

**IICA**

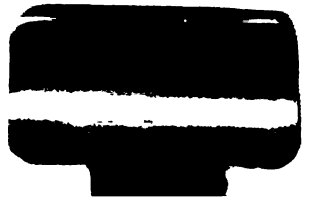


Consultant Final Report  
IICA/EMBRAPA-PROCENSUL II

INVESTMENT BENEFITS FROM  
AGRICULTURAL RESEARCH

IICA  
ASO  
R799

ESCRITÓRIO NO BRASIL



Centro Interamericano de  
Documentación e  
Información Agrícola

2 9 OCT 1992

IICA — CIDIA

Consultant Final Report  
IICA/EMBRAPA-PROCENSUL II

INVESTMENT BENEFITS FROM  
AGRICULTURAL RESEARCH

00002561

//  
**INVESTMENT BENEFITS FROM AGRICULTURAL RESEARCH**

**Consultant Final Report  
IICA/EMBRAPA-PROCENSUL II**

✓  
**Mark W. Rosegrant**

**Brasília, maio de 1989**

**INSTITUTO INTERAMERICANO DE COOPERAÇÃO PARA A AGRICULTURA  
EMPRESA BRASILEIRA DE PESQUISA AGROPECUARIA**

BV-006017

11CA  
A50  
R799

## APRESENTAÇÃO

A reprodução e difusão dos Relatórios de Consultores, no âmbito restrito das Diretorias das Unidades do Sistema Nacional de Pesquisa Agropecuária, vinculado à EMBRAPA, tem como objetivo principal o de divulgar as atividades desenvolvidas pelos consultores e as opiniões e recomendações geradas sobre os problemas de interesse para a pesquisa agropecuária.

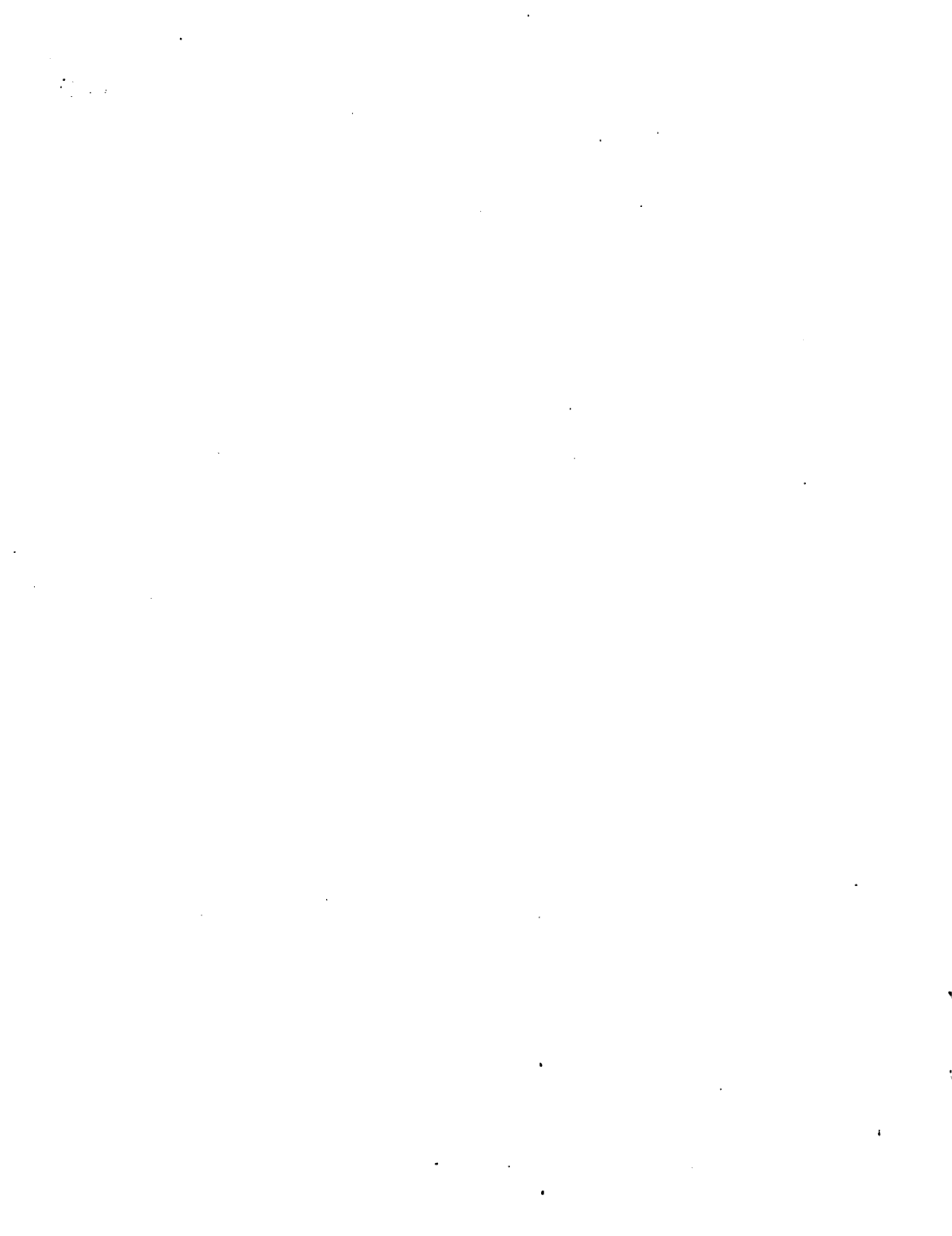
As atividades de consultoria são realizadas no âmbito do Projeto de Desenvolvimento da Pesquisa Agropecuária e Difusão de Tecnologia na Região Centro-Sul do Brasil - PROCENSUL II, financiado parcialmente pelo Banco Interamericano de Desenvolvimento - BID e a EMBRAPA conforme os contratos de Empréstimo 139/IC-BR e 760/SF-BR, assinados em 14 de março de 1985 entre o Governo Brasileiro e o BID.

