

# TAPPING THE FARMERS' WISDOM

*Farmers are becoming active participants in research rather than passive recipients*

NATHAN RUSSELL

**A** group of agricultural researchers in Africa is fomenting a revolution — not against the powers that be, but against the often cumbersome procedure by which new agricultural technology reaches farmers on this continent and elsewhere in the developing world.

Among the activists are members of Cameroon's National Root Crops Improvement Program (CNRCIP), which has launched a vigorous campaign to move root crops research onto farmers' fields. In 1982 it carried out 275 on-farm trials, and additional ones took place in 1983.

The objective of this work, according to Simon Lyonga, the program's national coordinator, is to "get farmers to participate more in solving their own problems." It is based on the radical assumption that farmers can be partners in research and that their observations and judgments can help guide researchers in seeking to improve farming methods. "We have always known that farmers are not fools," says Lyonga, "but now we are finding ways to take advantage of their wisdom."

CNRCIP is a cooperative venture involving Cameroon's Institute of Agricultural Research (IRA); the International Institute of Tropical Agriculture (IITA), which is providing technical assistance; and two donors, IDRC and Belgium's General Agency for Development and Cooperation (AGCD).

The problem being confronted by the program is partly institutional. In Cameroon, as in many other countries, agricultural research and extension are in two separate branches of government. Although this arrangement may make for a tidier organizational chart, it is not necessarily in the best interests of farmers, who have to wait a long time to get the benefit of improved crop varieties and researcher recommendations about the best cropping practices.

There are other impediments as well. Most agricultural researchers in the tropics have been trained to work under the artificial conditions of research stations, where they can manage their experiments relatively easily and feel assured that the results are reliable. These researchers are understandably reluctant to venture out into the much less certain environment of a single-hectare farmstead.

Researchers have also been hampered by a feeling that, before releas-

ing a new variety or technique to extension, they must be absolutely sure that it will succeed. Otherwise, if the innovation turns out to be a failure, their credibility with farmers may be irreparably damaged. True enough. But how will researchers ever achieve certainty about a new variety or technique until they have gotten farmers to try it?

Tapping the farmers' wisdom is no easy task, according to Herman Pfeiffer, an agronomist working with CNRCIP. It has taken him many hours of discussion with farmers to penetrate the inner logic of their often complicated farming systems and to understand the terms of reference they use in talking about their cropping decisions. But only by making this kind of effort can researchers establish what Pfeiffer calls a "continuous dialogue with



*Cameroonian farmer in an on-farm sweet potato trail. Photo: Nathan Russell/IITA*

farmers." And only through such a dialogue can researchers learn how best to intervene in traditional cropping systems with new technologies and afterwards determine whether the intervention was a success.

The on-farm trials carried out by CNRCIP in 1982 were of two types: researcher-managed "verification trials" and farmer-managed "demonstration trials." The former were conducted in southern and central Cameroon in cooperation with development organizations, church groups, and large farmer groups. The plots were laid out very much as they would be at an experimental station. Researchers made all the management decisions and evaluated the results.

The demonstration trials were much more the farmers' affair. Individuals or groups of farmers provided the land and all the labour, taking the yield as

their reward for participating. Each trial compared two improved sweet potato varieties with a local one commonly grown by the farmers. At harvesttime farmers came together for a field day to harvest the crop and make their own judgments about which variety yielded the most and produced the best quality tubers. They also considered the pros and cons of various cultural methods and cooked and ate the tubers on the spot to test their cooking quality and taste. At the end of the day, they took cuttings of the varieties they considered best back to their farms for "home multiplication" and further production.

The farmers were impressed with the yield and quality of the improved sweet potatoes. That is saying a lot when you consider that the "least significant differences" of statistical analysis are entirely meaningless to the farmers. Unless they can see a difference, they will continue to swear by their local varieties and traditional techniques. In most trials the best of the two improved varieties performed — statistically — 172 to 351 percent better than the local one.

Feedback from farmers is only one of the benefits CNRCIP researchers are gaining from their on-farm trials. Another equally important one is a stronger link with extension. Extension workers from the Ministry of Agriculture and private development organizations took part in the planning and execution of demonstration trials and also participated in the verification trials. These workers are placing themselves in the forefront of agricultural innovation in their country and becoming better equipped to channel research results into the hands of farmers. This is particularly important for extension workers in remote regions of the country since they do not have ready access to journals, technical bulletins, or other documents reporting the results of agricultural research.

Research and extension must find some common ground in order for both to work effectively. On-farm research can provide just such an opportunity. It puts the two in their proper relation by creating a continuous flow of information between those who generate and those who transfer technology.

