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Consultant Final Report
IICA/EMBRAPA-PROCENSUL II

SEED PATHOLOGY RESEARCH AND TRAINING

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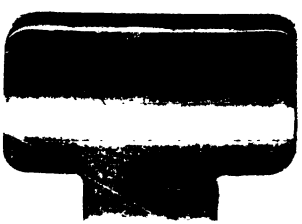

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SEED PATHOLOGY RESEARCH AND TRAINING

Consultant Final Report
IICA/EMBRAPA-PROCENSUL II

Richard L. Gabrielson

Brasília, março de 1988

INSTITUTO INTERAMERICANO DE COOPERAÇÃO PARA A AGRICULTURA
EMPRESA BRASILEIRA DE PESQUISA AGROPECUÁRIA

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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 agradeceria receber comentários sobre estes relatórios.

Horacio M. Stagno
Coordenador Contratos IICA/EMBRAPA

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

CONSULTANT FINAL REPORT

1. Consultant's full name: Richard L.GABRIELSON
2. Specialist in: Seed pathology
3. Title of IICA Project: 2.SB.3

4. EMBRAPA Program for which consultancy is provided:

PROGRAMA : PROCENSUL II

SUB-PROG. : I.PESQUISA VEGETAL

IICA Project Activity Code: 2.SB.302	Administrative Code: R4874B1B03102
Title of Activity of IICA Project corresponding to this consultancy	Cooperation with EMBRAPA on research activities in the field of crop production

CONSULTANT CONTRACT PERIOD	DUTY LOCATION (Center)
Octobre 17th to 31st,1987	CENARGEN and CNPT/PASSO FUNDO
CONTRACT EXTENTION PERIOD (If any)	DUTY LOCATION (Center)

5. Financial support: PROCENSUL II

6.6 ACTIVITIES IN SUPPORT OF OTHER CENTERS AND UNIVERSITIES IMPROVING THE RESEARCH CENTERS LINKS WITH ABROAD

R. L. Gabrielson - Activity Schedule:

October 13-14	Travel Miami to Rio
October 15	Travel Rio to Brasilia
October 15-17	Brasilia
October 18	Brasilia to Passo Fundo
October 18-24	Passo Fundo
October 25	Paso Fundo to Vicosa
October 26	Vicosa
October 27	Vicosa to Rio
October 28	Rio to Miami
October 29	Miami to Seattle

Acknowledgement:

I wish to thank Dr. Jairo Silva Chele CLNLRGLN for sponsoring my consultation.

October 15 - Visited EMBRAPA CNPH, the national center for vegetable research. Met Dr. Antonio Carlos Guedes, Dr. Carlos Alberto Lopes, and Dr. Jose' Amauri Buso.

Comments:

I was favorably impressed by the accomplishments of this station. The breeding and release of cabbage, carrot, lentil tomato, cucumber and sweet corn varieties, several with disease resistance, is remarkable in light of the relatively short existence of the vegetable station.

I understand there are presently 41 researchers at this station, and that currently only one research plant pathologist on site at present, Dr. Carlos. The present vegetable research program will suffer without additional pathological support. I further understand that there were at one time 8 plant pathologists, and that 3 plant pathologists recently left the station.

The reason(s) for the shortage of plant pathologists should be determined and corrective action taken to ensure that a stable faculty of plant pathologists be available to solve vegetable plant disease problems in the cerrados region.

October 15 - Visited EMBRAPA CPAC, the center for agricultural research for the Cerrados. Met Dr. Wenceslau J. Goedert, Dr. Luiz Carlos Bhering Nasser, and Dr. Maria Jose D'Avila Charchar.

Comments:

I was favorably impressed by the personnel and facilities for research. My basic interaction was with the two plant pathologists, Nasser and Charchar, and my comments refer to their programs.

They each need trained technical assistance, someone with a bachelors or masters degree in plant pathology. Such assistance is needed for sustained effort in field and laboratory research, both while the pathologists are on site and when they must be away from their duty station.

Two additional plant pathologists are needed, a pathologist trained in plant virology and a pathologist trained in plant bacteriology.

The project on weed control by biological means is a specialized field and needs the attention of a full-time pathologist for any reasonable hope for success.