As opiniões dos consultores são inteiramente pessoais e não refletem, necessariamente, o ponto de vista do IICA ou da EMBRAPA.

A coordenação dos Contratos IICA/EMBRAPA agradecerá receber comentários sobre estes relatórios.



Horacio H. Stagno  
Coordenador Contratos IICA/EMBRAPA





**C O N T E N T S**

	<b>Page</b>
Consultant Report . . . . .	1
EMBRAPA/IFPRI Collaborative research contract: a de- tailed research program . . . . .	7



INTER-AMERICAN INSTITUTE FOR COOPERATION ON AGRICULTURE  
IICA/EMBRAPA CONTRACT

CONSULTANT FINAL REPORT

1. Consultant's full name: *Mark W. Rosegrant*
2. Specialist in: *Investment Benefits from Agricultural Research*
3. Title of IICA Project: *2. SB.3*
4. EMBRAPA Program for which consultancy is provided:

*PROGRAMA: PROCENSUL II*

*SUB-PROGRAMA: 09-AVALIAÇÃO EX-POST*

IICA Project Activity Code: <i>2.SB.3.09</i>		Administrative Code: <i>R 4884 B1B 03109</i>	
Title of Activity of IICA Project corresponding to this consultancy	<i>Cooperation with EMBRAPA for the definition of an ex-post evaluation system for PROCENSUL II.</i>		
CONSULTANT CONTRACT PERIOD		DUTY LOCATION (Center)	
<i>August 31st. to September 6th., 1988</i>		<i>SEP/CPL, EMBRAPA</i>	
CONTRACT EXTENTION PERIOD (If any)		DUTY LOCATION (Center)	

5. Financial support: *PROCENSUL II*

6. ACTIVITIES UNDERTAKEN BY THE CONSULTANT AND RESULTS

6.1 RESEARCH DONE UNDER DIRECT RESPONSIBILITY OF THE CONSULTANT

Research activities developed	Results Achieved
1a. Undertook preliminary analysis of appropriateness of available farm management data sets at EMBRAPA for analysis of the impact on income distribution of new technology generated by EMBRAPA.	1b. Identified three data sets which may be appropriate for this methodology and analysis. The three data sets for further analysis are: (a) wheat production; (b) bean production data; and (c) PRODEMATA data panel.

6.2 SUPPORT TO RESEARCH UNDERTAKEN BY OTHER EMBRAPA RESEARCHERS

Research activities developed	Results achieved
1a. Assisted EMBRAPA team of researchers in developing methodology for analysis of income distribution impacts of new technology.	1b. Attended several meetings and had individual consultations with EMBRAPA researchers who will be involved in this analysis.

### 6.3 TRAINING ACTIVITIES DEVELOPED BY THE CONSULTANT

Date	Training subject matter	Type of event*	Number of beneficiaries	
			From EMBRAPA	From other institutions
Sept. 8	Distribution of Research Benefits - Seminar (Rosegrant and Vosti)		25	5

\* Short courses, seminars, conferences, etc.

### 6.3 ACTIVITIES IN SUPPORT OF RESEARCH STRATEGY AND PLANNING

Research subject matter	Research program to which subject matter is concerned
1a. Develop the research program for the analysis of the income distribution impact of EMBRAPA research.	1b. Collaborative research program between IFPRI and EMBRAPA (component on benefits of research).

8. CONSULTANT'S SUGGESTIONS AND TECHNICAL OR INSTITUTIONAL RECOMMENDATIONS FOR THE IMPROVEMENT OF THE RESEARCH SERVICE

---

Support provided by the IICA was excellent.

9. AGREEMENTS OR COMMITMENTS ESTABLISHED WITH EMBRAPA RESEARCHERS IN-SERVICE OF THE FUTURE DEVELOPMENT OF RESEARCH IN THE CONSULTANT'S FIELD OF SPECIALIZATION

---

Although my initial visit to EMBRAPA was very brief, I was impressed by the level of commitment and interest of the research/technical staff. I believe we have agreed upon a team that will do an excellent job on the analysis of income distribution impacts of new technology.

