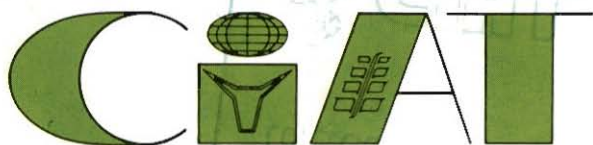


63815



Centro Internacional de Agricultura Tropical



CIAT

COLECCION HISTORICA





Centro Internacional de Agricultura Tropical

104688

## OFFICE OF THE DIRECTOR GENERAL

John L. Nickel, *PhD, Director General*

Alexander Grobman, *PhD, Director for  
International Cooperation*

Douglas R. Laing, *PhD, Director for  
Research/Crops*

Gustavo A. Nores, *PhD, Director for  
Research/Land Resources*

## GENERAL SERVICES ADMINISTRATION

Jesús Antonio Cuellar, *MBA,  
Executive Administrator*

Alessandro Ferrari, *Head,  
General Maintenance Services*

Eduardo Fonseca, *Head, Food and Housing*

Fernando Posada, *MS, Head, Purchasing*

Germán Vargas, *MBA, Head,  
Human Resources*

## FINANCIAL ADMINISTRATION

Andrew V. Urquhart, *FCA, Controller*

Joffre A. Guerrero, *Assistant Controller*

Mauricio Lozano, *MBA, Head, Budget Section*



## Centro Internacional de Agricultura Tropical

The Centro Internacional de Agricultura Tropical (CIAT) is an autonomous, non-profit institution dedicated to international agricultural research and training and is one of a group of similar centers located around the world (see page 19). We are governed by our own 17-member, international Board of Trustees and our operating funds come from various members of the Consultative Group for International Agricultural Research (CGIAR). Donors include private foundations, governments of several countries and international and regional development banks. Our mission is to fulfill the following Statement of Objectives:

**To generate and deliver, in collaboration with national institutions, improved technology which will contribute to increased production, productivity and quality of specific basic food commodities in the tropics — principally in Latin America and Caribbean countries — thereby enabling producers and consumers, especially those with limited resources, to increase their purchasing power and improve their nutrition.**



Specifically, we produce improved technology — improved germplasm and production methods for four commodities which are basic foods in Latin America and the Caribbean: beef (through work in tropical pastures and forages), beans, cassava and rice. Our improved technologies are not designed to increase production at any cost, but rather, to decrease costs per unit of production so that rural and urban poor will benefit most from the increased supply of food. Small farmers with few



## Centro Internacional de Agricultura Tropical

resources are special targets; our improved technology is designed to be scale-neutral and applicable to the real conditions of these producers while also being appropriate to larger-scale farmers.

With respect to tropical pastures and forages, we are working to increase available beef by bringing new land into production; with beans, cassava and rice, we are primarily attempting to increase productivity in existing cultivated areas. We always attempt to develop technology that will achieve optimum production levels of high-quality, nutritious foods using as few inputs as possible. Behind all our efforts is the concern to improve human welfare by improving low-income consumers' purchasing power and nutrition.

Although our product is improved technology, we do not have resources nor the mandate to provide finished technology for the many ecological zones, varied socio-economic conditions and range of consumer preferences. To help meet these needs, the Center works closely with its direct clients, the national research and extension or development institutions to provide technology ready for testing and adaptation to local conditions.

Strong two-way communication channels exist with these groups. In one direction improved technology components flow from CIAT to our clients who conduct necessary evaluations and adaptive research to meet local requirements. Promising technology is then validated under actual farming conditions involving the largest number of producers and ecosystems possible. When finally ready, new technology is transferred to producers by the respective national programs. An important informational flow also occurs in the opposite direction for reporting needs for either new technology or modifications in existing methods.

To effectively meet their objectives, CIAT's commodity programs communicate with national programs at all stages of technology generation and transfer. Visits with scientists from these programs and workshops and conferences provide fruitful contacts. Our major contribution to new technology is improved germplasm; promising materials and complementary cultural practices are offered to national programs as soon as possible for regional evaluations in many environments.

