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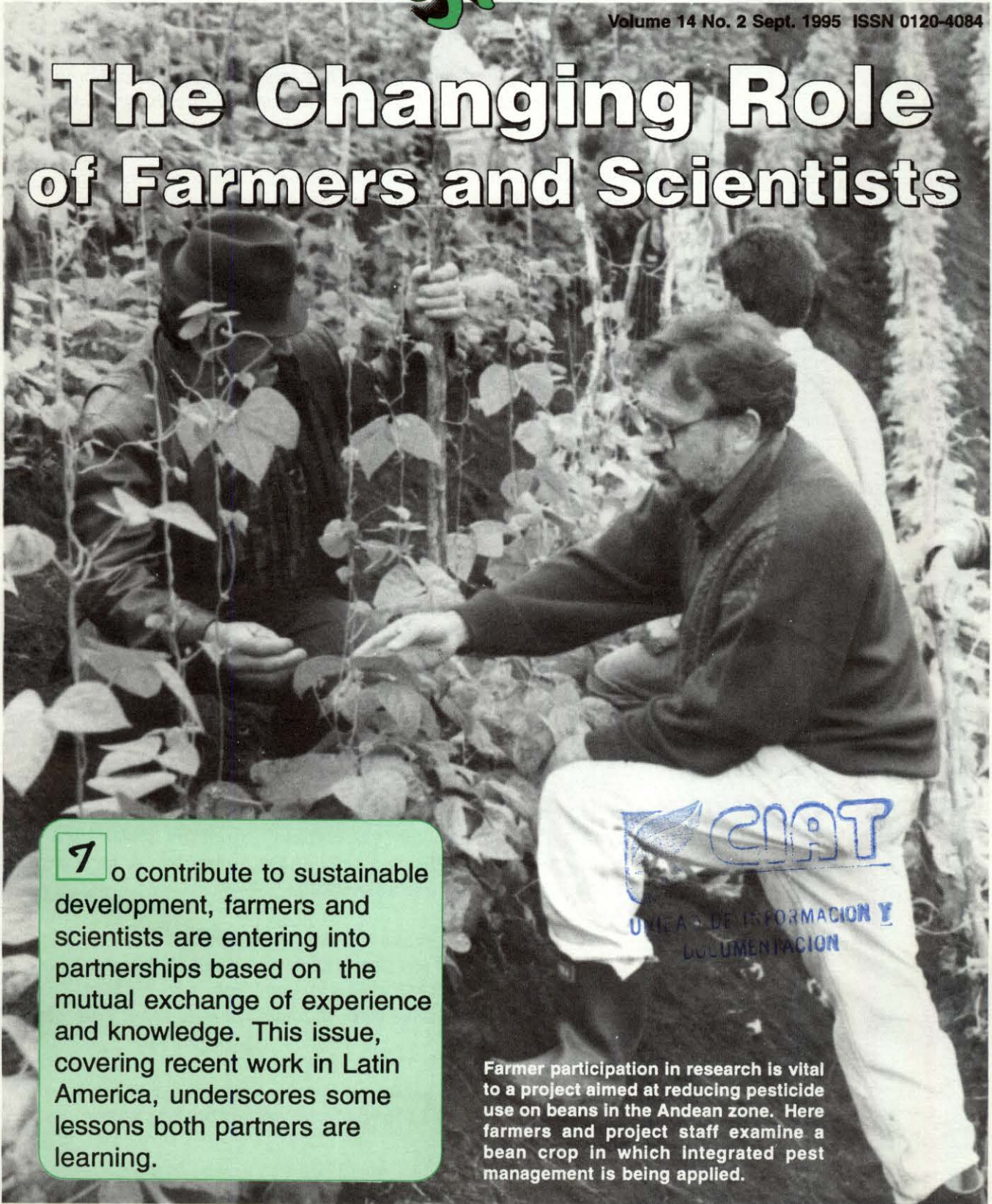
# CIAT



# International

Volume 14 No. 2 Sept. 1995 ISSN 0120-4084

## The Changing Role of Farmers and Scientists



**7**o contribute to sustainable development, farmers and scientists are entering into partnerships based on the mutual exchange of experience and knowledge. This issue, covering recent work in Latin America, underscores some lessons both partners are learning.

Farmer participation in research is vital to a project aimed at reducing pesticide use on beans in the Andean zone. Here farmers and project staff examine a bean crop in which integrated pest management is being applied.





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**CIAT International** highlights research and international collaborative activities of the International Center for Tropical Agriculture (CIAT, its Spanish acronym). The contents may be quoted freely or reprinted with proper credit given to the source. Clippings would be appreciated.

CIAT is dedicated to alleviating hunger and poverty in developing countries of the tropics by applying science to agriculture to increase production while sustaining the natural resource base.

CIAT is one of 16 international centers sponsored by the Consultative Group on International Agricultural Research (CGIAR), a group of 40 nations and international agencies that fund research for development. The Centers focus on the crops and livestock that provide 75% of the developing world's food.

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## From the Director General

**I**n my first message to readers of *CIAT International*, I would like to reflect briefly on the implications for the Center of its membership in the global agricultural research system.

As part of this system, CIAT works closely with its sister centers and with both national and regional research programs. As a member of a team, the Center must play its role so the other team members can fulfill theirs.

CIAT's role in this system is to provide services that satisfy urgent needs in developing countries. To fulfill this responsibility, we must be able to both interpret changes and respond to them flexibly. An institution that loses its capacity to evolve forfeits its right to survive.

The Center has already made considerable adjustments in the past few years. But it would be irresponsible for me to say that the process is complete. Change is our constant companion in life's journey. The challenge is to allow change to enhance rather than to diminish our productivity.

To continue benefiting producers and consumers of agricultural products requires that CIAT deal with new realities in many areas, of which I will mention three.