10. CONSULTANT'S COMMENTS ON CIRCUMSTANCES WHICH AFFECTED THE CONSULTANCY WORK

---

Date: October 7, 1988

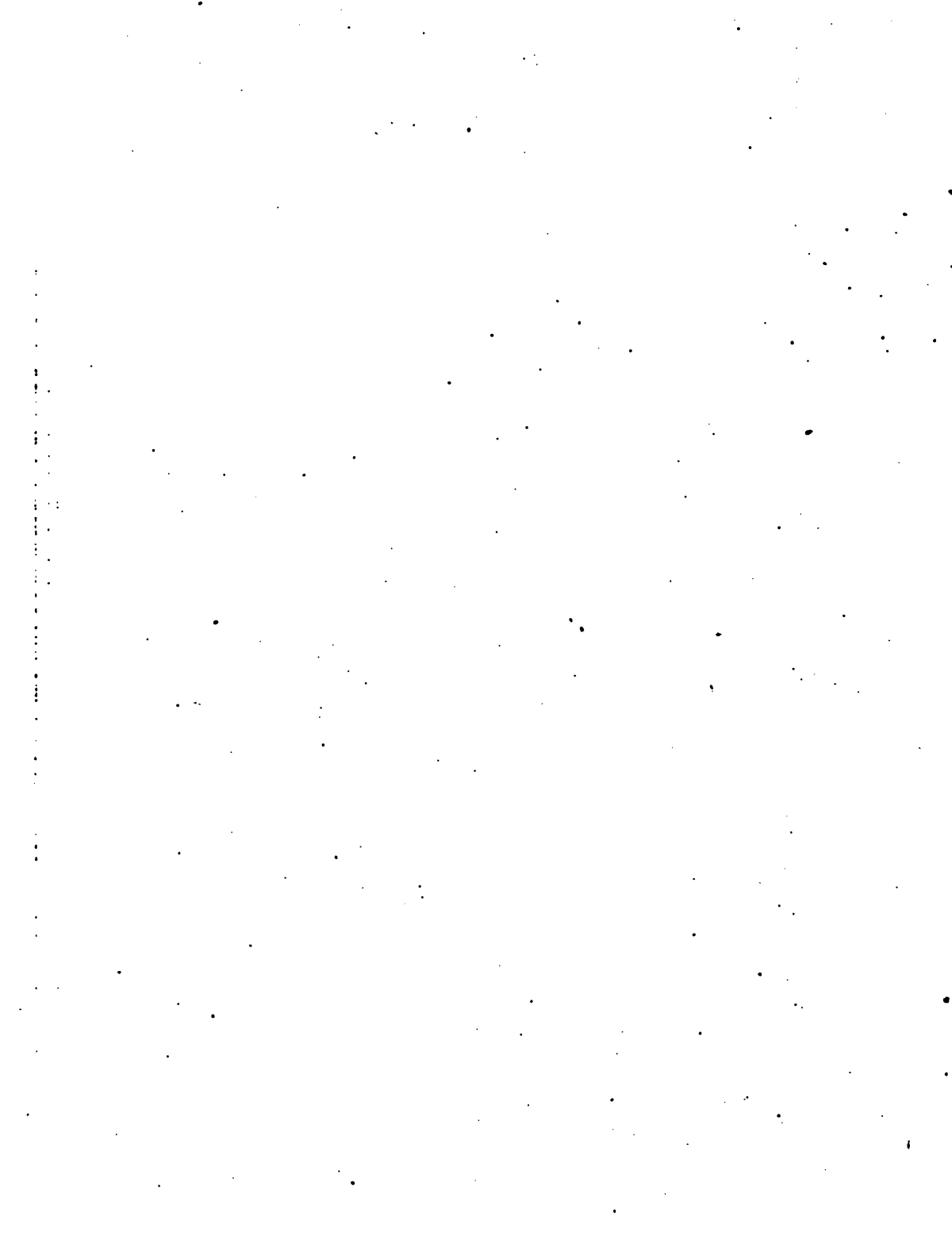
Signature  
Mark W. Ruggert

#### COMMENTS

The EMBRAPA/IFPRI Collaborative Research Contract is presented in the following pages, in a document prepared by Dr. Stephen A. Vosti. The Consultant Dr. Mark W. Rosengrant, who is presenting this report, is member of the EMBRAPA and IFPRI team, and is co-author of several publications on studies developed by the above mentioned contract.

The IICA/EMBRAPA Contract finances part of the activities considered in the EMBRAPA/IFPRI Collaborative Research Program.

