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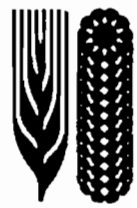

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Expectations and Realities in On-Farm Research*

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Introduction

While most national agricultural research budgets are under increasing pressure, questions are being asked about how much should be invested in adaptive on-farm research. At the same time, national and international agricultural research organizations and donor agencies have a widening agenda, including everything from natural resource conservation to biotechnology, that competes for attention and funds.

It is thus appropriate that we take some time to look back at what OFR has accomplished in the past decade and a half, to judge the degree to which our current position matches our original expectations, and to look to the future. This paper attempts to make a contribution to those ends. It begins by reviewing some of the major expectations that were held for OFR. It then examines some of the problems that made the establishment of OFR more difficult than originally expected. This is followed by a review of some of the major accomplishments of OFR. The final sections focus on what we have learned along the way and the implications for the future.

The Expectations for OFR

There is no need, in 1992, to give a lengthy definition of OFR. It is widely recognized as a term connoting adaptive research that is based on an understanding of farmers' problems and priorities and that aims to generate technology for well-defined groups of farmers. It is distinguished by a set of diagnostic and experimental methods that directs most research to farmers' fields. But we should recognize that this definition encompasses a wide variety of approaches and institutional forms; that it is part of a larger movement in farming systems research (FSR) that occupied much donor attention beginning in the 1970s; and that this movement itself grew out of a long history of other activities related to understanding farming practices and delivering adequate technology. The analysis presented in this paper will focus on OFR, but it should be understood that the comments apply in most instances to the wider FSR movement.

The fact that OFR is now a well-accepted part of our vocabulary is due in part to its ability to address, in a coherent fashion, a number of common concerns about agricultural research. A review of some of the expectations that motivated the establishment of OFR will help place OFR in context and will allow us to assess its current position.

Agricultural technology—One of the motivating factors behind OFR is a belief in the ability of agricultural technology to contribute to the alleviation of rural poverty. A major wellspring for this faith was the success of the Green Revolution, particularly the spread of new wheat and rice technology in Asia and other parts of the world. Although the subject of considerable controversy and debate, particularly in the early years, the results of the Green Revolution have clearly demonstrated the potential of new varieties and new techniques to contribute to improving the productivity of resource-poor farmers (Lipton with Longhurst 1989). To a certain degree, OFR has been an attempt to emulate that success over a broader range of environments.

Farmer knowledge and initiative—This wide variety of farming conditions contributed to another expectation for OFR. The heterogeneity of farming systems in the developing world would obviously require research methods that could generate location-specific technologies. It was also foreseen that a crucial contribution to technology development would come from farmers themselves. It was farmers who were responsible for the elaboration of these varied systems and who were most aware of their characteristics and potential. It was expected that

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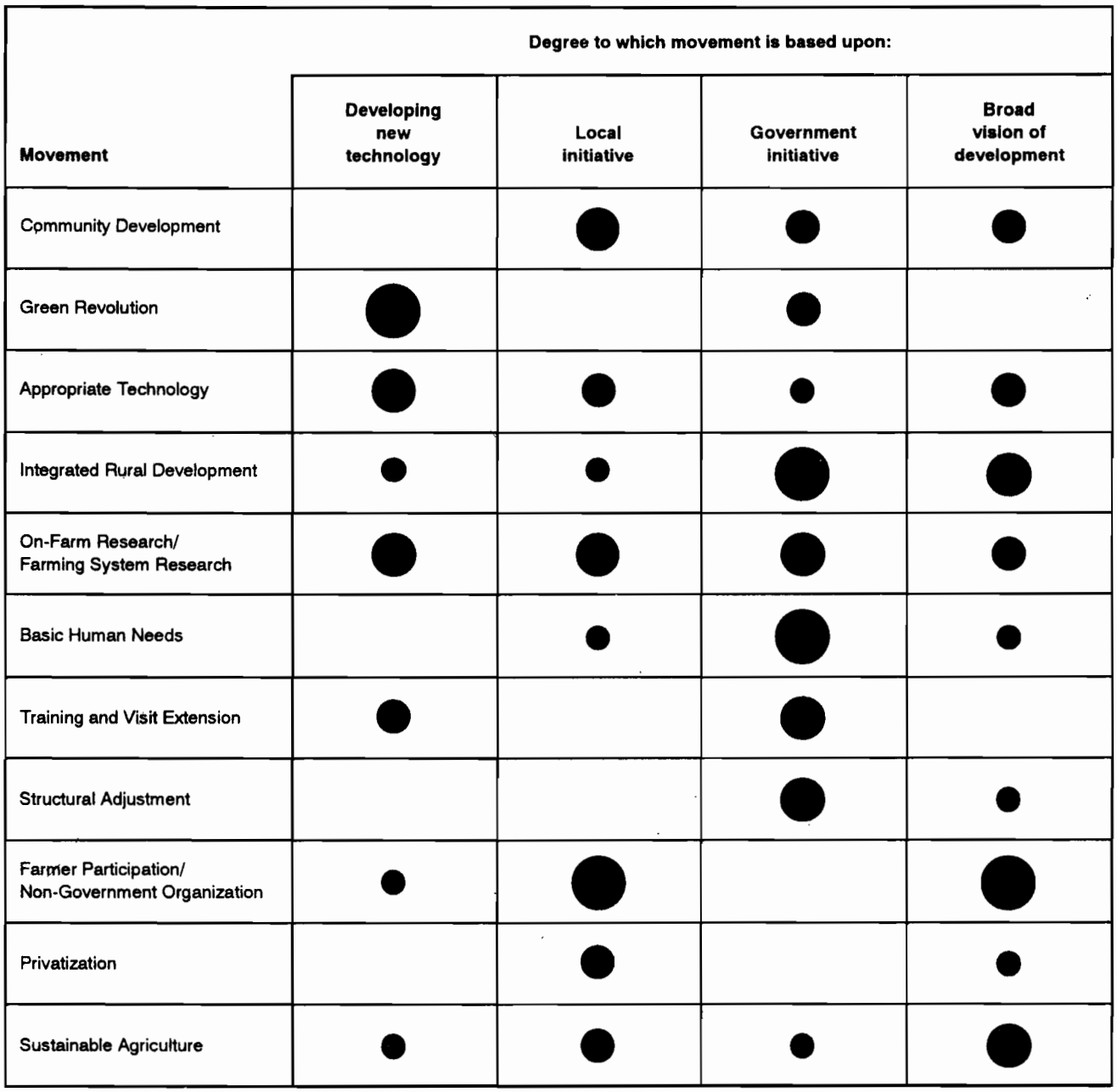
government and local level initiatives would seem to be opposites, for instance, government programs may try to stimulate local activity, as in the case of community development, while a de-emphasis on government may reflect faith in local initiatives (as with NGOs) or merely a faith in the invisible hand (as with privatization). Similarly, faith in new technology is tied to a fairly narrow vision of development in the Green Revolution but is associated with a much broader view in the Appropriate Technology movement.