The Cerrados is an excellent area to produce seed with a minimum of seed-borne pathogens. Dr. Nasser is especially trained in this area. The advanced international course on seed pathology, which he has coordinated, focused worldwide attention on Brazil's seed-borne disease problems and brought our knowledge to the state of the art. He should be encouraged to concentrate his efforts in this area. An area that has great potential for success and value for Brazilian agriculture.

October 16 & 17 visited EMBRAPA CENARGEN. Met Dr. Jairo Silva, Dr. Antonio Carlos Reboucas Lins, Dr. Arailde-Urben, Lidio Coradin, Dr. Clara Oliverira Goedert, and Magaly Veloso da Silva Wetzel.

Comments:

Dr. Lins phytosanitary program is very impressive and is filling a vital need in germplasm exchange. However, he should have a trained virologist in the program.

The germplasm analysis and storage facility is excellent. Wetzel's program of documenting seed-borne pathogens on germplasm is excellent. She needs additional technical assistance to grow out germplasm that is weak or in short supply.

October 16 at 1600 h delivered a lecture on seed pathology at FUNB, Fundacas Universidade De Brasilia.

October 18-24 - Passo Fundo. Participated in the Advanced International Course on Seed Pathology. A copy of the program is attached.

Comments:

The course was excellent. The lecturers were the experts in their field worldwide. There was an excellent discussion and interchange between speakers and participants. The state of the art in seed pathology was defined; both what we know and more importantly, what we do not know. It was a good beginning for seed pathology in Brazil. It should be followed by research to define seed pathology under Brazilian conditions and university training for those who analyze seed for seed health.

An excellent "Apostila" of some 400 pages was produced. This, however, does not cover the discussions that expressed concerns and offered solutions to specific Brazilian problems. A tape recording of the course was made.

This material edited and combined with the "apostila" should be published as a book which would be an outstanding contribution to science worldwide and to Brazilian researchers and teachers.

October 26 - Visited Universidade Federal de Vicosa, Departmento de Fitopatologia.

Comments:

Met Maria Cristina del Peloso Martins, Kiyoshi Matsuoka, Dr. James John Muchovej, Dr. Lacerio Zambolim, Dr. Luiz Antonio Maffia, and D. Reginaldo Da Silva Romeiro.

I delivered a lecture to faculty and students on my research program in vegetable pathology.

The faculty I met and talked to were excited about their research work and teaching programs. I was favorably impressed with the research facilities, the faculty and their programs.

I understand that there is no budget to pay page charges for publication in international journals. Publication is the final step in a research project. Page charges should be paid to encourage publication and thereby enhance the reputation of the faculty and the institution.

I understand that Dr. Maffia, Dr. Ferraz and Dr. Romeiro are planning, or in the process of writing, textbooks in their area of specialty. Textbooks in Portugese are essential to the internal growth and training of Brazilian students. They should be encouraged and helped to complete publication of their textbooks, a difficult but necessary work.

6.7 PUBLICATIONS AND REPORTS UNDERTAKEN WITH THE CONSULTANT'S PARTICIPATION

Author(s)*	Title of publication or Report and other bibliografic identification

Editors: ASSOCIAÇÃO BRASILEIRA DE TECNOLOGIA DE SEMENTES - ABRATES

Comite Tecnico de Patologia de Sementes - COPASEM

EMPRESA BRASILEIRA DE PESQUISA AGROPECURIA - EMBRAPA

Centro Nacional de Pesquisa de Triqo - CNPT

CONSELHO NACIONAL DE DESENVOLVIMENTO CIENTIFICO E TECNOLOGICO - CNPq

Title: Advanced International Course on Seed Pathology "Apostila" 400+ pages

* Personal, institutional, etc.

6.8 SUPPORT PROVIDED TO EMBRAPA RESEARCHERS IN THESIS AND DISSERTATION WORK

Name of the student	Thesis subject matter and sinthesis of advice

Not applicable

7. OTHER NATIONAL SYSTEM CENTERS, APART FROM DUTY STATION CENTER, ASSISTED BY THE CONSULTANT

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Comments:

I was favorably impressed by the accomplishments of this station. The breeding and release of cabbage, carrot, lentil tomato, cucumber and sweet corn varieties, several with disease resistance, is remarkable in light of the relatively short existence of the vegetable station.