Horacio H. Stagno





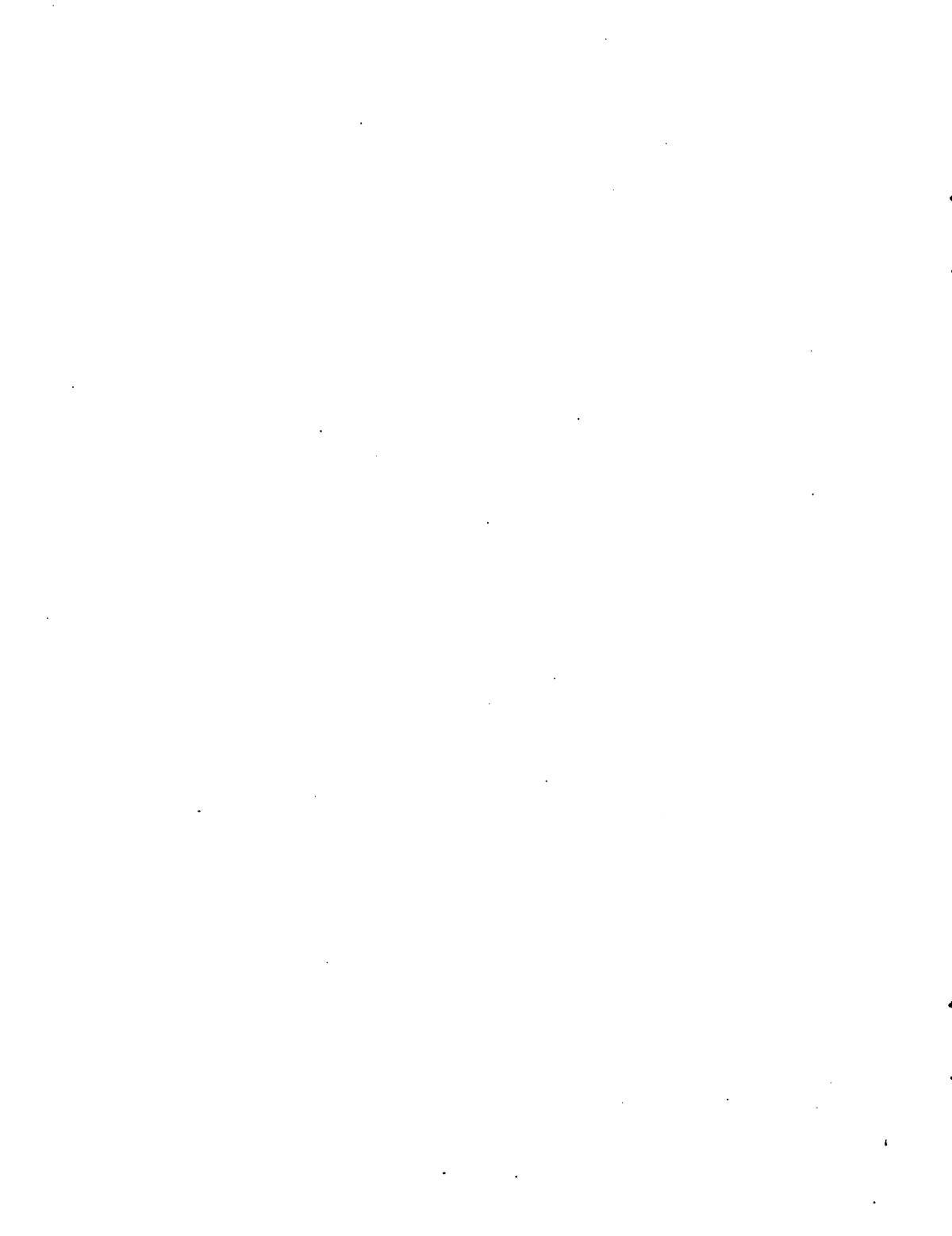
**EMBRAPA/IFPRI COLLABORATIVE RESEARCH CONTRACT:**

**A DETAILED RESEARCH PROGRAM**

**In Fulfillment of Clause VIII,  
Section 2 of the Current EMBRAPA/IFPRI CONTRACT**

**Stephen A. Vosti**

**September 28, 1988**



## GENERAL INTRODUCTION

EMBRAPA is currently involved in a self-evaluation process as an integrated part of the PROCENSUL program. The aim of this evaluation is to assess EMBRAPA's performance in its numerous roles as coordinator, producer, and disseminator of a major portion of new agricultural technology in Brazil. In addition, major focus is being placed on the socioeconomic impact of the technologies being generated.

To assist EMBRAPA in this general performance assessment, and as a continuation of several lines of research previously established at IFPRI, the two institutes have entered into a collaborative research agreement focusing on four key aspects of the generation and impact of agricultural technology: the adoption of modern farm technology, the nutritional impact of agricultural research, the distribution of the benefits generated by agricultural research, and the structure of human capital within EMBRAPA. This document seeks to outline the general lines of research to be undertaken in each case.

In a limited way, the present contract can be viewed as a logical extension of the previous EMBRAPA/IFPRI research program (EMBRAPA/IFPRI-1). The former contract focused exclusively on the issue of technology adoption, a theme which continues to play a central role in our collaborative research. However, this new contract (EMBRAPA/IFPRI-2), covering the period June 1988 - December 1989, is fundamentally different in two important ways. First, this contract

embodies a truer spirit of collaboration, both in terms of the sharing of research responsibilities and benefits, and as well as a more even distribution of the financial burden. Second, the research focus of the contract has been expanded to include various issues which are currently central to EMBRAPA in its evaluation process. Both of these improvements are certain to promote more, and more properly focused, research results.

This research program outline is the fruit of a very productive, one-month visit to EMBRAPA by Roy Nord, Mark Rosegrant and myself. Discussions with our EMBRAPA and IEA collaborators, and many other interested researchers and administrators, added tremendously to the breadth and depth of our understanding of the issues of concern to EMBRAPA. The success of our visit, therefore, depended a great deal on the availability and eagerness of those with whom we interacted. In addition to the long list of capable collaborators whose input was instrumental in setting this research agenda, and whose names appear in the text of this report, a very special note of thanks goes out to the entire EMBRAPA/SEP group who accommodated (and humored) us. To our coordinating secretary Eglaida Senar, and the rest of the EMBRAPA support staff, we send sincere "abraços".