First, our research capacities must evolve with the rapid, almost daily, change in science. Second, we must adapt to new directions in the CGIAR system by learning to participate effectively in projects that involve numerous national, regional, and international players. Third, we must respond to the dynamic circumstances of developing countries, which face problems of growing complexity in the production of food and management of natural resources.

Some of these developments are beyond CIAT's traditional field of action. But if we are to continue meeting the needs of our research partners, the Center must join with them in a search for more creative and effective ways to meet emerging challenges.

I look forward to exploring these challenges with you in future issues of *CIAT International* and to helping shape our collective response.

Grant Scobie



## Recent Publications

### Selección Recurrente con Androsterilidad en Arroz

(1995)

Chatel, Marc; Guimarães, Elcio P.

70 pages, 17 x 24 cm, perfect bound, paperback

ISBN 958-9183-67-0

Price: Colombia, Col\$7,000.

Other developing countries, US\$10.

Developed countries, US\$25.

This practical guide gives directions, diagrams, and examples for plant breeders to apply recurrent selection (RS) in rice breeding. It covers the production of recombinant genotypes, active maintenance of the populations obtained, their improvement through androsterile plants or fertile plants, and line selection by pedigree methods or anther cultivation. The RS method is described in five different cases: irrigated rice in Brazil, upland rice in Colombia, rice improved for resistance to blight and RYM virus in Côte d'Ivoire, high altitude rice in Madagascar, and flooded rice in Mali. The manual proposes a nomenclature for populations and lines obtained through recurrent selection, and gives examples for calculating the frequencies of androsterile plants and for mixing seeds of segregating progenies.



### Biología y Agronomía de Especies Forrajeras de Arachis

(1995)

(Also available in English)

Kerridge, Peter (editor)

227 pages, 17 x 24 cm, perfect bound, paperback

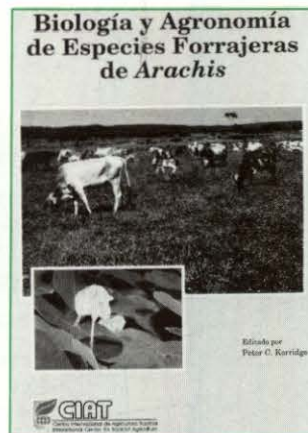
ISBN 958-9183-57-3

Price: Colombia, Col\$9,500.

Other developing countries, US\$12.

Developed countries, US\$30.

This is the Spanish version of the proceedings, published in English in 1994, of a workshop on forage *Arachis* held at CIAT. It includes 17 presentations on topics related to taxonomy, germplasm resources, plant physiology, diseases and pests, nutritive value, and agronomic use. They include previously unpublished data.



### Proceedings: International Symposium on Statistics in Agriculture and Environmental Research (Satellite Conference)

(1995)

(Also available in Spanish)

CIAT Biometry Unit

272 pages, 21 x 27.5 cm, perfect bound, paperback

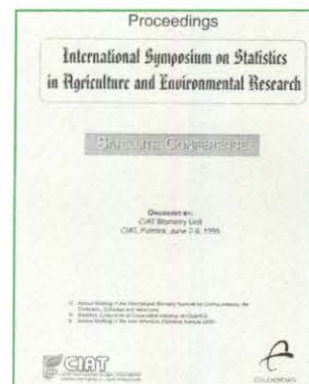
Price: Colombia, Col\$22,000

Developing countries, US\$30.

Developed countries, US\$50.

The 1995 Satellite Conference of the «International Symposium on Statistics in Agriculture and Environmental Research,» held at CIAT in June 1995, brought together the fourth annual meeting of the International Biometric Network for Central America, the Caribbean, Colombia, and Venezuela; the sixth annual meeting of the Inter-American Statistical Institute; and the fifth statistics symposium of the National University of Colombia.

The 15 articles from this conference consider the role and application of statistical methods in the areas of environmental research, biotechnology and molecular biology, and agricultural epidemiology.



### Problemas de Campo en los Cultivos de Frijol en el Trópico

(1995)

Cardona, César; Flor, Carlos A.; Morales, Francisco; Pastor Corrales, Marcial A.

220 pages, 11.5 x 17.5 cm, perfect bound, paperback

ISBN 958-9183-55-7

Price: Colombia, Col\$9,500.

Other developing countries, US\$12.

Developed countries, US\$30.

This manual describes the symptoms of and solutions to field problems in bean crops throughout the tropics. It is designed to help scientists, technicians, extension workers, and farmers identify problems in bean production and storage, and develop appropriate control measures. Color photos illustrate each problem. The text includes the common names of pests and diseases in Spanish, English, and Portuguese.





## PARTICIPATORY RESEARCH PROJECT WITH FARMERS—IPRA DIDACTIC VIDEO



The CIAT Participatory Research Project with Farmers, IPRA, has carried out research since 1984 with farmers and community groups in the Cauca department of Colombia and in other areas of Latin America. Based on this experience, IPRA has trained professionals both to carry out this research and to prepare others to do so. Now IPRA has prepared a new video to reinforce this work.

The 3-part video aid for trainers interested in participatory research methods covers the following topics:

- Essential skills for participatory research with farmers.
- Planning agricultural research with rural communities through Farmers' Agricultural Research Committees (CIALs).
- Strengthening farmer experimentation through the CIALs.

A trainers' guide accompanies the video.

Each section lasts from 10 to 18 minutes. Presently available in English and Spanish, the video will also be prepared in Portuguese, and in collaboration with IRRI in Chinese, Vietnamese, Lao, Tagalog, Malay, Thai, and Bahasa Indonesia. Format: VHS, PAL, or Beta.