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I was favorably impressed by the personnel and facilities for research. My basic interaction was with the two plant pathologists, Nasser and Charchar, and my comments refer to their programs.

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

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THE REASON(S) FOR THE SHORTAGE OF PLANT PATHOLOGISTS SHOULD BE DETERMINED AND CORRECTIVE ACTION TAKEN TO ENSURE THAT A STABLE FACULTY OF PLANT PATHOLOGISTS BE AVAILABLE TO SOLVE VEGETABLE PLANT DISEASE PROBLEMS IN THE CERRADOS REGION.

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THE CERRADOS IS AN EXCELLENT AREA TO PRODUCE SEED WITH A MINIMUM OF SEED-BORNE PATHOGENS. DR. NASSER is especially trained in this area. The advanced international course on seed pathology, which he has coordinated, focused worldwide attention on Brazil's seed-borne disease problems and brought our knowledge to the state of the art. He SHOULD BE ENCOURAGED TO CONCENTRATE HIS EFFORTS IN THIS AREA. AN AREA THAT HAS GREAT POTENTIAL FOR SUCCESS AND VALUE FOR BRAZILIAN AGRICULTURE.

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I understand that Dr. Maffia, Dr. Ferraz and Dr. Romeiro are planning, or in the process of writing, textbooks in their area of specialty. Textbooks in Portugese are essential to the internal growth and training of Brazilian students. THEY SHOULD BE ENCOURAGED AND HELPED TO COMPLETE PUBLICATION OF THEIR TEXTBOOKS, a difficult but necessary work.

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

Contacts were made that may lead to training of three graduate students through my program at Washington State University.

I recommend that Luiz Carlos Bhering Nasser visit my research program to view first hand our research program and techniques used in seed pathology.

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

Time available on this consultancy was not adequate. There should have been at least 4 weeks.

Date: [illegible]

Signature: [illegible]

A N E X O I

BRAZILIAN SEED TECHNOLOGY ASSOCIATION
ABRATES
SEED PATHOLOGY COMMITTEE – COPASEM

PROGRAM

ADVANCED INTERNATIONAL COURSE ON SEED PATHOLOGY

Passo Fundo, RS – Brazil
October 18-24, 1987

Brasília, DF
1987

BRAZILIAN SEED TECHNOLOGY ASSOCIATION
ABRATES
SEED PATHOLOGY COMMITTEE – COPASEM

PROGRAM

ADVANCED INTERNACIONAL COURSE ON SEED PATHOLOGY

Passo Fundo, RS – Brazil
October 18-24, 1987

Brasília, DF
1987

Course Coordinator:
Luiz Carlos Bhering Nasser

Course Comission:
Antônio Carlos Rebouças Lins
José Maurício Cunha Fernandez
Luiz Carlos Bhering Nasser
Maria Magaly Veloso da Silva Wetzel

Editorial Staff:
Leocádia Maria Rodrigues Mecenas
Beatriz de Fátima e Silva

CONTENTS

ABRATES BOARD OF DIRECTORS

COPASEM Coordinator:

Jaciro Soave

ACKNOWLEDGMENTS

The Seed Pathology Committee wishes to acknowledge the cooperation of:

- Ministério da Agricultura do Brasil – MA
- Empresa Brasileira de Pesquisa Agropecuária – EMBRAPA
- Conselho Nacional de Desenvolvimento Científico e Tecnológico – CNPq
- Embaixada da França (M.R.E.) – INRA
- British Council
- University of Natal – F.R.D. South Africa
- University of Georgia – United States of América
- Embaixada dos Estados Unidos da América – USAID
- Associação Nacional de Defensivos Agrícola – ANDEF
- Agroceres/Horticeres
- Companhia Nacional de Defensivos Agrícola – CNDA

PROGRAM

October 18 – Sunday

1:00 – 6:00 PM – Welcome
7:00 PM – Openning Session
8:00 PM – Cocktail

October 19 – Monday

8:00 – 9:00 AM – **Lecture**
The situation of seed pathology in Brazil.
Dr. Jaciro Soave (Brazil)

