



## SWIMMING

AGAINST THE TIDE:

INTEGRATING BIOLOGICAL

AND SOCIAL SCIENCE

“OF ALL THE CGIAR CENTERS

THAT I HAVE WORKED WITH,

CIP DEMONSTRATES BY

FAR THE CLOSEST INTEGRATION

OF THE SOCIAL AND THE

BIOLOGICAL SCIENCES”

G. EDWARD SCHUH, CHAIR, CIP EXTERNAL

PROGRAM AND MANAGEMENT REVIEW, 2002



In what was a radical proposal in 1978, CIP’s social scientists tried to convince a skeptical audience of biological scientists that technology development must go beyond simply addressing the biological constraints that limit food production to consider the social context in which agriculture takes place. First and foremost, they argued, this meant understanding and working with farmers, who they saw as innovators conditioned by social, cultural, and economic factors, as well as by their physical environment. That particular point of view contrasted with the predominant thinking then guiding CGIAR research, according to which centers were seen as the major source of innovation, producing technologies that were passed down to farmers through national research and extension programs.

“At the time, most CGIAR research was conditioned by notions that undervalued farmers’ capacities and idealized the production of

finished technologies,” says anthropologist Gordon Prain. “In this way of thinking, farmers occupied the fields of tradition, while high-tech laboratories and experimental stations represented modernity.”

Placing the focus on technology was difficult to resist. The Green Revolution was at its height and its results seemed almost miraculous. Even so, problems were emerging that raised important questions about the effects of technology on the environment and health, and the extent to which it was reaching poorer farmers who worked in complex, marginal farming systems.

Prain credits CIP’s founding Director General Richard Sawyer—a powerful exponent of traditional biological science—and Gelia Castillo—the Center’s first female board member and a rural sociologist—with the institutionalization of interdisciplinary methods at CIP. “Sawyer and Castillo were swimming against the tide,” Prain says, “a fact that was evident in the Center’s 1975 external program and management review which cautioned against using “core” resources to support noneconomist social science positions.” Nevertheless, with Sawyer and Castillo’s backing, CIP social sciences department head Douglas Horton was able to establish an eclectic mix of

social science disciplines and methods within the Center’s research program during the 1980s.

#### **FARMER BACK TO FARMER**

The first formal expression of CIP’s new approach to the social sciences was the farmer-back-to-farmer (FBF) model developed by an anthropologist and a plant physiologist. The model holds that research begins and ends with the farmer and the community and, of necessity, involves an interdisciplinary focus. Within the FBF philosophy, research and technology transfer were seen as parallel activities rather than as sequential steps in which responsibilities were handed off from agency to agency as a technology moved through the so-called development pipeline.

Prain recalls that the FBF model grew out of work in the high Andes on potato management practices designed to reduce postharvest losses. In the early 1970s the Center’s postharvest specialists, all of whom were trained in industrialized countries, recommended the purchase of solar dehydration machines, so-called “black box” drying units, to improve traditional processing of potato products. CIP social scientists, however, determined that farmers were unlikely to adopt the technology if it

SOCIAL SCIENTIST THOMAS WALKER EXCHANGES VIEWS WITH PLANT BREEDER JUAN LANDEO AND FARMERS DURING A FIELD DAY IN HUANUCO, PERU, ORGANIZED TO CELEBRATE THE RELEASE OF THE AMARILIS POTATO VARIETY.



involved additional cost. Farmers reported that their most important constraint following the harvest was the time required to peel potatoes for processing. In short, what they needed was better peeling equipment, not black box dryers.

Research on storage issues provided similar results. While the initial focus of CIP's postharvest research was on reducing storage losses of potatoes headed for the consumer market, surveys by CIP anthropologists showed that seed deterioration was a far more urgent problem. The solution that emerged was diffused-light seed storage, which contributes to slower, sturdier sprout growth and toughening of the skin of the tuber. The inexpensive construction of household

stores or the adaptation of existing spaces within the home led to significant reduction in losses and improvements in seed quality.

The lessons learned: farmers' involvement shortens the time needed to evaluate and eliminate unacceptable technologies that are not suited to the social context in which they live and operate, and farmer innovation improves adaptation to local conditions.

#### **A GENETICIST'S POINT OF VIEW**

The FBF approach provided the first decisive example of how the social sciences could be integrated into and even help shape CIP's research portfolio. "Today, the social sciences are a basic part of how CIP plans, conducts, and evaluates its science," says plant breeder Meredith Bonierbale, who heads up the Center's crop improvement and genetic resources program. She points out that the Center's economists and anthropologists provide perspectives that help biological researchers to make better decisions and establish boundaries for priority setting. "Because of social science involvement in technical research at CIP, our biological scientists are working earlier with farmers than they might ordinarily. The result is that we can target resources more effectively

and are far more likely to produce successful technologies,” she says.

For example, in the Center’s breeding program the perspective provided by social scientists greatly improves the chances of producing varieties that not only are suited to local conditions and constraints, but will also respond to farmers’ particular circumstances and to the demands of the marketplace. “What we’re trying to avoid is having a backlog of technologies on the shelf and the added expense of then finding ways of getting them out into the world,” Bonierbale says. Interaction between the disciplines, and especially with farmers, Bonierbale says, also optimizes the time and resources of individuals with different but complementary points of view. In this way research products become collective outputs of scientists and farmers, and stand a better chance of succeeding.

#### **NEW INTERDISCIPLINARY EXPERIENCES**

In recent years CIP has worked hard to incorporate farmers into mainstream research through farmer field schools. This program, spearheaded by a social scientist specialized in extension, has been successful in advancing

farmer selection of late-blight-resistant potatoes, integrated pest management, and sustainable urban agriculture. Bonierbale notes that the field school methodology—developed by the UN Food and Agriculture Organization for use with rice farmers—was first adapted to root and tuber crops by biological scientists working in Asia and was later championed at CIP headquarters by a plant pathologist.

In a similar vein, the Center’s postharvest team of biologists and social scientists is using the concept of “positioning” products in the marketplace to safeguard biodiversity and reduce rural poverty. By creating product development models that link subsistence farmers to potential markets, they hope to improve rural livelihoods and at the same time contribute to conserving the diversity of traditional root and tuber crops by giving farmers an added incentive to grow them.

“The 2002 external program and management review,” Bonierbale concludes, “was right to recognize CIP’s integration of the biological and social sciences. At many research institutions the social sciences are considered to be a service activity; at CIP they are part of the mainstream, an irreplaceable part that we would not want to do without.”