Experimental station research is the foundation on which both on-farm research and extension rest. In only

five years CNRCIP has made remarkable progress in its station research, developing a whole range of improved varieties and techniques for on-farm testing and eventual release to farmers. At the experimental stations, researchers are concentrating on activities, such as genetic improvement, that require careful control and on production techniques that are as yet preliminary and too risky for farmers to try on their own.

Through selection from many local varieties and improved ones brought in from IITA, plant breeders have identified varieties of cassava, yams, and sweet potatoes that yield well and are resistant to the most prevalent diseases of these crops. Some of the varieties are still being tested; others, having gone through experimental station and on-farm trials, are ready to be released to farmers on a large scale. Among the most promising of these are two sweet potato varieties, Tlb 1 and 527034, which, with funding from IDRC, are now being multiplied by the Ministry of Agriculture, one parastatal organization and the hundreds of farmers who have participated in on-farm trials.

CNRCIP's agronomists are also at an advanced stage in their work. They are putting together "packages" of improved cultural practices that should help small-scale farmers get the maximum return from improved varieties. Some of these practices are already being tested in farmers' fields.

The program's rapid progress is due in part to its capacity for self-criticism and its intolerance of busywork research that, as agronomist Jerome Ambe Tumanteh puts it, "answers questions that farmers never ask." These qualities manifest themselves in the way the researchers work with one another from day to day, in the monthly coordination meetings between IITA and Cameroonian scientists, and most particularly in the program planning meetings held every year just after harvest. In these meetings each researcher reviews past work and announces plans for the coming year. "We really argue it out, and we call nonsense what it is," explains Lyonga. Experiments that have no clear relevance to farmers' problems are either modified or discarded.

These rigorous evaluations serve to clarify the program's objectives and keep researchers from each discipline thoroughly informed about what the others are doing. According to Ambe Tumanteh, the sessions have other benefits as well: "You have to work hard to convince farmers, and these meetings give us plenty of practice."

To appreciate fully the importance of these achievements, it is necessary to view them in the context of international and national efforts to increase African food production, which, according to World Bank figures, has dropped in 25 African countries over the last decade. The technical means are rapidly being developed for arrest-

ing this decline and easing its calamitous effects on African economies. More than a decade of work by scientists at international agricultural centres, in cooperation with their national counterparts, has produced improved varieties of the continent's major food crops and modifications in its traditional farming systems that could go a long way toward alleviating the current food crisis.

What is still lacking, unfortunately, is the means for adapting these varieties and techniques to the diverse ecologies of Africa and transferring them on a massive scale to farmers. The burden of this task must be borne by national research and extension programs, but many of them are still at an

Lyonga, will soon enable Cameroonians to carry the program forward with little technical assistance from outside agencies. CNRCIP researchers have greatly profited from degree training at IITA and from the Institute's yearly root and tuber production courses. These training contacts have also provided IITA with a means for supplying a steady stream of new technologies to CNRCIP for adaptation and testing.

These efforts might have come to nothing, however, had the program not received solid backing from the Cameroonian government through IRA. From the beginning of root crops research in Cameroon, the government has demonstrated its seriousness about this work by offering large



*The results: a good harvest on sale at a roadside market near Buea in southwestern Cameroon. Photo: Nathan Russell/IITA.*

early stage in the slow and difficult process of institution building.

Much is now being done in some African countries to speed up this process through cooperation between international and national groups. CNRCIP is a case in point. The program was rapidly put on the path toward achievement through a creative combination of its own resources and those of IITA and the donors.

It is especially worthwhile to note the roles played by the national and international partners in this endeavour. IDRC and AGCD have provided funds not only to bring about capital improvements, but also to cover operating costs. Many development projects have foundered because donors were unwilling to go beyond their initial investment in buildings and equipment, which, for lack of additional funds, have fallen into disrepair and have never been fully utilized.

The donors have also invested heavily in training, which, according to

enough incentives to attract the best qualified Cameroonians and by making reasonable research allowances available to them. In addition to paying the salaries of CNRCIP researchers and technicians, IRA has provided land, housing, and research facilities. Already the major source of funds, IRA is assuming an ever greater share of the financial burden.

The contribution of the fourth partner in CNRCIP — the Cameroonian farmers — must not be overlooked. Their willing participation in on-farm experiments has proven to be crucial in confirming whether technologies that show promise at experimental stations will really make a difference in farmers's fields. By becoming active participants in research rather than passive recipients of its results, they have taken a radical step toward eventual transformation of food production in their country. □

*Nathan Russell is a writer/editor with IITA, Nigeria.*