Only with trained personnel can national institutions create or adapt improved technology for local conditions and





## Centro Internacional de Agricultura Tropical

successfully transfer it to farmers. With the overall guidance of our Training Office each program or unit of the Center provides commodity specific postgraduate training for research and production.

Information services represent another of our important contacts with client institutions. The Documentation Services Unit collects, processes and disseminates current scientific information from around the world in several forms. The Communication Support Unit analyzes informational needs of client programs and prepares and publishes materials based on our technology generation activities to meet these needs. This Unit also strongly supports training activities in CIAT and within countries through its design and production of audiotutorial aids.

CIAT's principal staff involved in technology generation and outreach consists of about 100 persons from some 20 countries; several scientists are outposted in countries other than Colombia. Some 150 university-educated professionals, the majority of whom are Colombians, assist the principal staff and another 1000 persons provide research and administrative support and clerical services.

Headquarters are on a 522-hectare research farm between Cali and Palmira, Colombia. Besides the usual laboratories, offices and support services of a modern research center, other facilities include housing for up to 80 trainees and a conference center with housing for up to 60 participants.

So that research may be done in environments other than the headquarters site, we also operate a 186-hectare farm — leased at token rent from the Colombian Fundación para la Educación Superior (FES) — 40 kilometers south of Cali, near Santander de Quilichao. Other major research locations are at Carimagua, in the Eastern Plains of Colombia and near Brasília, Brazil, at the Cerrado research center of the Empresa Brasileira de Pesquisa Agropecuária (EMBRAPA). Many other research projects are conducted in collaboration with national or regional agencies throughout Latin America and the Caribbean and in other parts of the world.

On the following pages we have provided synopses of individual program and unit goals and strategies and lists of principal personnel with their areas of specialization.

# LAND RESOURCES RESEARCH

Gustavo A. Nores, *PhD, Director*

## Tropical Pastures Program



The objective of the Tropical Pastures Program is to develop, validate and transfer technology to increase beef production primarily through improved year-round forage production in the acid, infertile soils of tropical America. These infertile soils represent about 850 million hectares which are currently underutilized.

The program expects to increase beef production in the tropical lowlands by developing grass/legume pastures which will be improved in terms of quantity and quality, complemented by economically viable animal management and health practices. With simple, low-input technology, these acid infertile soils could be developed for profitable and efficient beef production.



## Land Resources Research

- Gustavo A. Nores, *PhD, Economist (Coordinator)*  
Eduardo Aycardi, *PhD, Animal Health Specialist*  
Mario Calderón, *PhD, Postdoctoral Fellow in Entomology*  
Luis A. Carrillo, *PhD, Postdoctoral Fellow in Economics*  
Walter Couto, *PhD, Soil Scientist, Pasture Development (stationed in Brasília, Brazil)*  
John E. Ferguson, *PhD, Agronomist, Seed Production*  
Bela Grof, *PhD, Legume Agronomist (stationed in Carimagua, Colombia)*  
Gerardo Habich, *PhD, Cattle Production Systems Scientist*  
E. Mark Hutton, *DAGRSc, Visiting Scientist in Legume Breeding*  
Ingo Kleinheisterkamp, *PhD, Animal Scientist, Nutrition*  
Jillian Lenné, *PhD, Pathologist*  
Nobuyoshi Maeno, *PhD, Visiting Scientist in Legume Agronomy*  
John Miles, *PhD, Postdoctoral Fellow in Grass Breeding*  
Rolf Minhorst, *MS, Visiting Specialist in Animal Management (stationed in Brasília, Brazil)*  
C. Patrick Moore, *PhD, Animal Scientist (stationed in Brasília, Brazil)*  
Osvaldo Paladines, *PhD, Animal Scientist, Nutrition*  
Christoph Plessow, *PhD, Postdoctoral Fellow in Animal Management (stationed in Maturín, Venezuela)*  
Eugenia de Rubinstein, *PhD, Postdoctoral Fellow in Economics*  
José Salinas, *PhD, Soil/Plant Nutritionist*  
Rainer Schultze-Kraft, *DAGR, Specialist in Legume Agronomy*  
James M. Spain, *PhD, Soil Scientist, Pasture Development (stationed in Carimagua, Colombia)*  
Luis E. Tergas, *PhD, Agronomist, Training and Regional Trials*  
Derrick Thomas, *PhD, Legume Agronomist (stationed in Brasília, Brazil)*  
José M. Toledo, *PhD, Forage Agronomist*

## Swine Unit



Activities in swine improvement are primarily directed toward training and international collaborative projects so that existing technology and these projects can be applied at national or regional levels. Research in the unit deals with nutritional work to identify and adapt local protein and energy sources so that swine feeding is efficient and economical.