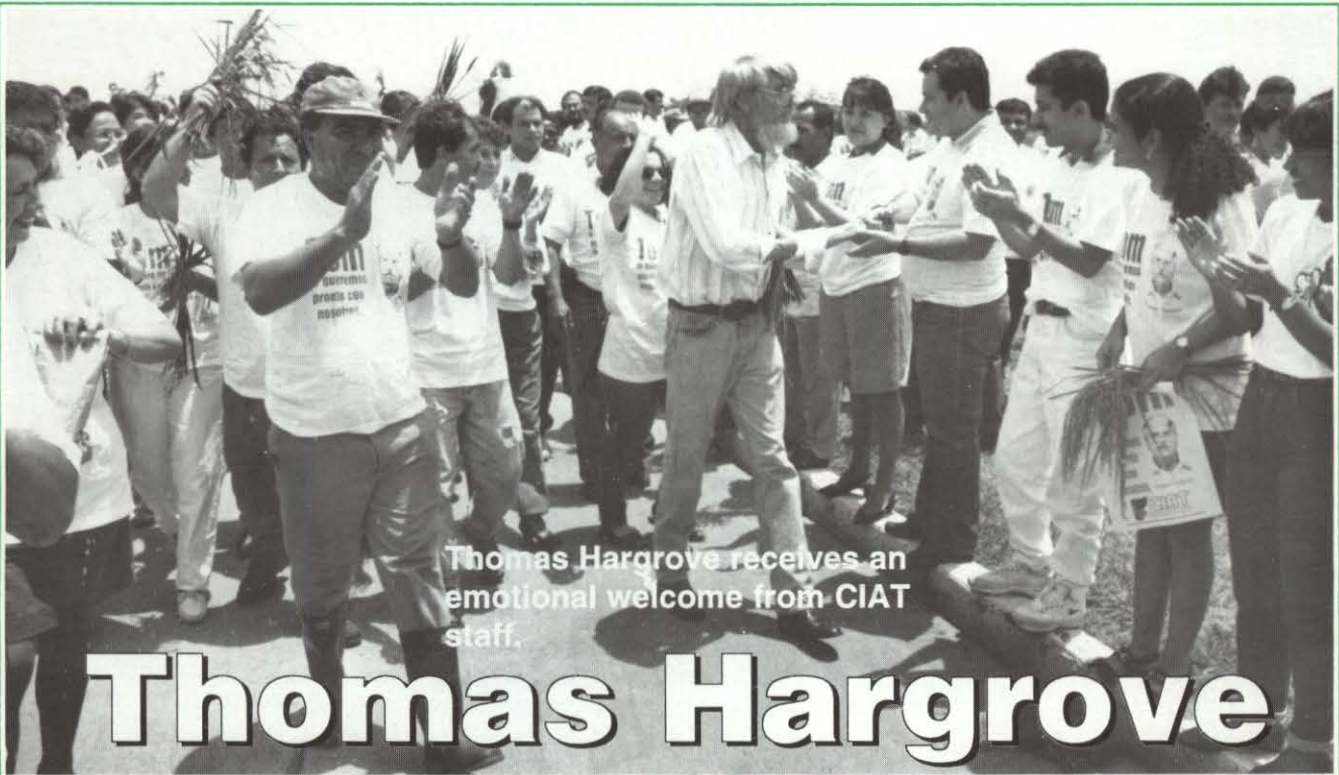
Prepared by the CIAT Hillside Participatory Research Project, funded by the W. K. Kellogg Foundation.

For further information, contact:

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E-mail: L.GARCIA.CIAT@CGNET.COM  
Fax: 1-572-445-0273

Price:  
Colombia, Col\$20.000.  
Other developing countries, US\$25.  
Developed countries, US\$40.





Thomas Hargrove receives an emotional welcome from CIAT staff.

# Thomas Hargrove

## Released after 11 Months of Captivity

**e** IAT is delighted to report that Dr. Thomas Hargrove, editor and head of its Communications Unit, has been freed after being held captive for 11 months by an unidentified group.

Hargrove, who was kidnapped on 23 September 1994, walked into his home in Cali on 22 August at 8:00 p.m., to the amazement and joy of family and friends.

His captivity ended "after 2 days hard march through Colombia's most rugged mountains," Hargrove says.

"I also walked alone through the proverbial Valley of the Shadow of Death—but I'm alive."

The Hargrove family showed tremendous courage from the start in dealing with his plight.