The remaining sections contain detailed outlines of our collaborative research plans for each of the four projects making up this research program. It should be noted from the outset that many of our research plans depend on data which are not currently available, and/or, statistical methodologies which have not been

tested in the specific applications we propose. Delays in data delivery and unexpectedly slow derivation of modified methodologies can alter the pace of our progress. I conclude the paper with a preliminary schedule of institutional visits, a general list of deliverables, and a final note of encouragement.

## 1. TECHNOLOGY ADOPTION RESEARCH

A necessary condition for any socio-economic impact from a given technological innovation is that the innovation be adopted by farmers. The adoption process provides the critical link between the generation of solutions to agricultural problems and productivity changes which consequently alter the lives of the individuals involved in the production, distribution and final consumption of food products. Therefore, we continue to consider research into the process of technology adoption to be central to the task of assessing the socio-economic impact (or lack thereof!) of new technologies developed by EMBRAPA. As in the previous contract, we will continue to focus on identifying those policy-relevant factors which alter (either positively or negatively) the direction and/or pace of agricultural modernization at the farm level.

The foci of our research efforts in this project are two. The first will attempt to apply a relatively untested statistical tool to farm-level input/output data. The most important objective, in this context, will be to identify technology types (as measured by input use), and to chart farmers' technology types over time. The second major thrust of this project will continue along the lines

mapped out in EMBRAPA/IFPRI-1, i.e., to identify those factors influencing farm-level decisions to adopt and intensively use modern farm technology.

Data Envelopment analysis is a multiple-input, multiple-output analytic technique. The most appealing feature of the technique is that it does not rely on any underlying distributional assumptions, but rather uses the data itself to create production frontiers and to locate individual farmers either on, or within, the multi-dimensional frontier. In addition, the relative efficiency of each of the producing units can be measured in a straightforward way. (See the attached paper by Nord and Josti for a more detailed description of DEA). An additional, and in this case more appealing, property of the DEA technique is that it allows for the grouping of farmers on the basis of common technologies. Common technologies are defined as those using inputs in roughly the same proportions. This will allow us to tell, for instance, which farmers belong to specific technology groups at given points in time.

The objectives of this particular research projects in the context of data envelopment analysis are as follows. First, we hope to derive efficient production frontiers using input/output data available at the farm level. Second, we will determine the relative efficiencies of farmers both within and across clusters of technology types. Third, and this will require the use of additional statistical techniques, we will attempt to explain differences in farm-level efficiency. In the event that time series data are available on inputs and outputs at the farm level, we also would like

to reproduce production frontiers over time for the same group of farmers in order to chart their movements both along (or behind) the efficiency frontier. Finally, an effort will be made to trace out the medium-run reactions to changes in the position of the frontier (and the clusters of farmers behind it) to changes in relative input and output prices. Note that categorizing farmers by input types should also allow us to chart farm movements and identify "jumps" in technologies which may occur over time.

A second thrust of this technology adoption research will continue to focus on identifying and quantifying the influence of factors affecting farmers' decisions to adopt and intensively use modern farm technology. To do this, we will continue in our efforts to develop statistical methodologies capable of dealing with the simultaneous nature of technology adoption decisions in diversified farms both cross-sectionally and over time, as well as our attempts to adjust these statistical algorithms to make fuller use of the very skewed data often generated by farm-level surveys.

In addition, we will stress the importance of farm-level diversification in the adoption of modern farm technology, both across farms and within a given farm across different farm outputs.

Finally, in the context of statistical algorithms of the Tobit class, we will continue to derive methods of dealing with the non-random absence of information on prices and quantities, as well as our treatment of prices as imperfect indicators of farm-level costs and benefits.

Finally, there is increasing interest in some circles within EMBRAPA on focusing more attention on the role of leading technologies in the subsequent adoption of other types of modern farm technology. In this context, we will assess the potential value of a lexicographic or similar approach to technology adoption at the farm-level. The importance of public-sector type investments as leading technologies, for example, irrigation and electricity, will be explored as time allows.

The data required for the application of the Data Envelopment analysis and Tobit techniques are fairly substantial. We expect that at least part of the São Paulo crop forecast series will be available in the near future, and we have every hope that series will provide the input/output information needed to test the DEA technique. In addition, the Rio Grande do Sul data should become available in the very near future and should provide additional data for testing both the DEA and the Tobit techniques, and interestingly enough, will provide a very interesting series which is dominated by monocropping.

#### Collaborators

Stephen A. Vosti - IFPRI

Marc L. Nerlove - IFPRI/PENN

Luiz Jose Maria Irias - EMBRAPA

Jose Roberto Vicente - IEA

Robin Sickles - Rice University



## 2. THE NUTRITIONAL IMPACT OF EMBRAPA RESEARCH

One of EMBRAPA's clearly stated mandates is to focus a substantial part of its financial and human resources in the area of food production. This particular research project of the EMBRAPA/IFPRI contract takes up the food production issues in two different ways. The first focuses on a very broad, aggregate view of the demand for, and supply of, specific food products. The second component will attempt to assess the direct and indirect impact on the nutritional status of farm families of different types of farm technologies employed.