9:00 – 10:00 AM – **Discussion Session 1**
The use of seed health testing for viruses in routine laboratories.
Dr. W. Kaiser (USA); Dr. C. Anselme (France); Dr. J.O. Menten (Brazil) Dr. M.Porto (Brazil) and Dr. A.M.R. Almeida (Brazil)

10:00 – 10:30 AM – Coffee break

10:30 – 12:00 AM – The use of seed health testing for viruses in routine laboratoris.
Dr. W. Kaiser (USA); Dr. C. Anselme (France); Dr. J.O. Menten (Brazil) Dr. M.Porto (Brazil) and Dr. A.M.R. Almeida (Brazil)

12:00 – 2:00 PM – Lunch

2:00 – 3:00 PM – **Lecture**
Research program of Dr. C. Anselme's group in France.
Dr. C. Anselme (France)

3:00 – 4:00 PM – **Lecture**
Accreditation of laboratories for seed health testing.
Dr. C. Anselme (France)

4:00 – 4:30 PM – Coffee break

4:30 – 5:30 PM – **Lecture**
Methodology to detect seed-borne viruses.
Dr. W. Kaiser (USA)

5:30 – 6:30 PM – Control of seed-borne viruses
Dr. W. Kaiser (USA)

October 20 – Tuesday

8:00 – 9:00 AM – **Lecture**
Research program of Dr. P. Berjak's group in South Africa.
Dr. P. Berjak (South Africa)

9:00 – 10:00 AM – **Discussion Session 2**
The use of seed health testing for bacteria in sartine laboratories.
Dr. B Rat (France); Dr. B.M. Cunfer (USA); Dr. N. Schaad (USA); Dr. M.R.G. Oliveira (Brazil) and Dr. J. Mauricio Fernandez (Brazil)

10:00 – 10:30 AM – Coffee break

10:30 – 12:00 AM – **Discussion Session 2**
The use of seed health testing for bacteria in routine laboratories.
Dr. Rat (France); Dr. B.M. Cunfer (USA); Dr. N. Schaad (USA); Dr. M.R.G. Oliveira (Brazil) and Dr. J. Mauricio Fernandez (Brazil)

12:00 – 2:00 PM – Lunch

2:00 – 3:00 PM – **Lecture**
The use and limitations of methods to detect seed-borne bacteria.
Dr. N. W. Schaad (USA)

3:00 – 4:00 PM – **Lecture**
Control of seed-borne bacteria.
Dr. B. Rat (France)

4:00 – 4:30 PM – Coffee break

4:30 – 5:30 PM – **Lecture**
Localization and survival of seed-borne pathogens
Dr. B.M. Cunfer (USA)

5:30 – 8:00 PM – Dinner

8:00 – 10:00 PM – **Discussion Session 3**
How to avoid the dissemination of pathogens in germoplasm exchange.
Dr. P. Berjak (South Africa); Dr. B. Rat (France);
Dr. W. Kaiser (USA); Dr. M.M. Wetzel (Brazil)
and Dr. A.C.R. Lins (Brazil)

October 21 – Wednesday

8:00 – 9:00 AM – **Lecture**
Research program of Dr. N.W. Schaad's group in the United States of America.
Dr. N.W. Schaad (USA)

9:00 – 10:00 AM – **Discussion Session 4**
How a seed pathology program can inprove the seed quality of vegetable crops.
Dr. C. Anselme (France); Dr. R.L. Gabriel-

son (USA); Dr. J. Sinclair (USA); Dr. T.D. da Silva (Brazil) and Dr. J.C. Machado (Brazil)

10:00 – 10:30 AM – Coffee break

10:30 – 12:00 AM – **Discussion Session 4**
How a seed pathology program can improve the seed quality of vegetable crops.
Dr. C. Anselme (France); Dr. R.B. Maude (England); Dr. R.L. Gabrielson (USA); Dr. J. Sinclair (USA); Dr. T.D. da Silva (Brazil) and Dr. J.C. Machado (Brazil)

12:00 – 2:00 PM – Lunch

2:00 – 3:00 PM – **Lecture**
Research program of Dr. J. Sinclair's group in USA.
Dr. J. Sinclair (USA)