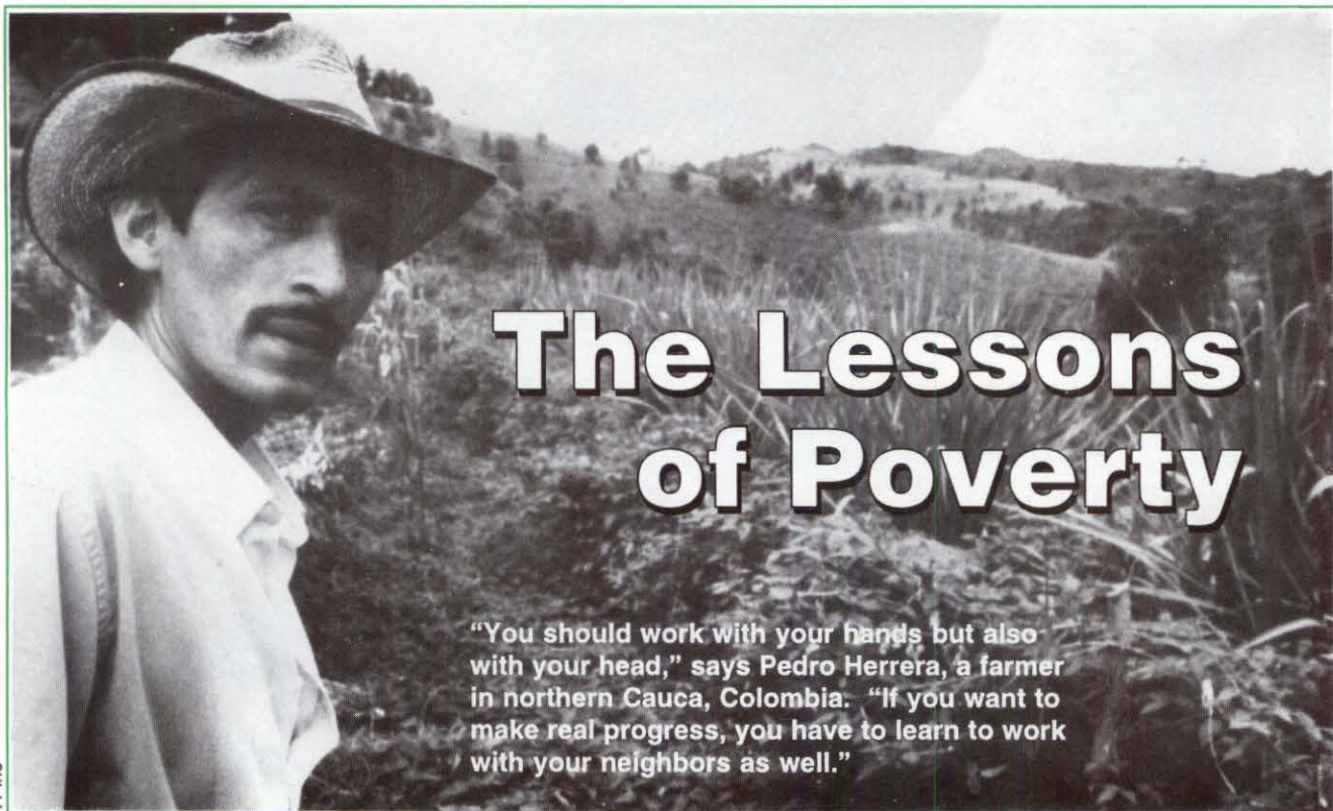
The Center is deeply grateful for the unqualified support it received during these 11 terrible months from various rural communities, especially in Cauca department; from Hargrove's colleagues in the press, radio, and television; and from many friends around the world who sent letters in support of his family and coworkers.

We are also thankful for solid support from the Colombian government and authorities and from numerous local, national, and international agencies and organizations, especially Red Cross International.

In sharing our delight at Hargrove's release, we wish to express our hope that other kidnap victims will soon be released as well. We also underscore our determination to continue working for the welfare of the poor and hungry in the developing world.







F. Pino

**P**edro Herrera felt out of place. The auditorium full of scientists and the wireless microphone were disconcerting to a man who has walked barefoot in the field most of his life. He looked for a familiar face but couldn't see in the dim light of the meeting room.

He tried to begin by greeting the audience, but his voice broke. Accidentally, he pushed the button of the slide projector's remote control. A huge photograph appeared on the screen. It was his mother smiling at Rosita, their parrot.

The presence of a familiar image in a world so different from his own restored his confidence, and he began to talk.

### *A farmer speaks*

"What a beautiful carpet you have; it must be very expensive," he started out. "I also have a carpet in my farm, but it's organic. I've been making it with weeds for the last 8 years. It covers the ground beneath my crops and prevents rainwater from washing away the soil. Also, it holds moisture and allows me to plant during the long dry months."

Pedro Herrera is a hillside farmer in Colombia's Cauca department, who—like so many others—derives a living from the land. CIAT had invited him to talk to researchers about how he manages his farm, and more than a few were surprised by what he had to say.

"See here," he said, showing a slide of a luxurious coffee crop on a 70 percent slope, "this carpet under the coffee trees is at least 20 centimeters deep. It prevents rain from splashing soil onto the plants, soil that may contain harmful insects."

"I also use live barriers to protect the soil," he explains. "I plant sugarcane across the slope, so the soil doesn't slide down. I feed the cane to the cows; the cows provide milk for my family and the market. I give the cow manure to the earthworms, and what the earthworms produce I give to the plants as fertilizer. Even the earthworms work on my farm! And my children are learning, too."



For Pedro Herrera and his family, coffee gives returns over the long term. He also plants blackberries, beans, and *lulo* for a more immediate income. "With these crops I support my family and the farm. The fertilizer, as I said, is prepared by the earthworms. I don't like to apply chemicals to the plants or soil."

"I look, observe, think, and then ask myself why. This is how I discovered that insects won't eat chili peppers. Maybe because they're so hot. I prepared a juice from chilis and sprayed it on my beans. The crop stayed healthy. Later, technicians taught me how to improve this insect repellent. I've learned a lot from them. It must be like going to university."

Like many other farmers in the region, he has worked with the Local Agricultural Research Committees (CIALs, their Spanish acronym) coordinated by CIAT's Hillside Program. Through these committees farmers conduct their own research, receive training, and participate in farm tours.

### *Toward reconciliation*

Those activities have provided a firm basis for CIPASLA, a consortium of 14 government and nongovernment institutions, of which CIAT is one. The consortium works with a community of 6,500 people in northern Cauca department. From this work the consortium is deriving insights and methods that can benefit many other communities in hillside environments.



A community group organized by CIPASLA builds a corral after finishing a course on livestock.

CIPASLA seeks to reconcile individual needs with social objectives, thus alleviating poverty while preserving the natural resource base. This approach is especially relevant in a region like Cauca, buffeted by hunger, poverty, social conflict, and even by nature herself.

In cooperation with technicians from CIPASLA, Pedro Herrera has set aside wooded areas bordering springs and streams on his farm. A barbed-wire fence protects native forest species, which in turn protect the water.