As with the other components of this research contract the nutrition project will begin with a review of the pertinent literature. The first body of literature to be explored deals with the interaction between food consumption and nutrition. The second vein of the literature relevant to this study looks at the interrelationships between food production and nutritional status, specifically of those families involved in producing food. Lastly, the literature dealing with the combined interrelationships between agriculture research, food production, and nutritional status will be explored.

### 2.1 The Supply of Food Products in Brazil

This subsection of the nutrition component seeks to trace the evolution of food production of major food products within Brazil at the national and regional levels. We expect to include rice, beans, corn, wheat, soybeans, cassava, tomatoes, potatoes, onions,

pineapple, and bananas as primary agricultural food products. In addition, we will include meat products such as beef, swine, and poultry, as well as other animal products such as milk and eggs. (Much of the land allocation and productivity data needed for this project has already been collected, and should shortly be available for analysis).

The analysis will be divided into two major chronologic segments: the first period covers 1949-1974, and the second covers the era 1975-1985. The starting date of the second period coincides more or less with the founding of EMBRAPA. We will also focus attention on the entire period 1949-1985 in an effort to chart trends in food production, as well as changes in the trends of food production which are likely to be attributed to EMBRAPA research efforts.

## 2.2 Food Habits

Alongside the analysis of food production trends, we will undertake a study of food consumption habits, also by region. We will focus on the evolution of food habits in Brazil, with an eye towards assessing the differences across regions and the stability of these trends over time. Of special interest will be the potential impact of EMBRAPA research on food habits. In addition, we intend to invert the question and investigate the potential role of food habits in the determination of agriculture research within EMBRAPA.

### 2.3 The Derived Demand for Food Products

Using published data on population by region in conjunction with the information we provide on food habits, we intend to construct a simple model for projecting food needs. We will do this in the following way. Step 1 will be to determine the annual age and the sex structure of the population, 1949 - to present, by regions. Using some generally accepted age - and gender — specific nutrient requirement figures, we will then determine the regional annual nutrient requirements for that population. By multiplying the two, we then can derive the caloric and protein requirements for the regional populations. We can then multiply those requirements by the food consumption habits of the regional populations within Brazil to estimate the total derived demand for specific food products at a regional level.

### 3.4 Equilibrium

These estimates of derived food demand can then be cast against the trends in food production that we identified previously. Comparing the two should provide EMBRAPA with important information as to whether population changes and potential changes in food habits will combine to outpace changes in the production in specific food products. Such findings should lend insight into resource allocation within EMBRAPA concerning the distribution of scarce human and nonhuman resources aimed at meeting current and future food demand.

## 2.5 Micro-level Case Studies

In addition to the aggregate-level analysis matching derived food demands with expected trends in agricultural output, we will undertake a very detailed micro-level study aimed at determining the relationships between technology adoption at the farm level and the nutritional status of the farm families engaged in agriculture production. This analysis relies very heavily on the existence of high-quality, micro-level data in which the technologies used in the production of food can be identified and subset into distinct categories. In addition, detailed information must be available on family-level (or hopefully, individual-level) food intake, and the nutritional status of youths age 0-6.

We are currently exploring two potential data sources which might meet both these criteria. Unfortunately, one available data set was collected in an area where EMBRAPA research efforts were not expected to add significantly to new technologies available to farmers. However, we still expect to be able to differentiate between technology types, and hopefully to identify some relationships linking agricultural technologies to changes in nutritional status across families, and perhaps even over time. In doing so we hope to make substantive contributions to the methodological problems associated with this type of research.

A second available data set collected by EMBRAPA's Bean Research Center, although less detailed, is more likely to contain EMBRAPA-related technologies, thereby facilitating (in some ways) the assessment of the nutritional impact of EMBRAPA research output.

For the micro-level studies, multivariate regression analysis is likely to be analytical tool we employ. Straightforward matrix manipulation techniques and linear programming will be used in the aggregate regional analysis.

## 2.6 Collaborators

Stephen A. Vosti - IFPRI

Shubh Kumar - IFPRI

Elisio Contini - EMBRAPA

Antonio de Freitas Filho - EMBRAPA

## 3. THE DISTRIBUTION OF THE BENEFITS OF EMBRAPA RESEARCH

EMBRAPA, and research institutions like EMBRAPA around the world, have been criticized for the types of agriculture products on which they focus, and the socio-economic impact of the new technologies generated for these particular crops. The critics have argued that these new technologies have tended to be designed in such a way as to give the large farmers a comparative advantage in terms of the quickness and completeness of adoption (at the expense of small farmers); and that the technologies being developed have been in general labor-saving, and therefore disadvantageous from the point of view of unskilled, landless laborers.

The literature in the area has made it quite clear that the only way to fully capture the distributional aspects of agriculture research is in a comprehensive, general equilibrium setting. This requires, of course, a complete modelling of all sectors of the

economy and a linking of these sectors in order to trace the economy-wide impacts of productivity changes generated by new agricultural technologies. While this is the proper theoretical approach, in many cases (and particularly in the cases of developing nations), data requirements for constructing such multi-sectoral general equilibrium models are prohibitive.