Julián Buitrago, *PhD, Nutritionist (Head)*

Guillermo Gómez, *PhD, Nutritionist/Biochemist*





Land Resources Research

## Special Studies

Bodo Hegewald, *PhD, Postdoctoral Fellow*  
(assigned to Cassava Program)

### IFDC PHOSPHORUS PROJECT

The objective of this project is to develop a phosphorus management strategy on the acid, infertile soils of tropical Latin America for the various cropping systems. Many phosphorus carriers are being assessed to ascertain which ones give the highest economic yields. To date several indigenous phosphate rock sources look very promising, and greenhouse and field experiments are being conducted to evaluate them. Many soils from throughout Latin America are also being characterized in order that further predictability of the phosphorus requirements of plants can be better understood from a soils standpoint.

William Fenster, *PhD, Soil Fertility Specialist*  
Luis Alfredo León, *PhD, Soil Chemist*

### LAND RESOURCES EVALUATION

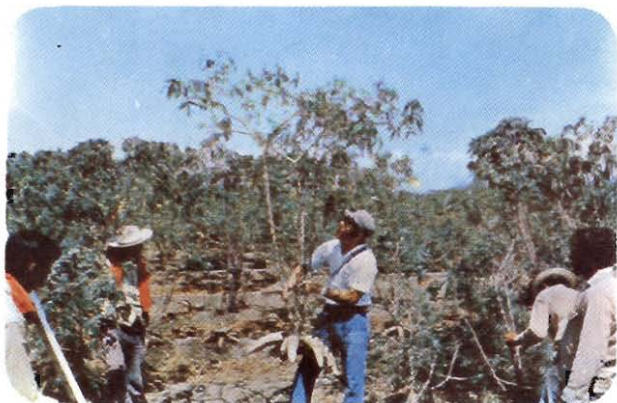
The present phase of this project evaluates land resources in the extensive target area of the Tropical Pastures Program in terms of climate, landscape, vegetation and soils. The structural units of study are known as "land systems" defined as areas which have repetitive patterns of climate, landscape and soils. These land systems are delimited on the basis of satellite and radar images. The systematized, descriptive information and the maps are recorded on magnetic tapes. The computerization of this information has the following advantages. 1) it permits easy access to quantitative land resources information; 2) information can be statistically analyzed; 3) different types of thematic maps can be produced; and 4) this information may be associated with data from other sources to carry out integrated studies.

Thomas T. Cochrane, *PhD, Land Resources Specialist*

# CROPS RESEARCH

Douglas R. Laing, *PhD, Director*

## Cassava Program



Cassava is an important source of energy in many regions of the world. The cassava team works to produce the most efficient plant varieties possible that incorporate resistance or tolerance to economically important insects and diseases. Additionally, work is done on improved cultural practices and low-cost, effective root storage methods, to achieve optimum production and utilization of this crop.

Anthony C. Bellotti, *PhD, Entomologist (Coordinator)*

Abelardo Castro, *PhD, Agronomist*

James H. Cock, *PhD, Physiologist (on sabbatical leave)*

David Conner, *PhD, Visiting Scientist in Physiology*

Clair H. Hershey, *PhD, Breeder*

Reinhardt Howeler, *PhD, Soil/Plant Nutritionist  
(on sabbatical leave)*

Kazuo Kawano, *PhD, Breeder*

Dietrich Leihner, *DAGR, Agronomist*

J. Carlos Lozano, *PhD, Pathologist*

John K. Lynam, *PhD, Economist*

Romeo R. Obordo, *PhD, Regional Coordinator for Asia  
(stationed with SEARCA, Los Baños, the Philippines)*