He and other members of the community have isolated 120 hectares of their woodland in the 2 years since CIPASLA was established. In exchange for preserving the natural resources they depend on, CIPASLA offers them opportunities to generate additional income, receive

training, and improve their livelihoods.

Pedro Herrera has his own reasons for embracing change. "When I was born, things were different. My parents had a small farm, but we couldn't make a living from it. My mother used to cry because she didn't have enough firewood to prepare breakfast. My brother and I would work 3 days to earn a bundle of firewood that barely lasted a week. That's when I became determined to take care of the forest."

There was silence in the auditorium . . . and then a roar of applause. Finally, somebody asked, "Don Pedro, who taught you all this?"

And he answered, "Poverty did."

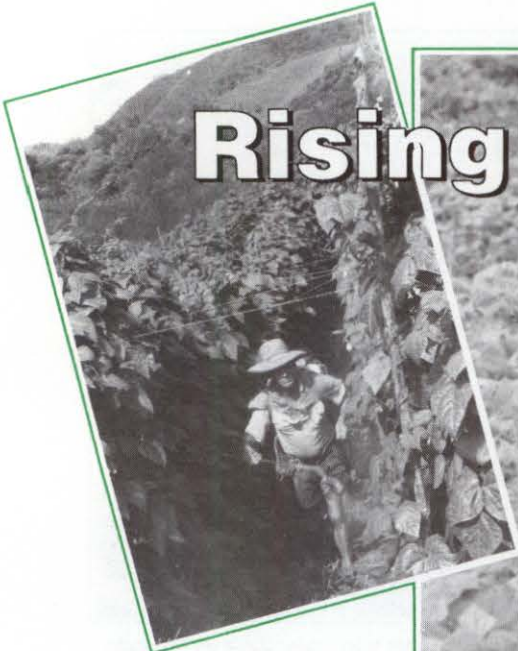
by Alexandra Walter





# IPM and the Smallholder

## Rising to the Challenge



María Teresa Ramón, crop protection specialist with Ecuador's Ministry of Agriculture and Livestock, monitors a bean crop for insect pests with a cooperating farmer in Loja.



Farmers discuss integrated pest management with Gloria Elena Guzmán of the Secretariat of Agriculture in Colombia's Antioquia department.



Once hailed as heroes of the "green revolution," agrochemicals have become the villains of sustainable agriculture after years of overuse.

Some scientists who welcomed the advent of pesticide application in developing countries are now looking for ways to correct the damage caused by indiscriminate spraying. One such scientist is Dr. César Cardona, CIAT bean entomologist. "Entomology has changed a lot; we have a different mentality now," he says.

Cardona leads a project that aims to reduce pesticide use on common beans in the Andean region of Colombia, Ecuador, and Peru. The project is funded by Canada's International Development Research Centre (IDRC).

To accomplish their goal, CIAT and its national partners are developing Integrated Pest Management (IPM) systems jointly with farmers. IPM is an ecologically sound method that combines various pest control techniques, including prudent use of pesticides. A sound IPM strategy enables farmers to obtain the same yield as with current practice but at lower cost.

### *Chemical culture*

A "chemical culture" has arisen among farmers in the Andean region, increasing production costs and posing a serious threat to human health and the environment.

"The problem is serious," Cardona says. "In some areas of Colombia, bean growers spray the crop an average of 11 times during a 90-day growing season. That means they're spraying once or twice a week." In parts of Ecuador, farmers spray an average of five times per crop and in Peru six times.

According to surveys conducted by the project, between 13 and 30 percent of



bean producers have suffered pesticide poisoning in the last 10 years.

Excessive pesticide use has become so deeply rooted in agricultural practice that some growers associate it with manhood. "At 14, I sprayed the landowners' crops five times a week. That job made me a man," says Floro Quille, a farm laborer who lives in Ecuador's southern province of Loja.

Farmers spray more out of habit and fear than need, Cardona says. Researchers found that in many cases farmers are spraying against insects that don't affect yield. Even so, farmers persist because they see pesticides as an insurance policy against crop loss. They'd rather lose their skin than their harvest.

### *The key to adoption*

"If farmers used IPM techniques, they could cut their pesticide applications to only two or three per crop in some regions," the entomologist comments.

But despite the clear benefits, it isn't easy for agricultural scientists to convince growers to adopt new technologies. "Farmers don't believe something just because we say it's true. They have to see proof," says Gloria Elena Guzmán of the Agriculture Secretariat in Colombia's Antioquia department.

The key to success lies in farmer participation. Growers in Antioquia, for example, have found through their own

experience in simple field trials that burning crop residues drastically reduces pest populations.

Farmers are also learning simple but accurate ways to determine when pest populations are high enough to warrant spraying. "We can't expect them to carry a notebook or calculator to the field—some don't even know how to read or write," points out María Teresa Ramón with Ecuador's Ministry of Agriculture and Livestock.

Farmers who agree to participate in an IPM experiment divide their farm into two areas. On one they follow their current pest control practices, while on the other they apply an IPM strategy. At harvest researchers and farmers compare results from the two areas.

So far, the project has conducted about 75 participatory experiments in Colombia, 25 in Ecuador, and 18 in Peru. "In all these trials, yields with IPM have been the same or greater than with current practice, but with a 70 percent reduction in the use of pesticides," Cardona says.

The hard part—achieving widespread adoption of IPM—is just beginning. But at least some farmers are now convinced that, if the Andean region is to achieve sustainable agricultural development, they will have to be its heroes.

Text and photos by Eduardo Figueroa Jr. □

## Women Farmers Take Up New Lives and New Technology

**E** contrary to their husbands' predictions, a group of Colombian farmers' wives has shown that they can work the land and still meet responsibilities in the home.

In addition to cooking, ironing, sweeping, and caring for husbands and children, the women plow, plant, weed, harvest, breed chickens and pigs, and . . . even find time to play bingo.

