping Off

The experiments will be repeated in the rainy season of 1984-85.

1.2 Screening Fungicides for controlling plant diseases

Three projects of this type are in progress.

a. Control of mildew diseases in cucurbits (Squash, Watermelon Cucumber)

This project is testing (Peltar; Pelt 40; Benlate Manzate and Afugan) five fungicides for their effectiveness.

b. Bacterial spot and blight control on Tomato, Sweet peppers and String Beans, using various copper formulations.

c. Evaluation of 4 chemicals at different concentrations and application internals for controlling Peanut rust and leaf spots.

1.3 Virus disease control in cucurbits

A series of experiments were conducted using squash, to test a mineral oil (J.M.S. stylet oil) for its efficacy in controlling aphidborne viruses.

The analysis of the results shows that the JMS stylet oil gave very good control of the Mosaic diseases.

There was a 7 fold reduction of virus spread when compared to controls ($P_{\_}$ .05.)

Another experiment to compare the effects of insecticidal sprays vis-a-vis the activity of the mineral oil is in progress.

1.4 Tomato wet season diseases

In collaboration with the University of the West Indies Biology Department the problem of the wet season diseases to tomato was addressed.

The plant pathologist supervised the honors project of a student reading for the Baccalaureate in Biological Science Degree.

The thesis was entitled "A survey of the Tomato diseases occurring in wet season in Barbados".

This is a list of the suspected pathogens found on the Tomato.

Pathogen	Varieties
Stemphylium sp.	Calypso, Walter, Duke
Helminthosporium sp.	Walter, Calypso
Collectotrichum sp.	Calypso
Phytophthora sp.	Calypso
Sclerotium sp.	Calypso, Walter, Duke, Beef Steak
Oidium sp.	Calypso, Walter
Phoma sp.	Calypso
Fusarium sp.	Bounty, Calypso, Walter, Duke
Alternaria sp.	Bounty, Calypso
Botrytis sp.	Calypso, Walter
Meloidogyne sp.	Calypso
(Four isolates of bacteria matching the characteristics of *Xanthomonas* sp.) & Erwinia	Calypso, Duke, Walter

Other pathogens not known to cause diseases on tomato were also isolated from samples during the survey. Pathogenicity tests will be carried out using these fungi in the next season of 1984/85.

Symptoms	Plant Part	Pathogen
Early Blight	Leaves	*Alternaria* sp.
Fruit Rot	Fruit	*Botrytis* sp.
Leaf Spotting	Leaves Fruits	*Colletotrichum* sp.
Rot	Fruit, Stem	*Fusarium*
Rot	Fruit, Stem	*Phoma*
Rot	Fruit	*Phytophthora*
Blight & Rot	Leaves, Fruit	*Phytophthora*
Stem Rot	Stem	*Sclerotium*
Leaf Spot		*Stemphyllium*

Symptoms	Plant Part	Pathogen
Soft Rot	Fruit	*Erwinia* sp.
Spotting	Calyx. Fruit, Leaves	*Xanthomonas*
Root Knot		*Meloidogyne*
Asymptomatic Blossom Fall		Nutritional
Blossom End Rot		Physiological
Purple leaf Curl		Nutritional
Cat Face		Physiological

2. DIAGNOSTIC SERVICES

The Diagnostic laboratory provides support services for the Plant Pathology Programs and to service extension programs and the General Farming Community.

The laboratory provides for routine diagnosis of diseases conditions and syndromes using materials such as soil, Plant Material, Food stuff and Livestock Feed.

Cases of fungal and bacterial aetiology are handled with relative comfort. There are no facilities available to handle virus assays at the moment. However, some amount of virus identification using serology is done.

During 1983 to 1984 the laboratory processed 100 samples and we can anticipate a great increase in 1984/85.

3. PUBLIC SERVICE

3.1 Seed Treatment

Certain bacterial diseases are controlled by seed treatment owing to their internally seed borne nature. The treatment is largely thermotherapeutic and is aimed at black rot of crucifers caused by

Xanthomonas campestris and bacterial spots and blight of peppers caused by Xanthomonas.

In 1983, only 22 batches of seeds were treated by the Plant Pathology Unit, of the total amount treated 18 batches were cabbage; 2 broccoli and two tomato.

Cotton seeds were also chemically treated to reduce the occurence of damping off disease in the field.

3.2 Fruit tree spray program

The fruit tree spray program is intended to reduce the occurence of common disorders of fruit trees. This is an Island wide program and is aimed at small and commercial farmers and householders. The disorders commonly encountered are:-

1. Sooty mold
2. Greasy spot
3. Anthracnose
4. Phytotoxemias caused by Toxicogenic Arthropods
5. Ants, thrips, mite and scale insects.

During 1983 a Total of 600 cases were attended to.

3.3 Extension Pathology

General extension and advisory services remain an integral part of the objectives of the plant pathology programs. Lectures sessions, on-farm demonstrations and field diagnosis account for a great amount of the programs. Over 500 field diagnostic visits were made in 1983/84

4. STAFFING

The Plant Pathology Unit is currently staffed by:

One Pathologist/Virologist, Omer S. Lloyd Thomas, one Senior Agricultural Assistant, Michael Philip, two Agricultural Assistants, Messrs Gordon Bispham, and Barney Callender and seven Casual workers.

Discussion

G. Pollard reported that the sugar cane thrips was also an important pest in Trinidad. He added that a post-graduate student was studying the biology of the pest and suggested that there be an exchange in information. M. Alam told the meeting that the sugar cane thirps had become a serious pest since it was identified in 1980-81 but he felt that population levels had declined since. He thought that levels may be affected by environmental conditions. E. Alleyne, however, thought that thrips populations were still high in Barbados but symptom expression was influenced by environmental conditions.

In reply to why 90% parasitism of Plutella was not acceptable, J. Jones said at that level there were still unacceptable damage levels. Alam reported having found up to 70% parasitis in the islands. Unfortunately, the extensive use of pesticides may have affected the further development of parasitism. He thought that it may be necessary for the parasites to attack other stages of the insects for effective parasitism. W. Van Whervin said that biological control would not give the level of product acceptability required in vegetables. E. Alleyne said that parasitism gives only a percentage of control but a the small population of insects left to be controlled can cause the damage.

REVIEW OF PEST MANAGEMENT IN GRENADA

by

James Marrast

Approximately 75% of Grenada's Agricultural commercial value comes from cocoa, banana and nutmeg. Recent years have shown that these crops have been stagnated and income have declined. Total agricultural product have decline by 7% in 1983.

An outstanding obstacle to increase general agricultural output is the inconsistency of Pest Management - Control of insects, diseases, nematodes and weeds. The main reasons are the poorly organised Plant Protection Unit and their staffing. The Grenada Banana Co-operative Society and Grenada Cocoa Association are the only two organizations which have programmes to protect cocoa and banana from certain pest. Some food crop and vegetable farmers tolerate pest and are forced to live with them. While farmers are relying on chemical means, they cannot diagnose problems accurately nor apply pesticides correctly and accurately. Although over the past two years there has been a marked increase in the use of agricultural chemicals, the pest problems seems to be worsening and annual crop losses are on the increase running into thousands of dollars.

BANANA	(1)	Moko Disease	- *Pseudomonas solanacearum*
	(2)	Weevil Borer	- *Cosmopolites sordidus*
	(3)	Leaf Spot Disease	- *Cercospora musa*
	(4)	Root Knot Nematode	- *Radopholus similis*
COCOA	(1)	Thrips	- *Selenothrips rubrocinus*

(2) Beetles - Stirastomas breve

(3) Black Pod - Phytopthora palmivora

(4) Termites - survey economic pest

These cause extensive reduction in production and have to be controlled by the use of expensive chemicals. The Grenada Cocoa Association and Grenada Banana Co-operative Society together spend about $450,000 annual on the control of pests.

INTERNATIONAL ORGANIZATIONS ASSISTING IN THE CONTROL OF PEST MANAGEMENT

1. The Agency for International Development USAID

This agency supported by the United States will support a Pest Management and crop Protection Programme. The Ministry of Agriculture will be the Chief executing body in co-operation with producers organization and farmers. A Pest Management Unit (PMU) will be established in the Ministry of Agriculture to ensure effective implementation.

Objectives

(1) To ensure optimal effectiveness and efficiency of Pest Management practices by farmers and commodity organizations.

(2) To minimize problems of Pesticidal poisoning and contamination to human

(3) To strengthen plant and animal quarantine at Airports and Seaports

2. European Development Fund (EDF)

The EDF funds a project entitled "Moko Disease Eradication and Containment Programme" executed by WINBAN. The programme is aimed at surpressing the disease agent (bacteria) by the use of Glyphosate (Roundup) injected in pseudostalks by a spot gun. A team of twenty-two (22) workers, two (2) Field Supervisors and one Quarantine Officer devote full time to the programme.

3. Inter-American Institute for Co-operation on Agriculture (IICA)

This organization has a Crop Protection Specialist (entomologist) on the Island and, is the only agency to have an active Pest Management research project on the Island.

The Specialist collaborates with the MOA in all aspects of Crop Protection activities. The organization recently sponsored a 5 day work shop in Crop Protection for MOA and G.B.C.S. Extension Officers.

4. Food and Agriculture Organization (FAO)

FAO is establishing a Plant Quarantine Service in Grenada. The programme will train local personnels in Plant Quarantine. The project will help develop and update Plant Quarantine Laws and Regulations.

LOCAL ORGANIZATIONS

1. Pesticide Control Board

The Pesticide Control Act was passed in 1973, this act provided for the establishment of a pest control board. The duty of the board is to advise the Minister of Agriculture on matters relating to the safety of Pesticides and Import regulations etc.

2. A IPM is to be organized by the MOA. The unit will co-ordinate all pest management work within the outside of the MOA. The Pest Management Unit will determine the suitability of the Integrated Pest Management in the various crops in the Island and to develop guidelines for implementation.

FOURTH MEETING OF HEADS OF PLANT PROTECTION OF IICA

MEMBER STATES IN THE CARIBBEAN

BARBADOS, NOVEMBER 5TH - 8TH 1984

COUNTRY REPORT

Presented by Leslie Munroe, Production Manager (Plant Protection)
Ministry of Agriculture, Guyana

Staff and Facilities

The Plant Protection Section is one of two sections within the Crop Science Division, Department of Agriculture of the Ministry of Agriculture.

The Section presently comprises of the following units, Entomology, Plant Pathology, Quarantine and Leaf-cutting Ant Control. During the last two to three years the Section has suffered through the resignations, without replacements, of four Plant Protectionists. The four consisted of two weed Control Officers, one Entomologist and one Plant Pathologist.

The present staffing situation is as follows:-

1. Production Manager (ag.)/Entomologist/Head of Coconut Rehabilitation Programme
2. (1) Plant Pathologist
3. (1) Agricultural Officer (Plant Pathology)
4. (1) Agricultural Officer (Entomology)/Plant Quarantine Officer.

The Department of Agriculture is now in the midst of a massive restructuring exercise resulting from the recent commissioning of the National Agricultural Research Institute.

The entire Plant Protection Section, but for Plant Quarantine, has been absorbed into the newly formed Research Institute. The respective roles of the Ministry of Agriculture and that of the National Agricultural Research Institute as it relates to Plant Protection, have not been clearly defined as yet. However, one sees the regulatory functions remaining the responsibility of the Ministry of Agriuclture.