The focus of this study will therefore be on a farm-level analysis of the distribution of research benefits. We will consider our work a first step in a larger multi-sectoral analysis, which we hope to carry out in future EMBRAPA/IFPRI collaborative research.

### 3.1 Factor Shares Methodology

As a first cut in empirically assessing the distribution of research benefits at the farm-level, we intend to utilize an existing methodology which IFPRI has employed in similar analysis in Southeast Asia. Specifically, this methodology seeks to break down total farm product into two separate, but interrelated classifications. The first classification distributes total farm product among factors of production, that is to say, among the land, non-land fixed capital, management, labor and current inputs. The second classification distributes the income generated by farming operations among income earners, that is, among landlords, operators, hired laborers, the providers of current inputs, and other income earners. A brief sketch of the methodological approach was provided by Rosegrant and Vosti in their September 8 seminar at EMBRAPA, at which time they also presented the results of a study focusing on the distribution of

agricultural output in Thailand and the Philippines under four technologically distinct irrigation systems.

As one would expect, the wholesale transfer of this specific methodology initially developed for Southeast Asia to the Brazilian context is unlikely to be possible. Some modifications to the methodology will certainly be required to reflect to the realities of the Brazilian agro-economic systems we intend to explore. Most notably, careful reconsideration of the definitions of technology at the farm-level will be required, since one of the necessary conditions for applying this specific methodology is that technologies be discontinuous and identifiable in such ways as to allow for the characterization of different technology types, which can be used to subdivide the sample for analysis.

The data requirements for applying the existing methodology are not great, but our review of the micro-level data sets available to us at this point in time indicate that very few have met the criteria. Further review of the data will be required before one or more data sets are ultimately selected. The most promising data set under review was collected recently by EMBRAPA's Wheat Research Center. Some promise also exists in the cases of the swine and fowl data, and the information collected in the soy bean growing areas.

### **3.2 Methodological Contribution**

There is some interest within EMBRAPA in making a theoretical contribution to the current literature on the distribution of research benefits. To the extent possible, we would like to make

that contribution, and we expected it to come in the form of an extension of existing models, most likely those dealing with the multi-stage process of the distribution of research benefits.

#### **Collaborators**

Stephen A. Vosti - IFPRI

Mark Rosegrant - IFPRI

Tulio Barbosa - EMBRAPA/SEP

#### **4. HUMAN CAPITAL RESOURCES WITHIN EMBRAPA**

(See the attached paper by Nord and Vosti for a very detailed outline of our research aims in this project.)

#### **5. CONCLUSION -- VISITS, DELIVERABLES AND CONCLUDING REMARKS.**

##### **5.1 Visits**

As indicated in the preliminary section, the current EMBRAPA/IFPRI-2 contract stresses the importance of direct collaboration in understanding and addressing the issues contained in the four sections of this research agreement. As evidence of our commitment to undertaking true collaboration, we have scheduled the following series of visits to be undertaken in 1988 and 1989.

For 1988, Luiz Irias, the EMBRAPA coordinator for this contract, is scheduled to make a one-month visit in November. In addition, for 1988, a short one-week visit in November by Elmar Cruz is expected.



For 1989, the following visits are tentatively scheduled. Shubh Kumar, an IFPRI nutritionist, will spend approximately two weeks in Brasilia in late February. One important collaborator from the Instituto de Economia Agrícola (IEA) São Paulo, Jose Roberto Vicente, is scheduled to spend approximately one month at IFPRI in the Spring of 1989. A series of short visits are also expected to cluster around the methodological seminar which is currently being planned by Luiz Irias for early May of 1989 in Brazil. Attendance from IFPRI will probably include Marc Nerlove, Roy Nord, Robin Sickles, Mark Rosegrant and myself. Following the conference, Elisio Contini is scheduled to spend approximately one month at IFPRI collaborating with Shubh Kumar and myself on the nutrition component of the research contract. Sometime in the early summer of 1989, Tulio Barbosa, the IFPRI collaborator responsible for the distribution of benefits component of the research program, will also visit IFPRI for approximately one month. In August of 1989, Roy Nord, Mark Rosegrant, and myself are scheduled to spend a series of weeks in Brazil. Finally, Luiz Irias will spend approximately one month at IFPRI in the Fall of 1989 for the purpose of preparing the final report for this EMBRAPA/IFPRI-2 contract, and potentially sketching out a project for continuing our collaborative research.

## 5.2 Deliverables

As regards deliverables, one year-end progress report will be submitted in December of 1988, in addition to a year-end financial statement. In May, 1989, a series of methodological papers will be

presented at the upcoming seminar being organized by EMBRAPA held in Brazil. The papers to be presented will be progress reports stressing the methodological aspects of our research, and paying special attention to the alternative methodologies that can be adopted in the specific context of each research project. In December of 1989, final papers will be submitted for each of the four research projects within the overall EMBRAPA/IFPRI-2 contract. In addition, some brief policy papers will be submitted which summarize the policy implications of the empirical and theoretic results which have been generated. These policy shorts will be presented at a formal policy seminar being organized by EMBRAPA to be held in December of 1989 if space availabilities and time constraints allow.