A mothers' community group provides daytime child care for these and other working women. Without that service, the farmers' wives would not have been able to take up their new lives as agricultural producers.

Formed in June 1994, the group originally consisted of 15 women. But its membership has grown to nearly 50, all from the village of Carmen de Viboral in Colombia's Antioquia department. The women's energy and determination have won them support from public and private agencies—and even from their husbands, as they've watched family income rise.

"They told us we were crazy, that this was man's work," says Amanda Saldarriaga de Castaño, the leader of the group. "We accepted the challenge and we've done well." She got the idea of ☞





A group of women farmers from Carmen de Viboral, Antioquia, Colombia, are applying an integrated pest management strategy in this on-farm experimental plot.

➔ Continued

forming the group at a seminar held for rural leaders at Cali, Colombia. "Only by working together can we get ahead" was the phrase that caught doña Amanda's attention.

At first the women met with resistance. The region's macho tradition proved even stronger than they had expected. But they received vital support from the Municipal Unit for Technical Assistance in Agriculture, which provided sound advice, 30 hens, a sow, and 150 fingerlings.

One member loaned part of her farm, where the group prepared plots for planting fruits and vegetables. But the true test of their perseverance was the fishpond. "The digging was hard, and some of us began to lose heart," the leader says, "but we succeeded by encouraging each other."

A year later the women are beginning to see results. The animals have multiplied, and the fruit and vegetable harvest was abundant. "The profits weren't

huge, but we've all increased our family income," doña Amanda says.

Precisely because they lack experience, these women tend to be more open than their husbands to trying new methods. One innovation with which they're now experimenting in their bean crop is Integrated Pest Management (IPM).

"They're going to be great farmers. We should give them all the technical know-how we have, so they can avoid falling into the trap of excessive pesticide use," says Gloria Elena Guzmán, a pest control specialist with Antioquia's Agriculture Secretariat, which cooperates with CIAT in an IPM project for the Andean zone.

The group plans to establish an "integrated" farm that combines various crop enterprises with livestock production. This new undertaking promises to be as challenging and as varied as their new lives.

Text and photo by Eduardo Figueroa Jr. □

## The Privat Recuperat

**A**n ambitious pilot project for testing and transferring a new forage management system was initiated this year in the piedmont of Caquetá department in southeastern Colombia.

Partners in the project include CIAT, the Colombian Corporation for Agricultural Research (CORPOICA, its Spanish acronym), the University of Amazonía, and Nestlé of Colombia.

The project seeks to boost milk and meat production by promoting the use of legumes to recuperate degraded pastures. These forages enrich the soil by recycling nutrients and fixing nitrogen from the air.

## CIAT Scientist Receives Biotechnology Prize

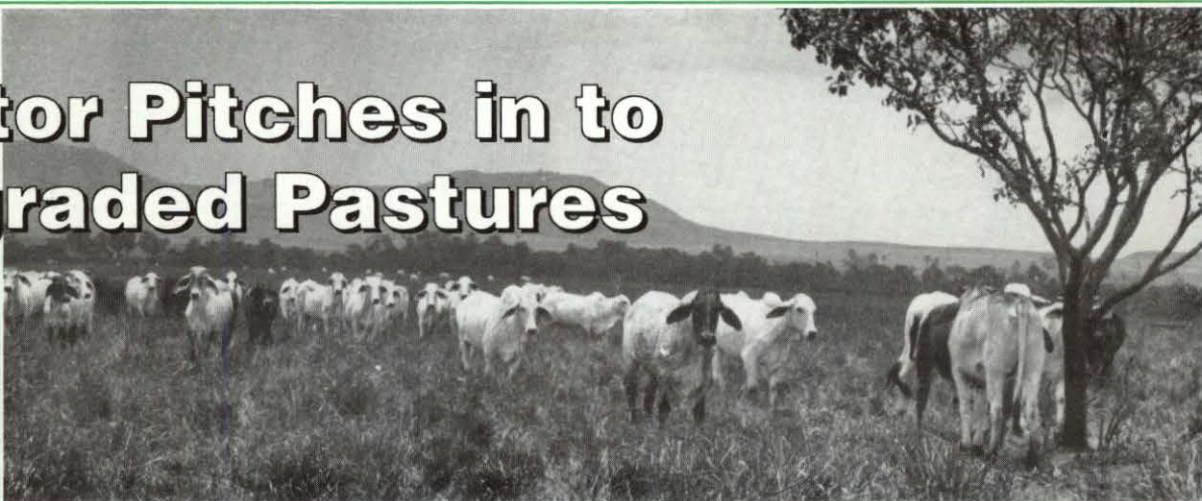
**D**r. William Roca, head of CIAT's Biotechnology Research Unit, has been awarded the first REDBIO medal for nearly two decades of work in applying biotechnology to agriculture.

The prize was created by the Latin American and Caribbean Network for Technical Cooperation in Plant Biotechnology (REDBIO, its Spanish acronym), which is sponsored by the



# Sector Pitches in to Degraded Pastures

M. Antorveza



An estimated 700,000 hectares of the piedmont—part of the Amazonian rain forest—have been deforested and covered with pastures of native and introduced grasses. Ranchers raise cattle on these lands for both milk and meat.

The pastures become degraded with time, and the soils wear out, keeping cattle production low. This is a serious constraint of economic growth in Caquetá, which supplies much of western Colombia's milk and meat.

Scientists from CIAT and CORPOICA have for some time selected forage species that can adapt to the acid, infertile soils of the region. In 1992, CORPOICA released one of these species, the perennial legume *Arachis pinto*, under the name 'Maní Forrajero', or forage peanut.

Now producers need to gain first-hand evidence of its capacity to increase milk and meat production. For this purpose the project's research partners will

test a forage peanut-grass association in farmers' fields with their participation. They will also design prototype systems for plowing and planting forage species under different types of topography in Caquetá.