Facilities

Plant Protection facilities remained virtually unchanged except that with the transfer of rice research to the new Research Institute, the facilities previously exclusive for rice are now available to the wider benefit of Plant Protection.

A deliberate effort is being made to infuse biological control into the pest control arsenal, therefore, towards this end a building at the Central Agricultural Station has been converted into an insectary. The conversion was primarily to facilitate investigatory studies of potentially effective biotic agents for control of the Coconut butterfly, Brassolis sophorae, but will serve as the nucleus for future work in the area of biological control.

The Plant Pathology and Entomology Laboratories of the Ministry of Agriculture are being utilised for laboratory sessions for University of Guyana, Faculty of Agriculture and Guyana School of Agriculture students.

Facilities of the Plant Quarantine Service have been declined to a limited extent due mainly to the absence of Quarantine Inspectors at the ports and financial stringency.

Urgent Pest, Disease and Weed Problems

There is at the present time heavy reliance on pesticides for successful crop production. Except for the Sugar Industry integrated pest management is not practiced to any noteworthy level. With the prevailing economic climate the availability of pesticides is uncertain and will continue to be so for sometime to come.

Sugar

Trips, Fulmekiola seratta, first recorded in 1982 are gaining importance as it spreads within the Demerara county.

Diatraea centrella (Moschl.) which is not usually controlled by the Tachinid parasite, Metagonistylum minense (Tns.) is still a problem and efforts at identifying an effective biotic agent are continuing.

The incidence of the major diseases smut caused by Ustilego scitaminea, rust caused by Puccinia melanotephala and Yellow Spot disease caused by Cercospera koepkei - (Mycovellosiella koepkei) has been low, the use of resistant varieties being the main course adopted.

Rice

The paddy bug Oebalus poecilus (Dalt.), leaf-miner. Hydrellia sp. nr. Spinicornis (Cresson) and the caterpillars, Spodoptera Frugiperda and Mocis Punctularis continue to be the most important pest affecting the rice production. Effective control of these pests is achieved through the timely application of chemicals.

Coconut

The wilt disease - Cedros wilt, fatal wilt or hartrot - which is associated with the trypanosomatid, Phytomonas sp. was first recorded in Guyana in 1982. Since that time the disease has been encountered at several other locations, more recently in the Pomeroon River which is a major coconut producing center about 100 miles north of the area where the disease was first recorded.

Red ring disease has been observed to be spreading within the country due essentially to the absence of Internal Quarantine.

The Coconut butterfly, Brassolis sophorae and the Coconut moth borer, Lapaeumides (Castnia) daedalus are of major importance and moreso now because of the frequent unavailability of chemicals for control. Biological control studies are therefore, proceeding apace with a view to utilising biotic agents for the control of B. sophorae in the first instance. Multiplication of indigenous parasites, Brachymeria sp. and Spilochalcis sp., is being persued.

Other Crops

Among the orchard crops, Tristeza Virus disease of citrus needs urgent attention. An injection of new resistant rootstock varieties into the system, an indexing programme and training are some of the requirements.

Moko disease is still a major problem of plantain and banana and with the lack of an internal Quarantine system the disease is spreading into new farming areas.

In the area of vegetable production studies were conducted on early and late blight of tomatoes, cabbage yellows and pod rot of cow pea.

Leaf-cutting Ants

Leaf-cutting ants, Atta and Acromyormex spp., are general insect pest and widely distributed in the country. Bait for the control of the insect is produced and distributed free of charge by the Ministry of Agriculture. During 1983, bait distribution totalled 6,500 kg.

Plant Quarantine

The Plant Quarantine Service is affected by inadequate facilities and staffing problems. The staffing problems relate to shortage and need for training of Quarantine Inspectors.

Presently two ports-of-entry are manned by Quarantine Inspectors, the Timehri International Airport and port Georgetown. Dealing with these ports is fairly straight forward, however, the ports of major quarantine significance at this particular stage in the country's development are those bodering Suriname, Brazil and Venezuela. All commercial domestic flights are, therefore, come under quarantine scrutiny.

The Quarantine Service has not recorded any significant interceptions and this may stem from the fact that the greater part of the agricultural commodities entering the country bypasses quarantine.

Recent Legislation Affecting Plant Protection

There has been no legislation enacted in the recent past which would have any bearing on Plant Protection. There is, however, legislation pending, this has to do with the labelling of pesticides act. The draft Jamaican Act is being used as a model.

Pesticide Problems

The problems as they relate to the use of pesticides include handling, labelling, use and disposal. Faced with the present shortage of specific recommended chemicals there is evidence of chemicals being used where not recommended. There are cases where the recommended treatments are not effective as they were formally e.g., the use of Decametrin for the control of the diamond back moth, Plutella xylostella, and so it is not uncommon to find persons using greater than the recommended dosage.

Discussion

C. Schotman asked where quarantine was placed in the restructuring. L. Monroe replied that quarantine was the responsibility of the Ministry of Agriculture. There will be a core of specialist in the Ministry and facilities were being examined. E. Alleyne asked whether the National Agricultural Research Institute (NARI) would be undertaking extension. L. Monroe replied that there will be an Extension Liasion Officer attached to the NARI and all research findings will be sent to the Ministry of Agriculture - Extension Staff.

FOURTH MEETING OF HEADS OF PLANT PROTECTION OF IICA

MEMBER STATES IN THE CARIBBEAN

BARBADOS, NOVEMBER 5th - 8th 1984

COUNTRY REPORT

Prepared and Presented by Jean Vernet HENRY, Plant Pathologist, Plant Protection Officer, Ministry of Agriculture, Haiti.

The Ministry of Agriculture of Haiti already has a Plant Protection section, but its work was concentrated on three kinds of activities:

a. Control of introduction of plant materials.

b. Delivery of certificate for export of plant materials

c. Intervention against local pest and diseases which represents a serious threat for our agricultural production.

A few years ago a project to control harmful vertebrate pest was established in the Service. It works now to control birds and rats principally in the rice and corn areas.

Now the problem of fruit fly, the smut of sugar cane, and the necessity to protect our coffee against rust has been given priority by the Head of the Ministry to organise a good and functional service of Plant Protection with quarantine and culture protection sections.

Mr. Barthelemy, Mr. Balthazar and I have received authorisation to organise this service and we hope to get some help from the International organisations who have a lot of experience like FAO, AID, IICA and CPPC to build it.

This plan concerns not only Haiti, but all the countries with which we trade. You can see below a plan of organisation chart of this Service. (See organization chart).

For this plan, we must have some technicians and specialists, which we are lacking at the present time. As a matter of fact we expect a training programme of a short-term duration to train quarantine inspectors and pest management technicians for the field. We need other specialist like those mentioned in the chart: Entomologits, Pathologists, Nematologists, Weed Scientists, etc.

This year we did not observe new pest and disease in Haiti. The smut is still present in some areas. I will note for you some results of Mr. Turenne who worked on sugar cane smut. The very important problem of our Service now is a correct identification of the fruit fly species that we have in Haiti. It is an urgent problem that we must resolve this year.

Some very important diseases now are:

1. The mildew of Corn Sclerospora sorghi.
2. The mildew of Tabacco Peronospora tabacina.
3. The Bunchy top and the Mosaic of pawpaw.
4. The blight of the young fruit of Anacardium occidentale.

Regarding the work on the sugar cane smut, Mr. Turenne has a germ plasma collection of thirteen varieties to screen for the smut disease:

Citadell 9	CP 70 - 1133
Citadell 3	CP 70 - 1527
CO 421	CP 72 - 1210
NO 2 - 83	CP 72 - 2086
CP 68 - 1026	CP 73 - 1547
CP 69 - 1956	CP 74 - 2005
CP 63 - 588	

He also had some varieties to be tested for the smut disease:

1.	CO 419	B 47 258
2.	CO 421	B 51 129
3.	Citadelle 3	F 160
4.	Citadelle 9	PR 1028

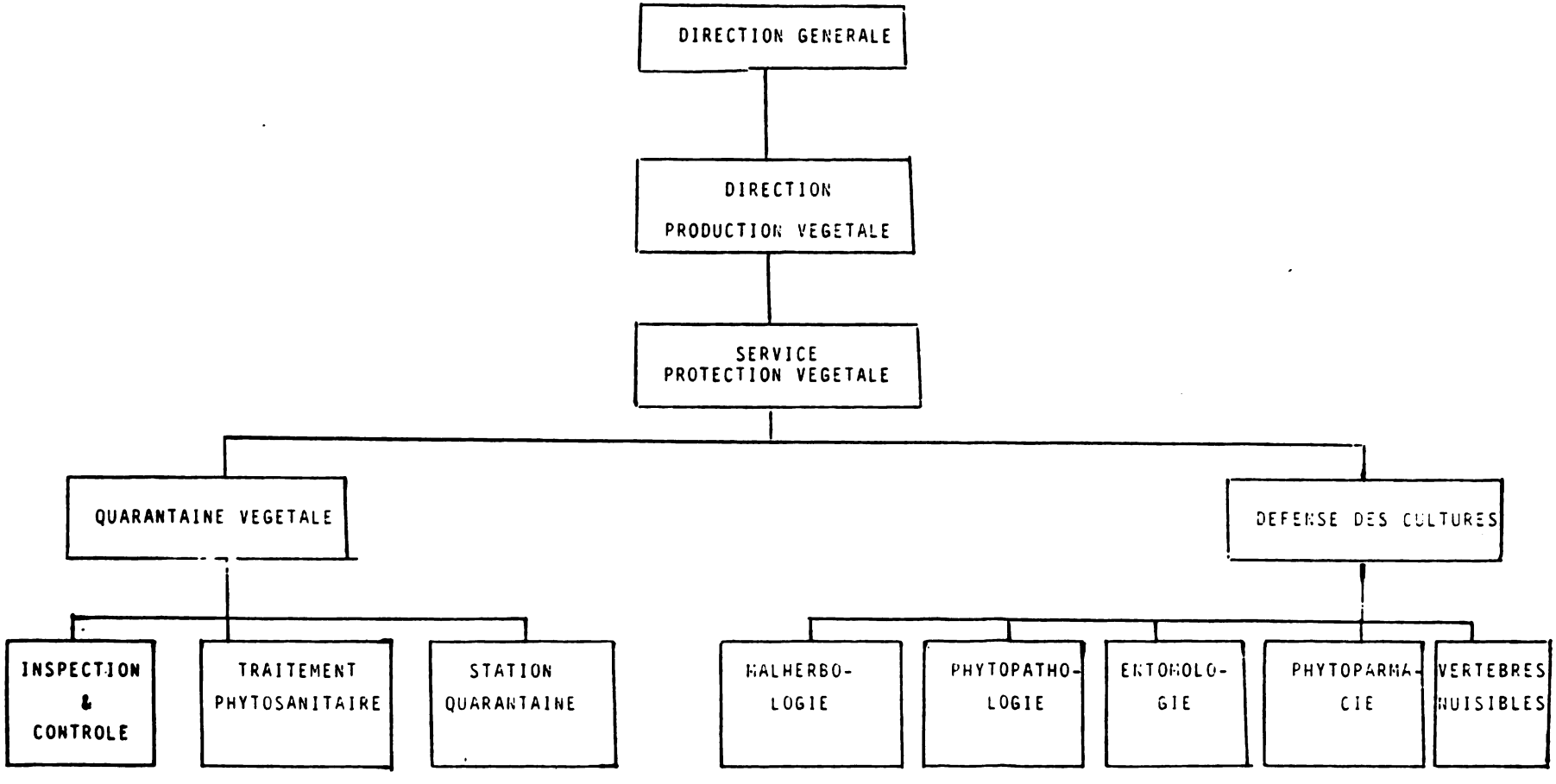
CO 419, Co 421, B 47 258 selected before have shown a susceptibility to Smut on artificial innoculation. There are other varieties that are being tested for their comportment to the Smut. They are:

1.	M-336*	2.	B-37172*
3.	F-157	4.	F-160
5.	PINDAR	6.	POJ (current name)
7.	Leogane 831 (local name)*	8.	Leogane 832 (local name)*

* Those varieties still show a very interesting characteristics They should be transferred to the farmers.