Jesús A. Reyes, *MS, Visiting Specialist in Entomology*

Julio César Toro, *PhD, Agronomist*

Yoshiki Umemura, *PhD, Visiting Scientist in Pathology*



Crops Research

## Bean Program



Beans (*Phaseolus vulgaris*) are an important protein source for rural and urban low-income families throughout Latin America. Consumer prices for this grain legume are high, largely due to low yields caused by the crop's susceptibility to many diseases and insects. The Bean Program, in close collaboration with national program scientists, is developing a scale neutral production technology to alleviate those problems. Main emphases are on developing pest resistance while improving plant architecture and raising bean yield potential – both for bush beans and climbing beans grown in association with maize. A strong training program and international cooperation activities directed heavily towards germplasm exchange support research components of the Program.

Aart van Schoonhoven, *PhD, Entomologist (Coordinator)*

Steven Bebee, *PhD, Postdoctoral Fellow in Breeding*

César Cardona, *PhD, Postdoctoral Fellow in Entomology*

Jeremy Davis, *PhD, Agronomist/Breeder*

Guillermo G. Galvez, *PhD, Regional Coordinator*

*for Central America (stationed in San José, Costa Rica)*

Peter H. Graham, *PhD, Soil Microbiologist*

Peter G. Jones, *PhD, Postdoctoral Fellow in Physiology*

Francisco J. Morales, *PhD, Virologist*

Silvio H. Orozco, *MS, Breeder (stationed with*

*ICTA, Guatemala)*

John H. Sanders, *PhD, Economist*

Howard F. Schwartz, *PhD, Pathologist*

Shree P. Singh, *PhD, Breeder*

Steven R. Temple, *PhD, Breeder*

Michael D. T. Thung, *PhD, Agronomist*

Oswaldo Voysest, *PhD, Agronomist*

Kazuhiro Yoshii, *PhD, Pathologist (stationed with*

*ICTA, Guatemala)*

## Rice Unit



Rice scientists direct a comprehensive international testing network in Latin America in collaboration with the International Rice Research Institute (IRRI) and conduct agronomic and breeding work to meet the demand for increased rice production and productivity under Latin American conditions. Several improved rice varieties developed jointly with the Instituto Colombiano Agropecuario (ICA) have been distributed to various countries in the region

Joaquín González, *MS, Agronomist (Head)*  
 Sang Won Ahn, *PhD, Pathologist*  
 Peter R. Jennings, *PhD, Regional Coordinator for*  
*Central America (stationed in San José, Costa Rica)*  
 Manuel Rosero, *PhD, IRRI Liaison Scientist*  
 Hector Weeraratne, *PhD, Breeder*





Research Support

# Research Support

## GENETIC RESOURCES UNIT



The Genetic Resources Unit provides evaluation, storage and distribution support to scientists working with plant germplasm materials of beans, cassava and tropical forages. Activities of the Unit ensures that valuable and sometimes rare, genetic resources will be carefully protected but at the same time, fully utilized both in CIAT and throughout the world.

Leonard Song, *PhD, Germplasm Specialist (Head)*  
William Roca, *PhD, Physiologist*

## STATION OPERATIONS UNIT

Alfonso Díaz-Durán, *MS, PE, Experiment  
Station Superintendent*

## LABORATORY SERVICES UNIT

Robert A. Luse, *PhD, Biochemist (Head)*

## DATA SERVICES UNIT

Gastón Mendoza, *PhD, Biometrician (Head)*

# INTERNATIONAL COOPERATION

Alexander Grobman, *PhD, Director*

## Training and Conferences



Parallel to research, the Center offers training at the postgraduate level to professionals from national organizations in countries of the tropics to develop a network of research scientists and to strengthen the capabilities of those organizations regarding CIAT's commodities. Training activities take place in all CIAT programs, however, coordination and administrative support is centrally provided by Training and Conferences.