3:00 – 4:00 PM – **Lecture**
Seed pathology problems to produce vegetable seeds in England.
Dr. R.B. Maude (England)

4:00 – 4:30 PM – Coffee break

4:30 – 5:30 PM – **Lecture**
Losses and damages caused by microorganisms in stored seeds.
Dr. P. Berjak (South Africa)

5:30 – 6:30 PM – **Lecture**
Certification schemes for reduction or elimination of seed-borne inoculum.
Dr. R.L. Gabrielson (USA)

October 22 – Thursday

8:00 – 9:00 AM – **Lecture**
Activity of the private enterprise in the brazilian seed pathology program.
Dr. J.L. Souche (Brazil)

9:00 – 10:00 AM – **Lecture**
Evaluation on the utilization of chemical seed treatment.
Dr. J. Sinclair (USA)

10:00 – 10:30 AM – Coffee break

10:30 – 12:30 AM – **Discussion Session 5**
Seed treatment
Dr. J. Sinclair (USA); Dr. B.M. Cunfer (USA); Dr. R.B. Maude (England); Dr. L.C.B. Nasser (Brazil) and Dr. V.C. Luz (Brazil)

12:00 – 2:00 PM – Lunch

2:00 – 6:00 PM – **Field Exursion**

October 23 – Friday

8:00 – 9:00 AM – **Lecture**
Research program of Dr. W. Kaise's group in the United States of America.
Dr. W.J. Kaiser (USA).

9:00 – 10:00 AM – **Discussion Session 6**
Comparative seed health testing.
Dr. C. Anselme (France); Dr. R.L. Gabrielson (USA); Dr. N.W. Schaad (USA); Dr. J. Soave (Brasil) and Dr. C. Lasca (Brazil)

10:00 – 10:30 AM – Coffee break

10:30 – 12:00 AM – **Discussion Session 6**
Comparative seed health testing.
Dr. C. Anselme (France); Dr. R.L. Gabrielsen (USA); Dr. N.W. Schaad (USA); Dr. J. Soave (Brazil) and Dr. C. Lasca (Brazil)

12:00 – 2:00 PM – Lunch

2:00 – 3:00 PM – **Lecture**
Research program of Dr. R.L. Gabrielson's group in the United States of America.
Dr. R.L. Gabrielson (USA)

3:00 – 4:00 PM – **Lecture**
Research program of Dr. B.M. Cunfer's group in the United States of America.
Dr. B.M. Cunfer (USA)

4:00 – 4:30 PM – Coffee break

4:30 – 5:30 PM – **Lecture**
Methodologies for detection and control of seed-borne viruses.
Dr. A.M.R. Almeida (Brazil)

5:30 – 6:30 PM – **Lecture**
Research program of Dr. Mande's group in England.
Dr. R.B. Mande (England)

8:30 PM – Group Dinner

October 24 – Satuday

8:00 – 9:00 AM – **Lecture**
Research program of Dr. B Rat's group in France
Dr. B. Rat (France)

9:00 – 10:00 AM – **Discussion Session 7**
Importance of seed-borne inoculum related to other sources.
Dr. C. Anselme (France); Dr. R.L. Gabrielson (USA); Dr. J.M.C. Fernandez (Brazil); Dr. J.R. Menezes (Brazil) and Dr. J.C. Machado (Brazil)

10:00 – 10:30 AM – Coffee break

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12:00 AM – **Closing Session**

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 agronômica 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.

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Responsáveis pela reprodução: Jadir José dos Santos e Murillo Sodré da Silva.

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Coordenação dos Contratos IICA/EMBRAPA
Escritório do IICA no Brasil
Caixa Postal 09-1070
Brasília, DF. 71.600

Tel. (061) 248-5477

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Autor

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INSTITUTO INTERAMERICANO DE COOPERAÇÃO PARA A AGRICULTURA
SHIS QI 5 CONJ. 9 BL. D COMERCIAL LOCAL, CAIXA POSTAL 09-1070, BRASÍLIA, D.F. BRASIL
TEL. (061) 248-5477 - TELEX 611959 INAG-BR - CORREIO ELETRÔNICO 1536.