Regarding the legislation of Plant Protection in Haiti we are working on it. The legislation of July 24, 1937 has been reviewed and will be presented to the Minister of Agriculture.

The plan on legislation pesticide must be prepared for 1985. We expect to control the trade and the use of chemical products in Haiti.


DIRECTION GENERALE
DIRECTION PRODUCTION VEGETALE
SERVICE PROTECTION VEGETALE
QUARANTAINE VEGETALE
DEFENSE DES CULTURES
INSPECTION & CONTROLE
TRAITEMENT PHYTOSANITAIRE
STATION QUARANTAINE
MALHERBOLOGIE
PHYTOPATHOLOGIE
ENTOMOLOGIE
PHYTOPARMACIE
VERTEBRES NUISIBLES

Discussion

W. Van Whervin informed J. Henry that he can let him have information on the disease of cashew.

C. Brathwaite said that he had supplied Haiti with information on Blue Mold disease and had recommended Rhidomil a systemic fungicide. He asked whether the disease was still a problem. J. Henry said that the disease was still a problem in some parts since the peasants were unable to control the disease.

FOURTH MEETING OF HEADS OF PLANT PROTECTION OF IICA MEMBER STATES IN THE CARIBBEAN

BARBADOS, NOVEMBER 5TH - 8TH 1984

COUNTRY REPORT

Prepared and presented by Walter Van Whervin, Ministry of Agriculture, Jamaica

REVIEW OF PLANT PROTECTION IN JAMAICA

Plant Protection is one of the major activities of the Department of Research and Development in the Ministry of Agriculture, Science and Technology. The Plant Protection Division has six (6) sections namely: Entomology, Plant Pathology, Nematology, Weed Biology, Plant Quarantine & Agriculture. The major activities of the Plant Protection Division embrace Research and Development, Regulatory and Advisory.

During the period under review the restructuring of the Department of Research and Development continued with the major research complex at the Central Research Station at Bodles and the other major Research Station at Montpelier nearly completed. Decentralization of research activities in Kingston to these major research stations will take place shortly.

A major activity of the period was the formulation of agricultural projects in Plant Protection - intemated funding for the project "strengthening and streamlining the Plant Quarantine System in Jamaica" was approved. This project comprises the establishment of a Post-entry Plant Quarantine Facilities at the airport and wharves in Kingston and Montego Bay.

Other projects formulated were:

a. A feasibility study for the establishment of a National Agriculture Programme;

b. A feasibility study for the establishment of a National Rodent Control Programme; and

c. A project profile for the eradication of the fruit flies, Anastropha spp. in Jamaica.

Research activities continued on the major economic agricultural crops. Research invalued the following:

a. The screening of pesticides to determine their efficacies in the economic control of pests and diseases;

b. The determination of resistance of some cultivators of crops to pests and diseases;

c. Cultural control; and

d. A reappraisal of the economics of control of the citrus weevils of Jamaica and the genera Exophthalmus, Pachnacus, Lachnopus and Artipus.

The Plant Quarantine Section and the Agriculture Section carried out their primary functions as Regulatory agents and the major research sections, manely Entomology, Plant Pathology and Weed Biology offered advisory services based on Diagnostic/Identification of specimens submitted by farmers.

During August 1984, American Foulbrood Disease of bees, Bacillus larvae, was discovered in Kingston and St. Andrew. A programme of eradication and an islandwide survey programme were immediately implemented. FAO was notified of the outbreak of this disease in

Jamaica. The survey so far suggests that the disease is primarily concentrated in Kingston and St. Andrew.

Discussion

W. Small asked whether the National Agricultural Research Institute (NARI) had the same function as CARDI. W. Van Whervin replied there was no problem since he felt that the organisation was to strengthen the National Institute. The NARI he said had an Advisory Committee which is the mechanism for integrating all agricultural research in the country.

C. Brathwaite asked about the status of Lethal Yellowing problem in Jamaica since the introduction of the Malayan Dwarf variety. W. Van Whervin told the meeting that the research in Lethal Yellowing was completed and emphasis was placed on crossing of Panama Tall with the Malayan Dwarf.

FOURTH MEETING OF HEADS OF PLANT PROTECTION OF IICA

MEMBER STATES IN THE CARIBBEAN

HELD IN BARBADOS - NOVEMBER 5th - 8th, 1984

COUNTRY REPORT

Prepared by: A.D. Auguste, Crop Protection Officer, Ministry of Agriculture, ST. LUCIA.

The year 1984 has seen some significant changes in the field of Crop Protection in St. Lucia. These changes are by no means complete, since development of this Unit constitutes one of the major aims of the Research Division for the future. Recently, Crop Protection has assumed a position of great importance since the agriculture of our country is being threatened by insect pests, which to our knowledge had not enjoyed pest status until the earlier 80's.

These developments have made it absolutely necessary to review the status of the Crop Protection Unit to determine its capabilities. Generally, staffing and facilities have been found to be inadequate and so recommendations have been made to this effect.

Staffing and Facilities

The Unit comprises a Crop Protection Officer who is head of it and is assisted by four persons, one of whom is a graduate of UWI; two of whom are Dimplomates from Jamaica School of Agriculture; and the other is a graduate of the St. Lucia School of Agriculture. One graduate and one Diplomate are currently on study leave.

Currently the Crop Protection Officer is assisted by two assistants, one of whom is attached full-time to a crop protection project funded by FAO. It is hoped that with the new staff structure proposed for "Crop Protection and Quarantine Unit", there will be a total of eleven members, who will be adequately trained and qualified to execute the duties of the Unit.

To facilitate laboratory work it has become necessary to seek an improvement of the facilities at Union Agricultural Station. The existing Crop Protection Laboratory is by far too small and uncomfortable for any meaningful work to take place. There is basic equipment in plant pathology such as microscopes, an autoclave, incubator, centrifuge, glassware etc., but by and large some of these are old and in various stages of disrepair. The lab is not equipped to undertake work in entomology. This year the Ministry of Agriculture is seeking the assistance of a suitable organisation in establishing laboratory facilities which would support both Pest and Disease programmes as well as the Plant Quarantine Service. If successful this would go a long way towards improving the vigilance which is so very necessary to the protection of a country's agriculture.

Urgent Pest Problems

Recently two major pests have been encountered in St. Lucia namely, the Coconut Mite (Eriophyes guerrerenis) and the Mango Seed Weevil (Sternochetus mangiferae). The Coconut Mite was confirmed as a pest in St. Lucia in 1982 by Dr. Reginald Griffith of Red Ring Research in Trinidad and Tobago, during a visit through the islands. At the time infestation level was already high enough to cause significant loss in yield. The percentage of the total number of coconut trees sampled which showed symptoms was about 78%. This figure was later also confirmed in another survey as the percentage of total nuts sampled which showed symptoms. Since then the Government of St. Lucia has given due consideration

to the salvation of the Coconut Industry, the second largest revenue earner in the agricultural sector. Coconut Rehabilitation programmes require as a pre-requisite, that mite control be researched and such control be made a necessary constituent of such programmes.

Since the estimation of damage Government has sought advice from various reputable Scientists and Resaerch Institutions on the problem. The general consensus was that a local or regional research programme was necessary before any control programme was instituted. To this end Government proceeded to seek financing for such a research programme. To date the programme is five months old and seeks to quantify accurately the extent of the losses experienced as a result of the pest and also to research different control strategies including, Biological and Chemical control. The use of the fungus Hirsutella thompsonii is the biological agent concerned. The fungus has been proven to be effective against the Citrus Mite. Also its effectiveness has been demonstrated against the Coconut Mite in the laboratory. However, its ability to survive external conditions experienced in our agriculture is still being researched. The chemical strategy, on the other hand, consists of the use of Vamidethian, Monocrotophas, and Polybutenes. Vamidothion and Monocrotophas have been used to control the mite, but the frequency of application and method of application render their use very expensive and cumbersome. Polybutenes are used to limit the mobility of the mite and when these are applied with a suitable insecticide their effectiveness

is enhanced. At present extensive collection of data is taking place along with the evaluation of the effect ot the insecticides on populations of the mite. The programme hopes to benefit from a second extension which would allow for more extensive work to be carried out.

The Mango Seed Weevil, reported in St. Lucia in 1983 and confirmed during the mango season this year, has created some problems for mango exporters in St. Lucia. The weevil, Sternochetus mangiferae, was confirmed to be present in two areas in the northern part of St. Lucia. The weevils were found in abundance in the Ciceron area just south of Castries, and to a lesser extent in Babonneau which is situated about four miles or six kilometers north-east of Castries. The pest has no significant effect on yield. but has very serious implications to trade from a Plant Quarantine standpoint. The report from St. Lucia would appear to be the first official one from the West Indies, though there is the possibility that the pest has gone unnoticed in other territories. The only host known to the pest is the mango. Though the mango is seasonal the pest is able to survive in old seeds debris and in crevices of fences, walls and the bark of the tree where they hibernate during the non-fruiting season. The onset of diapause seems to be associated with long day photoperiod and broken by short day photoperiod.

Central strategies for this pest have been described in literature. However radiation, low temperature storage and fumigation causes injury to the fruit. Sanitation therefore remains as the only feasible alternative

known to reduce the populations significantly without causing any injury to the fruit.

No new problems have been experienced with weeds, though weed control is an integral part of crop husbandry in all of the main crops in St. Lucia.

Recent Legislation Concerning Crop Protection

St. Lucia reports that there is no recent local legislation affecting Plant Protection. Plant Protection is still based on the legislation of November 17, 1942 vis the Crop Protection Ordinance.

Pesticide Control

St. Lucia has from August 1982 enforced the provision of the Pesticide Control Act of 1975. The six member board has had regular meetings since then and has outlined a modest plan of action, which includes Pesticide Registration, Licencing and Training Programmes for Customs, Port Handlers, Distributor Clerks and Transporters concerning Safe Handling, Transport and Storage of Pesticides.

Pesticide poisonings do occur infrequently and non-fatal injections have been reported. However, in all of the cases the acts were deliberate and could not be avoided.

Discussion

J. Jones enquired about the method of application of Polybutenes for Coconut Mite control. D. Auguste replied that polybutenes were sprayed on with a small sprayer.

J. Marrast expressed fears about short term projects and enquired whether there were plans for continuation. D. Auguste replied that the project was implemented such that a local counterpart is being trained and that further experiments and monitoring can be undertaken by the Ministry of Agriculure.

G. Persad informed the meeting the Vamidethion had been applied with a dye by the injection method and the dye had been observed in coconut water. Therefore, care should be observed in the use of systemic chemicals.

E. Alleyne asked whether serious attempts made at biological control programme. M. Alam outlined the efforts he had made and said that the difficulty is that the mite attacks at an early stage whilst the predators attacks the mite a later stage. W. Van Whervin told the meeting that much work had been done on mite control by the Coconut Industry Board of Jamaica. It was felt that there was no method that had given economic control. Work had also been done using fungus.