Finally, a final report summarizing the overall progress made on the entire research program will be submitted in December of 1989, as will a final financial report listing all expenses for the entire project.

### 5.3 Final Note

I would like to end this report on a very positive note. Given the obstacles that generally crop up in a context of writing proposals, securing their approval, and subsequently initiating research, I feel we have made tremendous progress. I am very pleased with the spirit of cooperation and collaboration that has existed from the very outset, and I have every reason to believe that the current IFPRI/EMBRAPA contract will generate important insights into some of the issues currently being addressed by EMBRAPA in its self

evaluation process. I also fully expect that the project will generate useful results in terms of policy recommendations for EMBRAPA.

## Programa II. Geração e Transferência de Tecnologia

O Programa de Geração e Transferência de Tecnologia é a resposta do IICA a dois aspectos fundamentais: (i) o reconhecimento, por parte dos países e da comunidade técnico-financeira internacional, da importância da tecnologia para o desenvolvimento produtivo do setor agropecuário; (ii) a convicção generalizada de que, para aproveitar plenamente o potencial da ciência e da tecnologia, é necessário que existam infra-estruturas institucionais capazes de desenvolver as respostas tecnológicas adequadas às condições específicas de cada país, bem como um lineamento de políticas que promova e possibilite que tais infra-estruturas sejam incorporadas aos processos produtivos.

Nesse contexto, o Programa II visa a promover e apoiar as ações dos Estados membros destinadas a aprimorar a configuração de suas políticas tecnológicas, fortalecer a organização e administração de seus sistemas de geração e transferência de tecnologia e facilitar a transferência tecnológica internacional. Desse modo será possível fazer melhor aproveitamento de todos os recursos disponíveis e uma contribuição mais eficiente e efetiva para a solução dos problemas tecnológicos da produção agropecuária, num âmbito de igualdade na distribuição dos benefícios e de conservação dos recursos naturais.

## INSTITUTO INTERAMERICANO DE COOPERAÇÃO PARA A AGRICULTURA

O Instituto Interamericano de Cooperação para a Agricultura (IICA) é o organismo especializado em agricultura do Sistema Interamericano. Suas origens datam de 7 outubro de 1942, quando o Conselho Diretor da União Pan-Americana aprovou a criação do Instituto Interamericano de Ciências Agrícolas.

Fundado como uma instituição de pesquisa agrônômica e de ensino, de pós-graduação para os trópicos, o IICA, respondendo às mudanças e novas necessidades do Hemisfério, converteu-se progressivamente em um organismo de cooperação técnica e fortalecimento institucional no campo da agropecuária. Essas transformações foram reconhecidas oficialmente com a ratificação, em 8 de dezembro de 1980, de uma nova convenção, que estabeleceu como fins do IICA estimular, promover e apoiar os laços de cooperação entre seus 31 Estados membros para a obtenção do desenvolvimento agrícola e do bem-estar rural.

Com um mandato amplo e flexível e com uma estrutura que permite a participação direta dos Estados membros na Junta Interamericana de Agricultura e em seu Comitê Executivo, o IICA conta com ampla presença geográfica em todos os países membros para responder a suas necessidades de cooperação técnica.

As contribuições dos Estados membros e as relações que o IICA mantém com 12 Países Observadores, e com vários organismos internacionais, lhe permitem canalizar importantes recursos humanos e financeiros em prol do desenvolvimento agrícola do Hemisfério.

O Plano de Médio Prazo 1987-1991, documento normativo que assinala as prioridades do Instituto, enfatiza ações voltadas para a reativação do setor agropecuário como elemento central do crescimento econômico. Em vista disso, o Instituto atribui especial importância ao apoio e promoção de ações tendentes à modernização tecnológica do campo e ao fortalecimento dos processos de integração regional e sub-regional.

Para alcançar tais objetivos o IICA concentra suas atividades em cinco áreas fundamentais, a saber: Análise e Planejamento da Política Agrária; Geração e Transferência de Tecnologia; Organização e Administração para o Desenvolvimento Rural; Comercialização e Agroindústria, e Saúde Animal e Sanidade Vegetal.

Essas áreas de ação expressam, simultaneamente, as necessidades e prioridades determinadas pelos próprios Estados membros e o âmbito de trabalho em que o IICA concentra seus esforços e sua capacidade técnica, tanto sob o ponto de vista de seus recursos humanos e financeiros, como de sua relação com outros organismos internacionais.



Esta publicação foi reproduzida, em abril de 1989, numa tiragem de 30 exemplares.

Interessados em receber mais exemplares  
deste e de outros Relatórios de Consultores  
poderão solicitá-los a:

Coordenação dos Contratos IICA/EMBRAPA  
Escritório do IICA no Brasil  
Caixa Postal 09-1070  
Brasília, D.F. 71600

Tel.(061) 248 5358





# FECHA DE DEVOLUCION


IICA  
 A50  
 R799

Autor

Investment benefits from agricultural  
 cultural research

Título

Fecha  
 Devolución

Nombre del solicitante