Nestlé of Colombia, which has operated in the region for many years, is both financing the project and participating in the transfer of new technology to producers. The project will last 4 years. □

Food and Agriculture Organization (FAO) of the United Nations.

CIAT was the first international agricultural center to establish a unit specifically for biotechnology research. At that time, in 1985, "developing countries were just beginning to perceive biotechnology's potential," according to Roca.

Since then the Center has demonstrated that this research can provide scientists with powerful new tools for solving farmers' problems. "We've tried to avoid a rift between pure research in the laboratory and its use to solve agricultural problems of national and international importance," Roca explains.

In an early application of biotechnology, CIAT scientists embarked on genetic improvement of rice through anther culture. The Center made a vigorous effort, with support from the Rockefeller Foundation, to strengthen the capacity of national programs to employ this technology.

As a result, teams of plant breeders and in vitro culture specialists from Argentina, Brazil, Chile, Cuba, Uruguay, and Venezuela have begun to integrate anther culture into rice breeding.

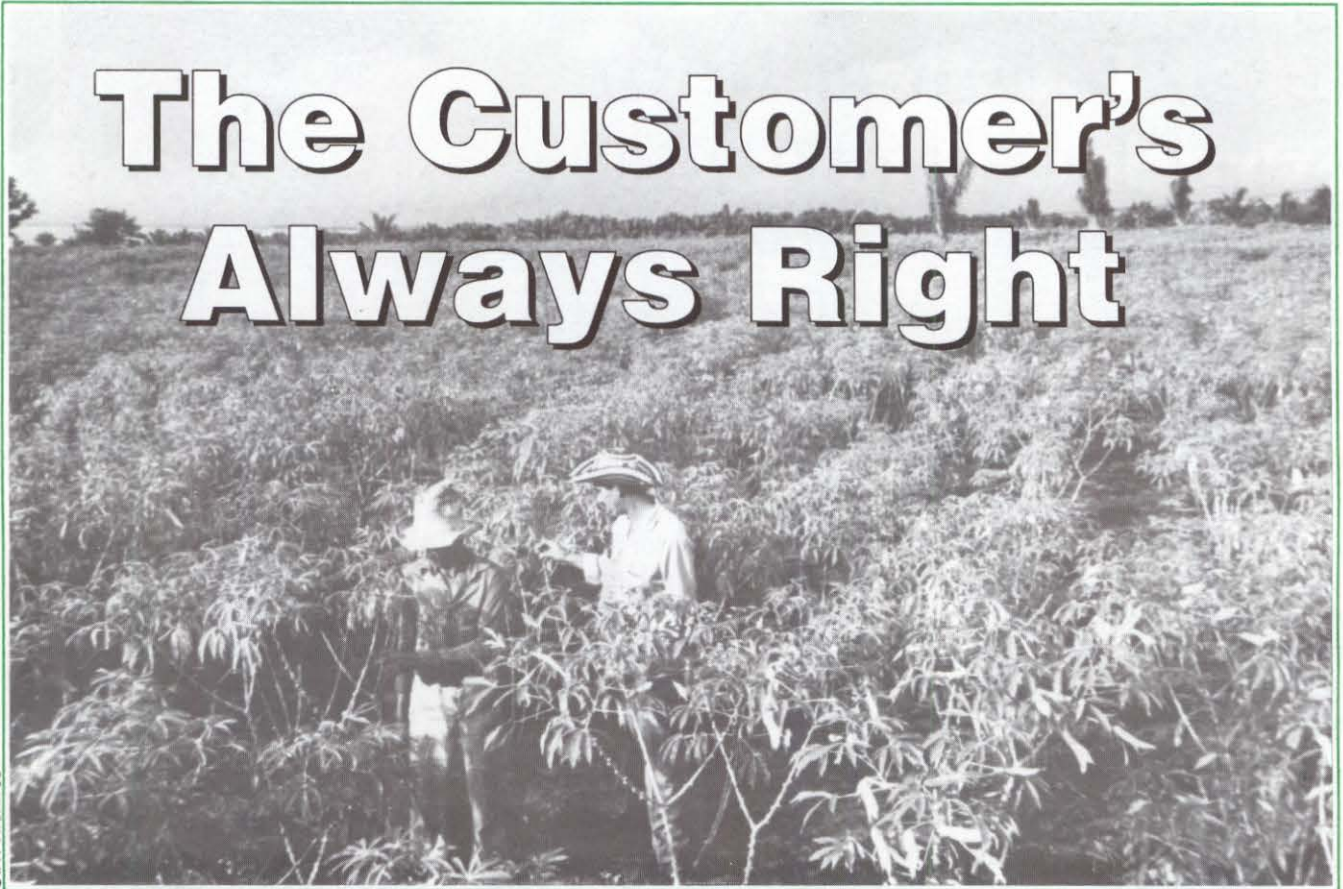
In cooperation with the International Plant Genetic Resources Institute (IPGRI), CIAT has also developed technology for conserving the genetic resources of cassava in vitro. The Center employs this approach to store and distribute the approximately 6,000 cassava accessions under its care. Four countries in Latin America and three in Asia are applying the technology as well.

More than 120 scientists from Latin America and the Caribbean have participated in CIAT training on agricultural biotechnology in the last 6 years. □



# The Customer's Always Right

CIAT Archives



**R**

esearchers have learned a lot in the last decade or so about basing technology design squarely on users' needs. Now, cassava producers and processors on Colombia's north coast are learning a similar lesson about satisfying their clients' demands.

The experience nearly cost them two-thirds of their market for dried cassava chips, established in the early 1980s to meet the needs of Colombia's fast-growing animal feeds industry. CIAT and national programs organized processing cooperatives for small-scale farmers, thus offering a stable secondary outlet for fresh

cassava, whose price fluctuates wildly.