FOURTH MEETING OF HEADS OF PLANT PROTECTION OF IICA MEMBER STATES IN THE CARIBBEAN HELD IN BARBADOS - NOVEMBER 5TH - 8TH 1984

COUNTRY REPORT

Prepared and presented by Cynthra Persad, Plant Pathologist, Ministry of Agriculture, Lands and Food Production

STATUS OF PLANT PROTECTION IN TRINIDAD AND TOBAGO

by

G. Cynthra Persad

Introduction

There are perhaps two significant changes in the status of agriculture in Trinidad and Tobago, which has influenced the crop protection programme.

Firstly, there has been a significant increase in the production of vegetables over the last few years. This increase can be attributed to the recent trend of growing vegetables (tomatoes, lettuce, celery and cucumber) under a controlled environment system eg. Nutrient Film Technique.

Also, the total number of hectares under sugar-cane cultivation has been reduced since Caroni (1975) Limited began its programme of crop diversification. Crops under cultivation by Caroni include citrus, cassava and rice together with the proposed cultivation of pigeon peas and coffee.

The plant protection programme, and urgent pest and disease problems are highlighted as follows:-

1. Citrus

Together with Caroni (1975) Limited, there is a national Citrus Rehabilitation Programme to increase the production of citrus so to supply both the local fresh fruit market and fruit juice demand.

A virus indexing programme for the production of Exocortis and Tristeza free budwood materials is now in effect. However, two serious pest problems faced by citrus growers are the Picong bee - Trigona sp., and the leaf-cutting ants, both of which can cause extensive damage.

2. Soft Fruits

An important constraint to increased production of soft fruits is the damage done by the fruit fly Anastrepha sp. which attacks sapodilla, guava pommerac, cimate, papaw and plum.

Studies on the control of the two major pests of soursop (Annona muricata) the moth, Cerconata sp. and the wasp Bephrata sp. are continuing.

3. Cassava

The incidence of Cassava Bacterial Blight (CBB) - Xanthomonas manihotis is on the increase, and this is mainly due to the indiscriminate movement of diseased cassava sticks as planting material.

A new insect problem was observed earlier this year where cassava tubers were attacked. The damage is associated with the presence of a bug not yet identified.

4. Rice

Extensive disease surveys of rice growing areas have indicated that while there are a few fungal leaf spot diseases, no viral, + bacterial diseases have been observed nor is there any nematode problem associated with rice cultivation.

5. Plantains and bananas

Moko disease continues to be the most important problem in the cultivation of plantains and bananas.

6. Tomato

With the increased cultivation of tomato under a controlled environment, the presence of a dry canker associated with pruning wounds have been observed. Also where the pyrethroid insecticide Ambusu has been used, there has been a significant increase in the mite population.

7. Lettuce

It has also been observed that when lettuce is grown under cover, the incidence of Cercospora leaf spot is extremely high and leaf death occurs.

This suggests that the varieties being grown are very susceptible since no free water is present on the lettuce leaves to spread the disease.

8. Sweet and Hot Peppers

There has been an increase in the incidence of Phytophthora blight of sweet and hot peppers. Both the collar-rot and root rot symptoms have been observed.

9. Bean/Pak-Choi

Web-blight disease, once important in the cultivation of Phaseolus beans, now also affects Pak-Choi (Brassica chinensis)

10. Cabbage

Hellula sp. (bud-worm) continues to be the most important pest of cabbage. Studies on the biological control of the 3 major pests of cabbage - Tricoplusia sp., Plutella sp. and Hellula sp. using a polyhedral virus extracted from T.ni began in 1984. While some control of Tricoplusia and Plutella spp. was achieved, little or no control was seen on Hellula sp.

11. Watermelon

In late 1983 and 84, a severe out-break of Gummy Stem blight disease of watermelon was observed. The disease caused by the fungus Didymella bryoniae has also been found to infect other cucurbits including Pumpkin, Cucumber and Gourds. Studies into the control of this disease have been initiated.

12. Other Pest/Disease Problems

Armyworms - Spodoptera sp. continue to affect various vegetable crops especially during seedling establishment.
Agrotis repleta, another army-worm is also important in South Trinidad. It is an ubiquitous feeder and attacks beans, cucurbits, tomato and several weed species.

- An extensive survey of plant-parasitic nematodes associated with crops of agricultural importance in Trinidad was completed in 1982.

Assistance in Plant Protection

A few areas of assistance in Plant Protection have been identified:-

1. Study in Acarology - the taxonomy and economic aspects.
2. Training of a Curator for the National Insect Collection.
3. Training in the field of Diagnostics - Mycology. Bacteriology and Virology.

Staff and Facilities

New staff additions in the field of Plant Protection include -

Ms. Lilory Mc Comie - Entomologist (Fruits) - M.A.L.F.P.

Mr. Edmund Rampersad - Plant Pathologist - Caroni (1975) Ltd.

Dr. Fritz Elango - Plant Pathologist - U.W.I.

Construction of a Post-Entry Glasshouse located at Centeno has been completed and will assist in the quarantining of plant material. An incinerator has been installed at the Port-of-Spain Wharves together with a Fumigation Chamber geared to use Methyl Bromide and Phostoxin.

A nematology laboratory was completed in 1984 at the Central Experiment Station, Centeno to accommodate the increase in nematological studies in research and diagnostics. This laboratory also acts as a Post-entry Quarantine laboratory for the processing of soil and root samples.

Plant Quarantine

The Plant Quarantine Service continues its inspections of all Agricultural Goods offered for entry into Trinidad and Tobago in order to prevent the entry of exotic plant pest and disease. The Mediterranean fruit fly trapping programme is continuing throughout Trinidad and Tobago.

At present, the Plant Quarantine Office is considering applications for the importation of commodities into Trinidad from Costa Rica, Colombia, Venezuela and the Dominican Republic. Items include, potatoes, corn, onions, garlic and carrots.

The proposed new Plant Quarantine legislation which has been submitted for processing is still awaiting approval. The old Plant Quarantine Regulations while inadequate continues to be in effect.

Pesticides Legislation

The Trinidad and Tobago Pesticide Legislation Act passed in Parliament in 1979 is yet to be enacted. An amendment to the Legislation giving the Pesticide Control Officers greater control responsibilities is soon to be laid in Parliament. The Pesticide Regulations include the Registration, Labelling and Packaging, Licensing of Premises, Transport, Storage and Disposal of pesticides.

Discussion

G. Pollard reported that the Sweet Potato Moth Borer Megastis grandalis should be considered as a pest risk since it is found only in Trinidad. This pest still cannot be controlled by insecticides he said. A project is on going screening for varietal susceptibility.

M. Alam noted that cabbage and cauliflower should be considered as secondary hosts for Hellula. The primary host are wild weeds.

J. Marrast wanted to know what control programme was being executed in Trinidad. Miss Persad replied that the grubbing out was recommended but farmers are reluctant to carry out the recommendations because it is labour intensive. In addition, farmers deliberately sell infected planting material to others.

J. Marrast asked whether it is true that Orange Groove Estate is planting bananas on a wide scale. Miss Persad replied that the estate is now growing food crops including bananas. The Ministry has prevented importation of banana planting material from other countries. Instead she said, the estate has been advised to import banana tissue culture from Honduras.

FOURTH MEETING OF HEADS OF PLANT PROTECTION OF IICA

MEMBER STATES IN THE CARIBBEAN

HELD IN BARBADOS NOVEMBER 5th - 8th 1984

CROP PROTECTION IN DOMINICA

Prepared and Presented by Hannah Clarendon, Crop Protection Officer.

CROP PROTECTION IN DOMINICA

Over the past four years the Crop Protection Unit of the Division of Agriculture in Dominica, has developed a project approach to pursuing its role in agricultural development. The Unit has been staffed with only one trained specialist, one lab technician, three plant quarantine inspectors and one plant quarantine coordinator. As a result, the Unit has come to depend on the support of regional and international institutions.

The work of the Crop Protection Unit covers all institutional aspects of crop protection, advisory, research and regulatory. All disciplines in crop protection are also covered and all work efforts have to be coordinated by the Crop Protection Officer.

The Unit has submitted projects in plant quarantine and pesticide residue analysis to FAO which have been approved and funded. A project in post harvest technology and integrated pest management in orchard crops have been submitted to TDRI (Tropical Development and Research Institute) and have been approved and funded. The Unit had also been involved in Tania Burning disease research, through a project funded by CIDA. Later on the Aroid development project took over, with work being carried out by CARDI. Early work on the Tania Burning disease was also facilitated by INRA Guadeloupe (through the French Technical Cooperation in Dominica).

Through the project approach, the Unit was able to attract funding for specific areas of work which would not have been possible with the usual budget approved by Government. Funding was for equipment and facilitating training programmes. Apart from the project approach as a strategy to pursuing crop protection objectives - the Unit also focused attention in major areas each year. 1982 Highlighted pesticide management, 1983 Plant quarantine, 1984 Post harvest problems.

Another approach was to use the regional institutions and specialist for carrying out surveys and to set-up specific work programmes. 1982 A coconut survey carried out by Reginald Griffith. Biological control programme by Munir Alam (CARDI) 1982. 1983 Orchard crop survey by Waller and King from TDRI. 1984 Coconut mite survey by IICA. WINBAN is overall responsible for all research in bananas and in 1982 had identified a new pest in bananas the Lachnophus beetle.

This approach to crop protection has had its problems in that because of serious staff limitations the understudying and coordination of technical assistance is not always possible.

In January 1984 IICA's project in Plant Protection commenced and because the original design of the project was changed significantly, the Crop Protection Unit has lost its Crop Protection Officer to Liaison Officer of IICA. The original plan was that IICA would major in crop protection, as all other aspects in agriculture were being handled by other institutions and agencies and it was felt at the time that IICA

should concentrate in plant protection developing, the lab and up grading personnel. More recently the Unit has lost the service of the Plant Quarantine Coordinator to Extension. The Crop Protection Unit has also lost its building to the IICA Office and further more the IICA's Liaison Officer cannot function as the Crop Protection Officer of Dominica as was originally envisaged and crop protection has suffered even more so.

Disucssion have been carried out recently with a view to resolving that problem and hopefully in the near future Crop Protection should be organised again.

In terms of pest and disease outbreaks, recently 1983-1984 a severe outbreak of slugs in the south-eastern region of Dominica has been reported. Mango June beetle problem was identified in 1984. Lachnophus beetle in bananas in 1982. Cedros wilt in 1982.

Pesticide management has moved on with continued training and functioning of the Pesticide Control Board. Recent developments - regulations under Pesticides Control Act is being approved by the Legal Department. 1984-1985 Work programme will highlight setting up of an Ideal Storeroom selection of a dump site for pesticide and commencement of pesticide residue analysis, continued training for medical personnel, staff of retail outlets and housewives.

Training has continued in Plant Quarantine. Another officer was sent to regional training course in August 1984, in St. Lucia. Office space is being arranged for officers at the various ports of entry. Officers have been able to receive uniforms, but are not yet appointed in an established post. Hopefully, in the near future the recommendations made by FAO Plant Quarantine Specialist will be followed-up.

The development of the Crop Protection Unit will continue with the project approach and the highlighting of major areas in its yearly work programme, continued training of local staff and efforts will be directed at getting the Unit built up again and strengthened through the presence of the IICA Office.