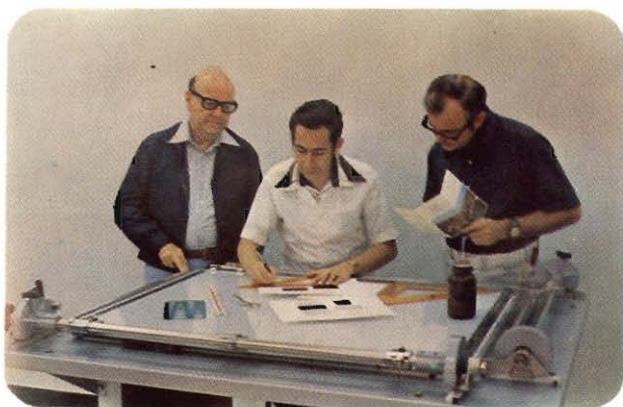
In collaboration with the other CIAT programs and units Training and Conferences also plans and organizes conferences, symposiums and technical meetings. These conferences facilitate communication among professionals in the agricultural and animal sciences, and they contribute to the development of networks of specialists and catalyze the interchange of information between CIAT and different types of audiences.

Fernando Fernández, *PhD, Soil Scientist (Coordinator)*  
David Evans, *Conference Administrator*



International Cooperation

## Communication Support Unit



The functions of this unit are to disseminate research results and to inform different audiences in the public sector of CIAT's objectives and activities. The Communications Unit develops and produces a series of technical and popular materials directed to specific audiences. In addition to personnel specifically working in message design, the Unit also operates the graphic arts and photography sections and a print shop. Additionally, the unit offers information services to all visitors.

*Fritz Kramer, PhD, Communication Scientist (Head)*

*Charles E. Bower, BSJ, Editor*

*Walter Correa, PhD, Head of Graphic Arts*

*Mario Gutiérrez, Ing. Agr., Editor*

*Fernando Mora, BS, AHA, Supervisor of  
Public Information*

*Austin E. Showman, MA, Visiting Editor*



International Cooperation

## Documentation Services Unit



The objective of this Unit is to deliver opportunely to th subscriber the documented technical information which he requires. For this purpose, a packet of services is offered which constitutes a system of consolidated information. In addition to those services offered by the specialized library, the "Table of Contents" publication is distributed monthly to some 2,000 Latin American professionals which provides them with a quick reference to printed articles in more than 700 technical and scientific magazines. The Documentation Center of the Unit has a worldwide distribution of abstract cards for technical articles on Cassava, Beans, Tropical Forages and Agricultural Economics and Rural Development in Latin America. Annually, cumulative volumes of these abstracts are produced as well as monographs on the state of development of specific areas within the species and fields of interest mentioned above.

Fernando Monge, PhD, *Communication Scientist (Head)*  
Trudy Brekelbaum, MA, *Editor in Documentation*





## International Cooperation

# Seed Unit

The Seed Unit is designed to meet the following needs, principally in Latin America and the Caribbean: 1) training in the different aspects and levels of production and seed technology at CIAT and in the countries in the target area; 2) technical collaboration at the country level to increase production and utilization of good quality seed of improved varieties; 3) research in seed technology which takes into account the problems of the region and which is carried out in collaboration with the principal programs at CIAT; 4) dissemination of experimental materials. Genetic and Basic Seed to collaborating countries for on-farm trials and subsequent multiplication

Johnson Douglas, *MS, Seed Specialist, (Head)*

## COLLABORATIVE PROJECTS

### CIMMYT/CIAT ANDEAN REGIONAL MAIZE UNIT

The Regional Andean Maize Unit is a special project directed by the Centro Internacional de Mejoramiento de Maíz y Trigo (CIMMYT) in collaboration with CIAT's international cooperation office. Its objectives are to develop and strengthen collaborative work in maize research and testing within and among national programs of the Andean countries.

Gonzalo Granados, *PhD, Entomologist (Head)*  
James Barnett, *PhD, Plant Breeder*

### ICTA/CIAT

In this project with the Instituto de Ciencia y Tecnología Agrícola (ICTA), the national agricultural research and extension institute of Guatemala, CIAT cooperates with this institution in the development of its programs. The project is sponsored by the Rockefeller Foundation.

Roland E. Harwood, *BS, Coordinator of Experimental Stations*

CIAT LIBRARY



100079030

**Apartado Aéreo 67-13**

Cali, Colombia, S.A.

Cables: CINATROP

Télex No. 05769

Telephones:

Palmira: 27044/9

Cali: 671411 - 671737

Bogotá: 418848 - 431259