Since then, more than 150 drying plants have opened up, and chip production has risen to around 35,000 tons per year. Farmers have increased both cassava yields and the area planted, which grew by 40% in the second half of the 1980s.

### *Too good to be true*

In a recent survey of farmers in Socorro, where the first plant was set up over a decade ago, most farmers claimed that their lives had improved markedly, according to Veronica Gottret, CIAT economics associate.

The new market for cassava had raised farmer's incomes and brought them major social benefits, including better schooling.

Sound too good to be true? It was. To their consternation, in early 1994 farmers heard that the feed mills, their main customers, had imported 20,000 tons of dried cassava chips from Indonesia. Orders for their own product ground to a halt in midseason. Previously busy plants stood idle. Incomes nose dived.

The farmers lost no time in finding out what had happened. Through their associations, they



wrote letters of complaint to government officials and to the feed mills. The government responded promptly, dispatching the deputy minister of agriculture to the north coast to investigate the problem. A few days later, CIAT's Cassava Program leader, Rupert Best, was summoned to a hastily convened meeting in Bogotá to help decide on a course of action.

The feed mills had switched suppliers for several reasons, the main one being price. Colombia had begun to open up its economy in the early 1990s, exposing domestic industries to fierce international competition. Asian producers offered dried cassava for considerably less than the local product.

Price was not the feed mills' only concern. They complained that the processing plants were unreliable and slow to deliver. Supplies were often adulterated, sometimes including microbes that limited the chips' use in the balanced feed rations needed to raise poultry and pigs.

### *Full circle*

These problems could be largely overcome in the medium term, according to Gottret. Many of the farmers who started the drying plants in the 1980s are gradually handing them over to their better educated but landless children, who tend to make better managers.

The main challenge now is to regain competitiveness by driving down prices. "The wheel has turned full circle," Best comments. "When we started

Researchers are pursuing a grass-roots approach that places much of the responsibility for identifying constraints and guiding the search for solutions on farmers' shoulders.

work in the early 1980s, farmers faced a market problem. That problem has been solved. What we need now is more yield-increasing technology to reduce per-unit root costs." The potential demand is high: provided the price is right, the feed mills say they can absorb up to 150,000 tons of chips yearly.

The government has demonstrated its confidence in the industry's future by promising a sizable injection of cash to boost cassava production and increase efficiency. The country will invest up to US\$5 million in research and development over the next 4 years. The money for research, amounting to nearly US\$0.5 million, will be channeled through CIAT and the Colombian Corporation for Agricultural Research (CORPOICA, its Spanish acronym).

Researchers are pursuing a grass-roots approach that places much of the responsibility for

identifying constraints and guiding the search for solutions on farmers' shoulders. "We have to take advantage of our past experience with farmer participation in research. The essence of this approach is that farmers own the process," explains Antonio José López, CORPOICA's research coordinator for the region.

Some of the money will be spent on launching cassava production and processing in an area, Montes de María, whose traditional crop, tobacco, is in decline. The area looks suitable for cassava and could help to meet the current shortfall in demand, according to CIAT economist Guy Henry.

But much of the cash will go towards revamping existing processing plants and tightening up their management through training. "The emphasis here is on staying competitive," Best says.

It's just as well. In recent years, private-sector entrepreneurs have moved into the cassava processing business, opening up plants alongside those of the cooperatives launched in the 1980s.

The long-term future of the cooperatives depends on their efficiency. "Those that can become entrepreneurial will survive, but some are probably not going to make it," Best says. Tailoring the product to the customers' specifications and delivering it on time will be vital.

by Simon Chater



# Harvesting "Grey Literature" for a Greener World

**7** he CIAT Information and Documentation Unit (IDU) has received a grant from the Kellogg Foundation to compile and disseminate information on resource management in tropical America.

The project targets "grey literature," information that has never been published, or has been published in a nonconventional form or for limited distribution. Examples include annual reports, surveys, policy documents, statistics, and maps.

"We know by personal experience that many research bulletins, communications, and periodic reports never see the light of day," says Dr. Raul Vera, leader of CIAT's Tropical Lowlands Program. "The quantity of valuable local information may far exceed that of information published internationally in refereed journals."

"Grey literature can contain invaluable information not currently available in conventional literature," explains Elizabeth Goldberg, IDU head. "It can fill gaps. It can document research, or indigenous or popular knowledge that would otherwise be lost."

"We know by personal experience that many research bulletins, communications, and periodic reports never see the light of day."

The information will be compiled with the collaboration of national programs in Bolivia, Brazil, Colombia, Costa Rica, Honduras, Nicaragua, and Venezuela. The multi-institutional effort will include universities as well as national, regional, and international research centers. Many of the institutions involved are already among CIAT's research partners.

The 3-year program will begin with analysis of existing information to identify gaps. Then local partners will begin to search for documents. All the information will be maintained as regional and international databases, to be published on compact disc and as alert bulletins. Copies of source

documents will be available on request.

"Researchers, extension agents, development specialists, and decision makers in Latin America will benefit from access to this information," Goldberg says. "It will also be disseminated worldwide through the AGRIS database of the Food and Agriculture Organization (FAO) of the United Nations."

"Our countries need to consolidate their information systems. To do this we must cooperate with local institutions, neighboring countries, and the world," says Nancy Andara, librarian at Venezuela's Central University, one of the participating institutions.

The information to be documented will cover resource management in three important agroecoregions of tropical America: savannas, hillsides, and forest margins. CIAT conducts research on all three of these environments. They also coincide with areas covered by the global initiative for Soil, Water, and Nutrient Management (SWNM) of the Consultative Group on International Agricultural Research.

by Gail Pennington