DISCUSSION ON REPORT OF IICA REGIONAL PLANT PROTECTION SPECIALIST

E. Alleyne asked for an update of the Harmonization of Pesticide Legislation. C. Brathwaite replied that the meeting had laid ground for the harmonization process. The concern was with those countries without legislation. These countries were asked to develop their legislation. C. Brathwaite added that the other concern was on training in pesticide residue analysis. Some people had already been trained at the University of Miami. He continued that another meeting will be convened when all countries have their legislation.

E. Alleyne thought that IICA should consider discussing the harmonization process with the Regional Governments. C. Brathwaite replied that efforts to bring the harmonization process to the Health Ministers through CARICOM.

J. Marrast congratulated C. Brathwaite on the report and the work he had undertaken. He however appealed for collaboration amongst organisation working in the region. C. Schotman outlined the work of FAO and said he was happy to report that there is close collaboration between IICA and FAO. H. Clarendon thought that it was the responsibility of the national Government to insist on collaboration by Instutions

instead of duplication of efforts. C. Brathwaite reminded the meeting that one of the objectives of a meeting like this where all institutions were represented was aimed at putting energies together and to avoid duplication of efforts.

REPORT FROM REGIONAL AND INTERNATIONAL ORGANISATIONS

Training in Crop Protection in the Faculty of Agriculture, The University of the West Indies, St. Augustine

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Faculty of Agriculture, U.W.I., St. Augustine

The Faculty of Agriculture offers both undergraduate and postgraduate training in various aspects of crop protection. As part of the B.Sc. programme, courses are offered in entomology, pathology and weed science. At the postgraduate level some formal courses are offered but M.Sc. and Ph.D. degrees are awarded mainly on the basis of research work in any of the fields listed above.

Undergraduate Training

Two undergraduate programmes are offered in the Faculty of Agriculture, U.W.I. - a B.Sc. (General) and a B.Sc. (Agronomy). Both programmes share a common Part I after which students choose either the general degree programme or the specialised agronomy programme.

Students must pass a total of 72 units for the award of the B.Sc. degree. Twenty-four units are offered each year. These are all compulsory except in the final year of the programme which consists of both core units and elective units. Table 1 lists the various courses offered in crop protection.

In the B.Sc. (General) programme there are twelve units in crop protection, approximately 17 percent of the course. Of these, eight units are core courses and four are electives. In the B.Sc. (Agronomy) option, fourteen of the seventy-two units

TABLE 1

Courses in Crop Protection Offered
in the Faculty of Agriculture, U.W.I.

		Units[a]	B.Sc. (General)	B.Sc. (Agronomy)
Course 125	General Microbiology and Mycology	2	X	X
Course 126	Agricultural Zoology	1[b]	X	X
Course 133	Practical Skills[c]		X	X
Course 225	Crop and Animal Protection	1[d]	X	
Course 233	Applied Entomology	2		X
Course 234	Practical Project	2		X
Course 312	Project	2	X	X
Course 314	Plant Pathology and Weed Science	2	X	X
Course 320	Weed Science	1	X	X
Course 334	Crop Entomology[e]	1	X	
Course 335	Crop Pathology	2	X	X
		Total Units	12	14

[a] 1 unit = 27 hours

[b] Entomology component

[c] Non-examinable course run in the summer vacation

[d] Crop Protection component

[e] To be replaced by a new 2-Unit Course in 1985/1986

(approximately 20 percent) are devoted to crop protection all of which, except one unit (Course 320 - Weed Science), are core courses.

Postgraduate Training

Postgraduate training in crop protection has always been an important aspect of the work of the Faculty, continuing the excellent record set by its predecessor, the Imperial College of Tropical Agriculture or ICTA.

Over the past sixty years there have been close to two hundred postgraduate theses (DTA, AICTA, M.Sc., Ph.D.) in the general area of crop protection (entomology, pathology, weed science).

Training Courses/Seminars/Workshops

The Faculty continues to play an important role in the organisation and/or sponsorship of various seminars, workshops and training courses which may be directly related to crop protection or, at least, involve inputs on aspects of pest and disease control. Over the past ten years the following have been hosted/co-hosted by the Faculty:

1974 Symposium on the Protection of Horticultural Crops in the Caribbean; 8-11 April, 1974, Trinidad.

1979 Regional Workshop on Tropical Grain Legumes; 18-22 June 1979, Trinidad.

1980 Seminar and Workshop on Pest and Pesticide Management in the Caribbean; 3-7 November 1980, Barbados.

1981 Consultative Meeting on Post-Harvest Losses in the Caribbean 19-24 July 1981, Trinidad.

1981 Short Course on Integrated Pest Management of Tropical Crops; 10-22 August 1981, Trinidad.

1983 Caribbean Regional Workshop on Tropical Root Crops; 10-16 April, 1983, Jamaica.

1983 Agro-Tech. '83. An International Seminar on New Technology in Food Production for the Eighties and Beyond; 26-30 June 1983, Trinidad.

1983 Workshop on Agricultural Research Policy and Management in the Caribbean; 26-30 September 1983; Trinidad.

Relationships With Other Agencies

The Faculty of Agriculture has always maintained a good working relationship with other agencies and institutions involved in crop protection activities in the region e.g. the Caribbean Agricultural Research and Development Institute (CARDI); the Commonwealth Institute of Biological Control (CIBC); Caroni Research Station in Trinidad; various Ministries of Agriculture; the FAO Caribbean Plant Protection Commission and more recently with the Inter-American Institute for Co-operation in Agriculture (IICA).

In some instances personnel from these agencies are actually involved in teaching in the Faculty at both undergraduate and post-graduate level including supervising postgraduate research. In other cases, U.W.I. staff may be collaborating in research programmes with these agencies or be involved in short-term projects on behalf of the agencies, eg. IICA.

From what has been very briefly summarised above of the performances of the Faculty of Agriculture at the St. Augustine Campus there is no doubt that the Faculty has recognised the important role which crop protection must play in regional agriculture and, more importantly as well, the role which the Faculty itself must play by its teaching, research and collaborative programmes in achieving increased food production in the Caribbean.

Discussion

H. Clarendon asked what amount of teaching was carried out in post-graduate level at the University of the West Indies (UWI). G. Pollard replied that formal teaching was minimal. M. Alam said that he had found a deficiency in knowledge of basic entomology in the region and wondered whether this was being taught at the University. G. Pollard replied that there is a one (1) unit course in basic entomology at UWI. Shortage of facilities has made it difficult to offer a more specialised course.

NEW INSECT PESTS OF SUGARCANE IN BARBADOS, W.I.

by

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INTRODUCTION

With the introduction of sugarcane in the New World, a number of exotic insect pests were accidently brought with it. As most of these pests were not accompanied by their natural enemies, and the new ecological conditions suited them well, these thrived well in this part of the world. In the mean time, many insect pests, which previously were harboured by indigenous crops and/or wild plants, shifted to it, and have now adapted sugarcane as their main host. Some of these are of major economic importance, others of minor significance. Some are widely distributed in the region, others are restricted to one or more areas. Seriousness of a pest may also vary considerably in different areas.

During recent times, some insect pests have reached these shores through wind currents, hurricanes, ships and airplanes.

In Barbados, more than 210 phytophagous and associated parasitic, predatory and asprophitic species have been recorded. While many phytophagous insects (as well as parasites and predators) attack several hosts, there is little doubt that extensive systematic collecting and rearing will greatly expand the current list.

During recent studies, a few additional insect pests were recorded, and are discussed in brief as under:

....1. Sugarcane Borer, Opogona sacchari (Bojer)(=Opogona subcervinella (Wlk.))(Lepidoptera: Hieroxestidae).

The pest was first reported by Box (1953) on sugarcane in the Canary Islands and Mauritius and Davis (1978) in North America. Pigatti et al. (1979) tested various chemicals for the control of O. sacchari, on bananas in Sao Paulo, Brazil.

Veenenleos (1981) reported that the pest was intercepted in the Netherlands for the first time in 1971 and has subsequently been intercepted in other consignments from various countries. In Europe, the pest attacks a wide range of ornamental plants of tropical origin in glasshouses.

In Barbados, the pest was first recorded in the Southern part of the island in late 1982. Since then it has dispersed to some other parishes.

Nature of damage

Young larvae feed under the leaf-sheaths and as they grow in size, penetrate the stalks/joints and destroy the cane tissue. The larvae feed extensively, causing greater damage than the sugarcane moth-borer, Diatraea saccharalis (F.). The damaged stalks are badly eaten out and are filled with larval frass.

The full-grown larva measures 8 - 15mm (avg. 11,75mm) in length. General body colour fuscous, with head dark-brown, slightly flattened, with extended mandibles. Population occurs in the feeding chamber. Before pupation, the larva cuts an exit hole, spins a tough, elongated silken cocoon (sometimes lined with cane fibre) in the feeding chamber, and with its head close to the emergence hole, pupates in it.

Infestation levels:

To evaluate the amount of damage caused by the pest, a joint infestation survey was carried out in the areas of its distribution.

Twenty five randomly selected stumps were examined, of which 14 or 56 per cent were infested. In the infested stumps, the range of stalk infestation was 5.5 - 45-5 per cent (avg. 21 per cent).

For the evaluation of joint infestation, fifty randomly selected cane stalks were examined. The per cent joints bored was: Tops - 36.8; Bottoms - 31.5 and Total - 34.2.

Since the detection of the pest in the island, the damage has increased significantly, and the pest is gradually spreading in the island. Unless measures are taken to control the pest, it may reach serious levels and cause substantial losses to the industry.

Natural enemies

So far no parasite has been found attacking the larvae. A number of earwigs - Euborellia sp. and an unidentified Embioptera were found feeding on the larvae under leaf-sheaths and in the feeding galleries of the pest.

Chemical control

Cancienne and Hensley (1966) and Badry and Hensley (1974) recommended the use of granular formulations of endrin, guthion, carbaryl and endosulfan to control D. saccharalis in Louisiana, U.S.A.

In Barbados, chemical trials will soon be carried out to find out the most suitable pesticides to arrest the ravages of the pest. In the mean time, the following suggestions are made.

i) Destroy the infested stalks

ii) Do not take planting material from the infested fields (if possible)

iii) Spray the heavily infested fields with systemic pesticides, such as guthion, carbaryl, metasystox, perfekthion or dipterex.

iv) Treat sets with the above mentioned chemicals, before planting.

..... 2. Leptostylus assimilis (Gahan)(Coleoptera: Cerambycidae): Generally a minor pest. The grubs bore into the dead or dying sugarcane stalks.

The eggs are laid singly or in pairs in cracks or wounds in cane stalks. On hatching the grubs bore into the stem and feed on cane tissue. Usually a number of grubs feed together in a single stalk and cause extensive damage. The full-grown grubs pupate in the feeding chambers.

The pest has been reported from the Greater and Lesser Antilles on cassava, avocado and other woody plants.

Members of this family have been reported attacking sugarcane in U.S. Virgin Islands, India, Hawaii and Queensland (Box, 1953).

In the Southern part of Barbados, sugarcane stalks were attacked by the pest, particularly in the fields which were heavily attacked by the sugarcane root-borer, Diaprepes abbreviatus (L.) and white-grub, Phyllophaga (=Clemora) smithi (Arrow). Each cane stalk harbours a number of grubs, pupae and adults. Since its first record, the pest has also been found in other parts of the island.

Control measures

i) Because of the nature of damage, and the preference to attack the dead or dying cane stalks, chemical control is not feasible.

ii) Remove the dead or dying cane stalks from the field.

iii) If possible, avoid taking planting material from the infested sugarcane fields.

..... 3. Wood and Bark-borer (Unidentified Bostrychid): During March 1984, a small population of a wood-boring beetle was found attacking healthy cane in the Southern par of the island.

Usually the members of this group attack fallen trees/plants, dried wood and occasionally attack unhealthy standing trees.

Box (1953) reported Apate monacha F. attacking sugarcane in Cuba and Puerto Rico.

In Barbados, the pest was only recorded once, and further attempts to recover it in the field were unsuccessful, an indication of its accidental appearance on sugarcane. Observations are continuing for any further developments.

..... 4. Pithia picta (Drury)(Hemiptera: Coreidae). Generally the pest feeds on tomatoes, beans, egg-plant, sweet potato, wild Ipomoea and Cucurbits.

In St. George, Barbados, during October 1982, an unusual outbreak was recorded on sugarcane, where all stages of the pest were found feeding on cane leaves.

Adults 15-18mm long, head extended forward. Legs long and slender. General body colour dark brown. Lateral margins of pronotum and sometimes the posterior portion red; ventral surface mottled with reddish-brown.

Eggs are laid on leaves, in clusters of 30 to 40, arranged in one or two rows. At first the nymphs are orange-red, but become darker as they develop. Life-cycle is completed in about a month.

Control measures

The eggs are parasitised by a Telenomus sp.
During outbreaks, fast acting, non-residual pesticides, like Malathion, Dibrom and Dimecron may be used to knock down the pest populations.

Summary

Since late 1982, four addtional pest species, viz. Opogona sacchari (Bojor), Leptostylus assimilis (Gahan), an unidentified Bostrychid and Pithia picta (Drury) were recorded on sugarcane. Of these, O. sacchari is of major economic importance and needs special attention.

A survey of its distribution in the island, levels of infestation and indigenous natural enemies, alongwith chemical control trials will be carried out.

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REPORT OF THE FAO REGIONAL PLANT PROTECTION OFFICER

CHARLES Y.L. SCHOTMAN
TECHNICAL SECRETARY OF THE CPPC

PRESENTED AT THE
FOURTH MEETING OF HEADS OF PLANT PROTECTION OF IICA
MEMBER STATES IN THE CARIBBEAN
BARBADOS NOVEMBER 5th - 8th 1984

Status of the CPPC

Since the last general session of the CPPC held in Barbados, August 1983, the following countries have become new members of the Commission: Nicaragua, Mexico and Costa Rica. Also, very recently Panama and St. Kitts have expressed their desire to become members. Including these, the CPPC would soon count twenty-two (22) members, including practically all countries and territories situated entirely in the Caribbean, and nearly all states around the Caribbean Sea, except Belize and Guatemala.

The Director-General of FAO appointed the new Regional Plant Protection Officer as Technical Secretary of the CPPC, who is posted at the office of the FAO Representation in Port-of-Spain, Trinidad since May, 1984.

Activities 1984

1. Strengthening of National Plant Quarantine Services.

- Participation at plant quarantine training course in the Dominican Republic for two weeks, February 1984. This training course was part of a Technical Cooperation Project of FAO to strengthen the plant quarantine service and assist in the setting up of a post-entry quarantine station.

- Organisation of a one week in-service training course for plant quarantine inspectors of the English-speaking Caribbean, Castries, St. Lucia, August 1984. To this course, IICA, USDA specialists cooperated as well as

the Lecturer in Entomology of the University of the West Indies sponsored by IICA. The course was attended by plant quarantine inspectors of St. Lucia, Grenada, Dominica, Suriname, Barbados, Antigua, St. Vincent and St. Kitts.

2. Round Table on Prevention of Black Sigatoka.

This round table was held in Martinique, 30-31 July 1984, and delegates from Barbados, Cuba, Venezuela and France participated.

3. Meeting of the Executive Committee of the CPPC, Fort de France, Martinique, 1-3 August 1984.

The members of the Executive Committee for the period August 1983 - 1985 are Barbados, USA, Venezuela, Cuba and France.

Amongst the most important recommendations were:

- Organization of a round table meeting for Caribbean plant protection services on harmonization of plant quarantine legislation.
- Formation of a Working Group to create a regional fruit fly dectection programme in the Caribbean.

4. Liaison Between Plant Protection Services in the Caribbean.

Several times, all national plant quarantine services in the Area have been alerted in connection with new records of important plant pests and diseases:

- The Coffee rust in Costa Rica.
- The Mango seed weevil in St. Lucia.
- The Citrus canker in Florida.

Further, technical information was circulated to all plant protection services including a book on Plant Health and Quarantine (edited by Hewitt and Chiarappa), the Plant Quarantine Training Guide (1983), information on the identification on black and yellow sigatoka and the mango seed weevil. Also the CPPC Biannual Bulletin for the second half of 1983 was prepared. The two numbers covering 1984 are in preparation and will be issued in one single number.

The Regional Plant Protection Officer visited several Caribbean Islands to review plant quarantine services and assess training needs.

5. Lists of Economic Important Pests.

The CPPC lists of economic important pests existing in the Caribbean and those of quarantine importance are being up-dated and should serve as a base for common measures to avoid spread of pests of quarantine importance.

Future Programme of Action

At the end of 1984, through the services of a consultant, a programme of action will be proposed for the next period of three years, aimed to strengthen the efficiency of the CPPC in the Caribbean Area.

Some Action Planned For 1985

The following plans are still subject to approval by the FAO Assistant Director-General, Regional Representative for Latin America and the Caribbean.

1. Strengthening of National Plant Quarantine Services.

- TCP, Grenada: Establishment of national plant quarantine service and strengthening of plant protection.
- National Workshops aimed to identify requirements to strengthen or create national plant quarantine services in St. Kitts, Nevis, Antigua and St. Vincent.
- Technical Assistance to the Dominican Republic in termination of construction of post-entry quarantine station and operation of the station.
- Assistance in the restructuring and strengthening of plant quarantine in St. Lucia.
- National plant quarantine training course in Haiti in cooperation other French-speaking territories in the Caribbean.
- Regional plant quarantine training course for Spanish-speaking countries in the Caribbean and members of the CPPC.
- Visits to CPPC member countries and territories not visited in 1984, to assess functioning and needs to strengthen or establish plant quarantine services.

2. Plant Quarantine Legislation.

Round table on the harmonisation of plant quarantine legislation and regulations to avoid spread of pests of quarantine importance

to the whole Caribbean Area (San Juan, Puerto Rico, August 1985, subject to approval).

3. Regular Session of the CPPC.

Will be held in San Juan, Puerto Rico, August 1985 for all CPPC members.

4. Establishment of a Fruit Fly Detection Programme in the Caribbean.

The programme should consist in the technical assistance to Caribbean countries through inter-governmental cooperation between USDA, Cuba, Barbados and other interested Caribbean countries in the detection of fruit flies in the Caribbean and those of quarantine importance. It is proposed to create permanent Sub-Commission under the CPPC to coordinate this programme. Survey of Mango seed weevil could be eventually included in this programme.

5. Technical Information.

- Two issues of the CPPC Bulletin.
- French and Spanish versions of the Plant Quarantine Training Manual.

6. Assistance to Countries in the Case of Pest-Outbreaks.

Upon request of countries.Technical assistance to identify, assess damage and control fruit flies has been requested recently by St. Kitts.

Discussion

E. Ambrose asked why was the banana organisations e.g. WINBAN not invited at the meeting to discuss Black Sigatoka. C. Schotman replied that the meeting was not planned. The meeting took place by chance after the Executive Meeting of the Caribbean Plant Protection Commission.

REPORT - USDA/APHIS

SERIOUS PEST INTRODUCTIONS IN THE USA FOR THE PAST YEAR

by

Ed L. Ayers Jr.

1. Mediterranean Fruit Fly (Medfly)

On June 19, 1984, four fruit flies were collected from a Jackson trap which was set in a sour orange tree in Miami (Dade County), Florida. The specimens were hand carried to Gainesville where Harold Denmark, Florida Department of Agriculture and Consumer Services, Division of Plant Industry identified them as Medflies. The Medfly Action Plan was placed into effect immediately.

On June 20, 1984, 1,101 traps were in service, and a fifth specimen was collected. Ground-applied bait spray was applied to hosts within 1/4 mile of the infestation. The following day, June 22, aerial application of bait spray was made to the 5,200 acre or 9-square mile eradication treatment areas.

Subsequently, more than 3,600 Medfly traps were set in Dade County. Eleven adult flies and one larva were found in this small area. Bait spray applications were made on a weekly basis. On August 8, 1984 two additional flies were collected on Dodge Island, which is just outside the treatment area. The treatment area was expanded to include Dodge and several other small islands. When based on environmental data (day degrees), 2 life cycles without detection of any flies had elapsed, bait spraying was discontinued in part of the original treatment area, and the same held true for the area around Dodge Island. The final treatment was made on September 28, 1984. An Environmental Assessment was prepared jointly by the Animal and Plant Health Inspection Service, Plant Protection and Quarantine, and the Florida Department of Agriculture and Consumer Services, Division of Plant Industry.

Emergency Action Notifications (premise quarantine) were issued to affected industry to regulate movement of regulated items until State regulations were issued June 29 and Federal Regulations were published July 3. The following is a summary of regulatory activities.

488	Emergency Action Notifications Issued
496	Compliance Agreements Issued/Reviewed
1 080	Nursery Contacts Made
8 085	Fruit Stand Visits
20 376	Farmers' Market Inspections Made
1 161	Flea Market Vendors Contacted
874	Mobile Vendors Contacted
15	Certificates Issued
21	Commodity Treatments Supervised
20	Quarantine Violations

The trapping has been reduced and will be at the detection level by November 1, 1984. The State-Federal quarantine regulations remain in effect during the period of 3 fly generations after the last detection.

Information personnel, both State and Federal, were onsite and provided excellent service for the project. Two terminals (part of our Hewlett Packard System) were moved onsite, and training was provided by the Automated Data Systems Staff. Subsequently, data was input and retrieved in both tabular and graphic formats.

2. Status of the Oriental Fruit Fly Eradication Project in California

Since the first detection of Dacus dorsalis (Hendel) on June 27, 1984, in the Silva Lake area of Los Angeles County the total number of flies trapped has risen to 86 flies. In addition to the Los Angeles finds, one fly was recovered in San Diego County (August 2, 1984) and one in Orange County (October 12, 1984) bringing the total to 88.

Currently, 590 square miles of Los Angeles and 81 square miles of San Diego and Orange Counties are being intensively trapped at five Jackson and five McPhail traps per square mile.

Male annihilation treatments continue on nearly 50 square miles in Los Angeles County and 9 square miles near Anaheim, Orange County. Treatments were completed in the Silver Lake area on August 10, 1984, and the Pasadena area on October 10. Thirty-seven properties received ground applied foliar malthion bait treatments and soil treatments with diazinon to dripline of host plants.

The quarantine area is compose of 96 square miles in Los Angeles County; areas in Orange and San Diego Counties are not regulated. Presently, 55 nurseries, 17 fruit stands, and 41 street vendors are under compliance agreements and monitored on a weekly basis. Over 7,000 pounds of regulated material have been seized.

3. Citrus Canker

On August 27, 1984, disease symptoms later determined to be citrus canker, Xanthomonas campestris pv. citri (Hasse) Dowson, were detected on plants in a nursery in Polk County, Florida. The Plant Protection and Quarantine (PPQ) Emergency Action Plan for citrus canker was immediately activated. Subsequently surveys detected the disease in six additional Florida nurseries. State and Federal emergency procedures and quarantine regulations were put into effect. A cooperative PPQ-Florida Department of Agriculture and Consumer Services, Division of Plant Industry (DPI), project staff was established, and a Citrus Canker Technical Advisory Committee was formed.

The strain of the bacterial pathogen which causes the form of citrus canker now in Florida has not previously been described. State and Federal personnel are carrying out a variety of research and methods development studies designed to define the strain of the organism, its effects, and improvements in survey, regulatory, and control measures.

Surveys initially were made in all Florida citrus nurseries and in all nurseries and groves that received citrus stock, plants, or budwood from the known infected establishments. Also, surveys were made at nurseries in Florida and Louisiana where budders who worked for infected nurseries also did budding work.

The next phase of the survey included other nurseries and groves. Currently, a survey is underway throughout Florida in noncommercial plantings. As of October 27, the symptoms of the disease have not been found any place other than the seven nurseries.

The control-eradication activities were stated September 12. This involved burning all stock in the infected nurseries and defoliating trees in a buffer area around each infested premise. Resets or newly planted stock from these nurseries have been located in Florida and elsewhere and have been destroyed. This work is still underway.

The State and Federal regulations do not allow movement of host plants or fruit within Florida or interstate to any citrus-producing State. A regulatory precautionary treatment, chlorine dip, is applied to all fruit that leaves the State, and plants are required to have a cooper treatment if they meet the criteria for shipment. Federal regulations were effective September 14, 1984. As of October 26, Compliance Agreements are in effect with 97 packers 48 processors, 34 gift fruit sellers, 8 scale operators, and 7 in other categories.

An extraordinary emergency was declared by Secretary Block to provide for funding the project. Indemnification was not included in the original emergency declaration. After several million trees had been destroyed, this issue was reconsidered. On October 24, Commissioner Conner announced indemnification to nursery owners, and on October 25, Secretary Block expanded the compensation to include transplants from infested nurseries.

The PPQ Preparedness for Emergency Plant Pest Action Cadre was called upon to supply staffing for the project, but it was soon determined that additional assistance was needed. In addition to personnel detailed to the project by PPQ and DPI and temporary hiring, several other methods were used to expedite the work. PPQ called upon Veterinary Services, Federal Grain Inspection Service, and the Agricultural Marketing Service to provide employees to assist with the work. DPI enlisted help from the Crop Reporting Service, Forest Service, Fruit and Vegetable Inspection Service, and the Florida Department of Correctional Institutions. Administrative, information, safety, and methods development personnel are onsite. The prognosis is that eradication of this disease will require several years.

4. Acarine Mite

Acarapis woodi, an internal obligate parasite of honey bees, causes acarine disease. It occurs throughout most of the world, but until July 3, 1984, had not been known to occur in the United States or Canada.

It was reported to be in Mexico in 1980; therefore, Plant Protection and Quarantine (PPQ) and cooperating States conducted a survey in 1981 with negative results. In 1984, it was reported to be 150 miles south of our border. A survey of the area 50 miles on both sides of the United States-Mexico border was initiated in the spring of 1984, and on July 3, the first samples of bees known to have the parasite were collected near Weslaco, Texas. For the next 3 months, expanded surveys in Texas and other States having bees that had been known to be in Texas were in a small area in Louisiana. The PPQ Varroa Bee Mite Emergency Action Plan was modified to conform to the requirements of this pest. A cooperative survey program was conducted by PPQ and other States. Regulatory and control measures were carried out in Texas and Louisiana. Since there is no certification treatment for bees, only equipment and associated materials could be moved from the regulated area.

A four-country area in the lower Rio Grande Valley was consider generally infested. The other six areas of infestation (five in Texas- one in Louisiana) were considered suppressive; therefore, bees in infested yards and the surrounding areas were depopulated. Upon detecting the bee July 3, project activities were immediately expanded and expedited.

On July 24, the previously formed Committe on African Honeybee and Parasitic Bee Mites was called to Brownsville, Texas. Basically, their recommendations were followed in the program with the exception of indemnification to beekeepers for bees depopulated. The American Bee Federation, which met the same week, offered to provide replacement bees and queens at no cost to the Government to those beekeepers whose bees were depopulated.

Federal and State quarantine regulations were promulgated, depopulation accomplished, and the survey expanded. Several States placed embargoes (State quarantines) on Texas and Louisiana bees and associated equipment, and Canada placed a 90 day quarantine against the United States. The survey in Mexico in cooperation with Sanidad Animal detected infestations adjacent to the lower valley, to Eagle Pass, El Paso, and Nogales. A more thorough survey of the States was needed before any further action was taken in Mexico.

The Georgia State quarantine has provisions requiring a permit to enter or transmit the State. Samples of bees from New York State were sent to Florida for examination in order to obtain a permit from Georgia. On October 4, the State of Florida advised PPQ that samples received from that beekeeper in New York were infested. The same day, the Agricultural Research Service bee laboratory at Beltsville, Maryland, reported mites in bees from samples taken in South Dakota in August. This greatly broadened the scope of the problem. Subsequently, additional infestations were found in Florida, New York, South Dakota, and Nebraska.

The examination of bee samples for detection of mites is a technical and timeconsuming task. Samples have been taken in many States but have not been processed. In August and September, training sessions in mite identification were held in Florida, Illinois, Wyoming, Maryland, California. and Arizona. This greatly increased the number of people who could examine the trachea of bees for mites.

Currently, a nationwide survey is being made. It is planned to collect and process all bee samples by January 1, 1985. Additionally, PPQ is taking the leadership in coordination of the methods and procedures to be followed to certify apparent freedom from mites in package bee and queen bee shipments. Without the ability to ship package bees and queen bees interstate, honey production and pollination of crops as now practices will cease. It is also essential that honey producers and crop pollinators be able to carry out migratory operations. The detection of this mite has threatened to shut down the honey bee business.

5. Status of Ethylene Dibromide

Ethylene dibromide (EDB) is a fumigant that is effective against tropical fruit flies. The Environmental Protection Agency (EPA) has banned the use of EDB for domestic uses.

EDB may be used for the export of Florida citrus from November 1 through January 31 each citrus season. Hawaiian papaya may be fumigated throughout the year for export.

EPA has proposed a regulation to permit the entry of mangoes fumigated with EDB until September 1, 1985. The EDB residues in the mangoes can not exceed 30 parts per billion (ppb) when sampled. To reach 30 ppb, it is necessary to aerate the fruit after fumigation for 7-10 days at warm ambient temperatures. The proposed regulation has not yet been published as a final regulation.

REPORT BY APHIS - Ed L. Ayers, Jr.

In 1980 USDA and the State of California spent 100 million dollards to eradicate Medfly. In 1984 USDA spent less than 1 million dollars on Medfly in Florida. Presently, we are spending millions on Citrus Canker in Florida.

Our history in recent years shows many pest introductions. Many of these pests have been eradicated due to early detection and immediate action. When the USA dectects a pest many countries place quarantine on host of materials, fruit, vegetables and nursery stock. We provide all information possible on the status of pests and gladly let foreign officials visit to review pest situations.

However, we are changing our philosophy of allowing fruit and vegetable imports into the USA. Previously entry requirements were based on literature search and an indication by the country of origin that the pest did not exist in that country.

Due to the continual pest invasion we will now ask countries on what basis they do not have a pest. Do they have a continuing Detection Programme? Have they recently carried out a Detection Programme for a pest? If so, how and what are the techniques used etc.? Then, we will make a judgement.

Our Industry and Congress is saying to USDA it is good that we detect pests early and often eradicate them. But it is essential that we do every thing possible to keep pests out. That we must be aware of pest conditions in countries from which we import fruit and vegetables.

REVIEW OF REPORT ON ENTRY STATUS OF FRUITS AND VEGETABLES INTO U.S. MARKET

C. Brathwaite introducing the topic said that a letter was received from Deputy Administrator Plant Protection and Quarantine USA by the Director of IICA Plant Protection Programme in the Caribbean area with a copy of a paper entitled "Evaluation of the Quarantine Requirements for Tropical Fruits from the West Indies". This paper outlined the reasons for the restrictions imposed for entry of tropical fruits into the USA. This was as a reply to a recommendation made at the 'Meeting of Working Groups on Post-harvest Quarantine Treatments for Citurs and Tropical Fruits' - where the representatives from the Caribbean requested that APHIS relook the situation of entry of fruits in the USA with respect to fruit flies in light of new information and a report of fruit flies in the region.

G. Pollard had been asked to examine the report in light with information from the islands to see if there are conflicting points.

G. Pollard said that according to published information on fruit flies from Stone USDA and recent study in the region, Anastrepha obliqua is widely distributed in the Caribbean and is a host of plums, mango, pomerac, citrus. A. striata is found only in Trinidad and Tobago and is of quarantine importance. No fruit flies had been found on citrus or mango in Trinidad.

E. Alleyne asked whether a survey had been carried out and the meeting was told that a survey had been carried out and the Picong bee and cutting ants were found.

M. Alam said that he found fruit flies in St. Kitts on mango and although it was reported from Dominica on citrus, he had not found it in that island.

REVIEW OF INTEGRATED PEST MANAGEMENT PROGRAMME FOR THE CARIBBEAN

This topic was introduced by C. Brathwaite who said that this idea was initiated by CARDI. This Institute contacted the World Bank and the University of Miami. IICA was then contacted on the matter and collaborated with CADRI, UWI and the Ministries of Agriculture in preparing documents in support of an integrated pest management programme for the Caribbean.

G. Pollard reported that the project included training in integrated pest management but since no funding is available nothing has been implemented.

M. Alam reported that CARDI is engaged in an integrated pest management programme in the islands as part of their Inter-cropping Research Project.

PREPARATION OF PROJECT PROPOSALS FOR A SURVEY OF FRUIT FLIES IN THE CARIBBEAN

C. Brathwaite introduced the topic and said that following a meeting of Working Group on Post-harvest Quarantine treatments for citrus and tropical fruits in Miami and following paragraph 6 page 2 of the "Evaluation of the Quarantine Requirements for Tropical Fruits from the West Indies" - some Governments have approached USDA for permission to export fruit to the U.S. USDA has replied that it is possible if safeguards can be given along the lines of paragraph 6 page of the report. Governments have been looking for assistance for trapping programmes. Some aid agencies were approached and IICA was asked to collaborate with aid agencies. A proposal was prepared and feasibility is being studied by one agency. This proposal was related to countries free of fruit files.

The projects to be handled on a government/aid agency level with IICA and APHIS providing technical input.

PREPARATION OF FIELD GUIDES TO PLANT PESTS AND DISEASES OF IMPORTANCE IN THE CARIBBEAN

C. Brathwaite in introducing this topic said that it was felt that such guides were necessary. He reported that the following guides are being prepared:

1. Moko disease of Bananas.
2. Coffee berry borer.

He asked for the cooperation of persons present in preparing guides. He suggested a guide to the quarantine pest, Mango seed weevil, etc.

M. Alam reported that a guide on the pigeon pea pod borer is in preparation and he intends preparing one on pests of cabbage.

DEVELOPMENT OF THIRD REGIONAL PLANT QUARANTINE TRAINING COURSE

C. Brathwaite introducing the topic said that courses had been offered in Trinidad and Tobago, Barbados and more recently in St. Lucia. The course next year is being offered to Jamaica. The idea of having the course in the different islands is to facilitate the training of a large number of persons in that island.

W. Van Whervin of Jamaica said that whilst Jamaica accepts the offer, it may be better to hold the course around December. The country is preparing to have post-entry facilities which would be ready then.

E. Alleyne asked whether any other courses were planned for next year. Ed Ayers mentioned the course in Plant Quarantine in the USA. This course is open to anyone who can be sponsored by a funding agency, who speaks English, and is a plant quarantine officer.

C. Brathwaite asked whether there was anything special that any one would like to have included in the course. C. Persad suggested that shipment sampling be included in the course.

SURVEY OF THE INCIDENCE OF MANGO SEED WEEVIL IN THE CARIBBEAN

This topic was introduced by D. Auguste who outlined activities which have taken place since the pest was discovered in St. Lucia. He said that the pest was present in two areas in St. Lucia and since its discovery the following action had been taken:

1. Literature review.
2. Notified FAO.
3. Notified the Extension Officers of the presence and asked them to report whether they had seen it and to be watchful for the pest in the different districts.

It as not known how the pest was introduced into the island. It may not be a recent introduction but could have been present for some time.

The only control measure practical is field sanitation to reduce the population. M. Alam questioned the effectiveness of field sanitation because of the terrain and the distribution of mango trees on the island.

C. Brathwaite asked whether the pest has been found in all varieties of mango. D. Auguste replied that it had not been found in Julie and Graham although a survey had not been carried out to confirm this.

C. Schotman reported that he had written to FAO asking for information on that pest. It is possible that some studies had been carried out on the pest in Asia or it is likely that there is varietal preference and they might have been identified before.

The meeting felt that St. Lucia should carry out a survey to identify pest varietal preference on the island.

WORKSHOP ON DETECTION OF PEST AND DISEASES OF FRUITS IN THE CARIBBEAN

C. Brathwaite introduced the topic and said that this topic was suggested for discussion in response to querries received by IICA. Except for bananas and citrus there has been no special programme for fruits. He noted that Barbados was very interested in such a proposal and this month a seminar/workshop lasting 3-4 days will be set up in that island. The fruits selected will be Barbados cherry, citrus, mango and avocado.

E. Alleyne said that the seminar was important since there was a move to improve the production of soft fruit in the island.

The meeting felt that there was not much research information on pest and disease of non-traditional fruit crop. It was decided that the seminar be held to identify the pest and disease problems which need research. Islands should put together information on pest and diseases of fruit crops in their country.

PROPOSALS FOR A JOINT MEETING OF THE SOCIETY FOR PLANT PROTECTION IN THE CARIBBEAN AND THE ORGANISATION OF TROPICAL AMERICAN NEMATOLOGIST (OTAN)

C. Brathwaite said the IICA was approached by OTAN on the following:

1. IICA assistance.

2. The Society For Plant Protection In The Caribbean to consider a joint meeting.

G. Pollard said that the UWI had received a letter from OTAN seeking co-sponsorship.

It was decided that the offer of a joint meeting with OTRAN was too late since planning of meetings took some time. The future organisation of the Society was entertained. C. Brathwaite thought that with his work load as Director of IICA - Trinidad Office made it difficult to devote time to society affairs. The Society should be an independent body although IICA can still assist. He suggested that the Society should be run by UWI.

E. Alleyne was concerned about funding for participation at meetings. It is possible that UWI will not want to provide assistance. It was suggested that the UWI would assist the Regional Plant Protection Specialist in the implementation of the activities of the Society.

ESTABLISHMENT OF REGIONAL TRAINING PROGRAMME IN PESTICIDE SAFETY

C. Brathwaite introduced the topic and that FAO, WHO/PAHO and some other agencies were interested in Pesticide Safety and what form should this programme take.

It was generally felt that training courses should be organised in Pesticide Safety at a national level since some countries already had such a programme. National programmes can be strengthened in areas where there are deficiencies and IICA will assist in such National programmes.

COMMENTS

C. Brathwaite suggested that there was a need for the establishment of system for alerting countries when there is a disease outbreak in the region. For past information has been through FAO and personal contact, newsletters, but a system of immediate information is not available. There is too much delay in reporting of pest outbreaks.

C. Schotman felt that the existing system should be maintained by FAO. The Heads endorsed the proposed development by IICA of a hemispheric plant disease reporting system and felt that this could compliment that of FAO.

REPORT ON VISIT TO GRENADA, ST. VINCENT AND ST. LUCIA TO INVESTIGATE THE POTENTIAL PEST RISKS ASSOCIATED WITH THE MOVEMENT OF AGRICULTURAL PRODUCE VIA THE INTER-ISLAND SCHOONER TRADE

The report was presented by G. Pollard.

Discussion

C. Brathwaite informed the meeting that this study was an initial effort and a more scientific study was necessary. The difficulties that Plant Quarantine Officers have in inspecting produce was discussed.

H. Clarendon outlined the efforts by Dominica to assist the Plant Quarantine Officers in carrying out their duties.

W. van Whervin thought that the study should examine such factors as:

a. Literature on the subject.
b. The volume of commodity.
c. Treatment of protocol.
d. Medthod of transport.
e. Socio-economic factors.
f. Analysis of a situ.
g. Ability of organism to survive in transport.
h. Economics of the crop.
i. Race and strain effects.

G. Pollard updated the meeting on the preparation of a bibliography on Entomology. He said that this was being prepared and he is expecting

it to be completed by 1985. G. Pollard also told the meeting about a Text book on Crop Entomology he is preparing. He reports that the response from contributors has been quite encouraging. As a teacher of entomology he thinks such a book is necessary for the region.

On the question of the Caribbean Plant Protection Newsletter E. Alleyne suggested that a list of on going projects in Plant Protection in the Caribbean be included. C. Persad suggested that a list of professionals in the islands be included. Both suggestions were adopted by the meeting.

C. Brathwaite reported that a seminar on Coconut Pest and Diseases is to be held in Suriname sometime next year. He added that since it was being held in that country it may concentrate mainly on Hart Rot (Cedros Wilt). He will convey more information on the matter later.

REMOVAL OF RESTRICTION IN REGIONAL TRADE BY CARICOM COUNTRIES

C. Brathwaite introduced the topic and referred to a letter stating that a meeting of Heads of Government in July 1983, the Heads agreed "to the principle of removal of all barriers to intra-regional trade in primary agricultural commodities and livestock ".

At a meeting of the Standing Committee on Ministers responsible for Agriculture a working group of technocrats was established to assist the CARICOM Secretariat in preparation of recommendation on:

> "The removal of barriers to intra-regional trade subject to original certification, applicable health regulations initially for a specific number of commodities ..... to also recommend a time schedule for the inclusion of additional commodities for free trade."

The Group met and recommeded a list of produce for removal of all barriers to intra-regional trade.

C. Brathwaite wanted to know if the members present had information on this. Whether there was a Plant Quarantine input? He brought this up since the members may be called upon to take decisions on the matter. Pest risks should be considered.

No delegate other than Trinidad and Tobago had heard of this. It was recommended that the Heads of Plant Protection take steps to ensure a technical input into the decision by the Heads of Government to remove barriers to the intra-regional trade in primary agricultural produce and to report back to the Heads of Plant Protection meeting.

RECOMMENDATIONS

1. The Heads of Plant Protection were charged with the responsibility of bringing the decision by the Heads of Government to remove barriers to inter-regional trade in primary agricultural produce to the attention of the Heads of Technical Services with the objective of ensuring full imput by the techncial personnel in this critical area. Any decisions taken would be reported back to the next Heads of Plant Protection Meeting.

2. The Heads of Plant Protection examined the paper on 'Pest Risk Analysis' presented by Dr. Pollard, UWI and felt that this was a useful study but that there are other factors to be taken into consideration:

    1. Literature review.
    2. Volume of commodity.
    3. Treatment protocol.
    4. Method of transport.
    5. Socio-economic factors.
    6. Analysis of situation in situ.
    7. Ability of the organism to survive in transport.
    8. Economics of crops.
    9. Race and strain effects.

3. Considering that most countries in the Caribbean have established Plant Quarantine Services and are cooperating to prevent entry into the region of new plant pest and disease or spread of those

present in the region, The Heads of Plant Protection urge the countries and territories where plant quarantine services are absent to establish such service. A further recommendation was that existing services be upgraded and strengthened.

4. The Heads of Plant Protection felt that there was a need to continue training in Plant Quarantine as it is recognised that in some territories plant quarantine inspectors were not fully aware of their responsibilities as stated on the phytosanitary certificate and were issuing these certificates without proper examination of the produce being exported.

5. The Heads of Plant Protection expressed concern about the transfer of trained plant quarantine personnel from Plant Quarantine to other unrelated divisions of government with the consequent weakening of the Plant Quarantine Service.

6. The Heads of Plant Protection felt that there was a need for training programmes for all personnel other than plant quarantine personnel involved in the export of agricultural produce to familiarize them with the Plant Quarantine Regulations.

7. The Heads of Plant Protection recommended that emphasis be placed on holding of a seminar on detection of pest and diseases of non-traditional fruits, in order to identify areas needing

research and to contribute to the recent thrust in fruit crop development in the region. As background material for the seminar it was recommended that each country prepare a list of pest and diseases associated with these crops for presentation.

8. The Heads of Plant Protection endorsed the Regional Plant Protection Newsletter as a worthwhile document and suggested that it be expanded to include a list of:

    1. On going projects in Plant Protection in the region.
    2. Plant Protection personnel in the region. This information should be sent by the Heads of Plant Protection to the Regional Specialist.

9. The Heads of Plant Protection recommended that the Third Regional Training Course in Plant Quarantine be held in Jamaica and the details of the course will be worked out between IICA and Jamaican authorities.

10. The Heads of Plant Protection felt that there was urgent need for a comprehensive field guide of pest and diseases of plant quarantine importance in the region and agreed to collaborate with international agencies in the production of these guides.

11. The Heads of Plant Protection generally felt that training courses should be organised on pesticide safety at a national level since some countries already had such a programme. National programmes can be strengthened in areas where there are deficiencies and IICA should assist in such National programmes.

12. The Heads of Plant Protection considered the APHIS report - "Review of Report on Entry Status of Fruits and Vegetables Into U.S. Market" and agreed that there is a need for an urgent survey of the distribution of fruit flies within the region. The Heads supported IICA's initiative for the establishment of trapping programmes.

13. The Heads of Plant Protection appealed for closer collaboration amongst the agencies involved in Plant Protection in the region.

14. The Heads of Plant Protection discussed the Society of Plant Protection and:

    (a) Noted the invitation by OTAN to participate with them in a joint meeting in Trinidad in 1985. It was felt however, that the invitation was too late for participation as a body.

(b) Agreed that there should be a meeting of the Society of Plant Protection in 1986. Jamaica agreed to host the meeting, the agreed theme being 'Plant Quarantine in the Caribbean With Emphasis on Pest Risk and Seed Pathology' and

(c) Endorsed the idea of establishing local chapters of the Society of Plant Protection.

15. The Heads of Plant Protection expressed their gratitude to the Government of Barbados and the Ministry of Agriculture, Food and Consumer Affairs in particular, for hosting the fourth meeting of Heads of Plant Protection of IICA member states in the region.

16. The Heads of Plant Protection expressed their gratitude to the Inter-American Institute for Cooperation on Agriculture (IICA) for sponsoring the meeting and to Dr. Brathwaite in particular for the excellent work which he has been doing for Plant Protection in the Caribbean.

FECHA DE DEVOLUCION