Note: The size of the circle indicates the relative importance of the factors on which each movement is based.

Figure 1. Characteristics of rural development movements.

The remarkable thing is that, as interest in these various factors ebbs and flows, a particular combination occasionally crystallizes into a movement that provides organization, energy, and direction to donor efforts. This is what happened with OFR/FSR. One thing that distinguishes OFR/FSR in Figure 1 is that these interests and motivations are quite well balanced compared to those of most of the other movements. Moderation is not always a virtue, of course, but this analysis shows OFR as a reasonable and responsible approach that expects contributions from both the government and the grass-roots level, and places faith in the possibilities of technology and in the advantages of a broad vision of rural development. It will be useful to bear in mind this analysis of OFR as we examine some of its failings and its accomplishments and consider its future position.

Unrealized Expectations: Excesses and Omissions

There is no doubt that the expectations for OFR were at times unrealistic. The excesses and omissions characteristic of any movement, combined with competition from continual positioning for donor attention and support, have meant that the FSR movement has been the subject of various doubts and criticism. It is true that the FSR movement has been a 'bandwagon' (Simmonds 1991), and it is well known that bandwagons attract both followers and detractors. The criticism of OFR ranges from good, tough questions (Herdt 1987) to sour grapes (Biggs and Farrington 1991). A recent book on agricultural policy comes to the following conclusion about the FSR movement:

> FSR became overblown in the 1980s due to the almost reckless enthusiasm of aid donors for the concept. Its productivity gains in relation to the resources committed are unproven, and its outcome in terms of increased understanding of farming systems is disappointing. While enormous energy has been expended in preparing FSR manuals, methodologies, guidelines, and newsletters remarkably little material has been produced on FSR results, insights, impacts, or lessons (Ellis 1992:235).

This critique is itself overblown, but it represents a current of opinion regarding the status and accomplishments of OFR. We need to be able to acknowledge and respond to such concerns. Early commentators on FSR foresaw this type of criticism:

> Expectations are running high. FSR is regarded by some as a panacea. But FSR clearly is not a panacea for solving all the problems facing small farmers. The hope is that sufficient progress can be made to sustain FSR's credibility while it grows, in the face of inevitable disappointments (Gilbert et al. 1980:83).

Mistaken assumptions about technology—OFR places considerable emphasis on the ability of new technology to make a contribution to improving the welfare of the rural poor. At least three problems related to this assumption have led to results that are less than expected. The first is that technology development for many farming systems has proven to be more difficult than envisioned. Considerable research skill is needed to provide technological change that proves to be consistently superior under the difficult conditions of many tropical farming systems. Research in Zambia, for instance, has shown significant advantages for improved weed control, yet the labor requirements of extra weeding, the costs and management requirements of herbicides, and the variability in field conditions are such that no technological alternatives have yet proven feasible (Vernon and Parker 1983). The research investment required to improve many farming systems has certainly been underestimated.

A second, related, difficulty has been in providing technology that makes enough of a difference to farmer productivity to warrant the investment of farmers' time and money in acquiring the new technique. A great proportion of resources in OFR has been devoted to tinkering with things like fertilizer or seeding rates whose results are either modest enough to escape the attention and interest of most farmers or require more concerted extension effort.

A third difficulty in relying on technological change has been inadequate attention to targeting. Most technological change requires an investment in inputs or the acquisition of additional skills and

knowledge, rather than the mere rearrangement of household resources. Households will invest in new agricultural technology only if that investment will yield a significant return. Households for whom agricultural production represents a small proportion of income, or who have access only to uncertain product or input markets, will not be likely to risk investing in new technology. Some OFR has been carried out in areas where dependence on agricultural production is minimal, or in countries where the policy environment is not conducive to any sort of investment in farming technology. This is not to say that OFR should not be directed towards the poorest sectors of the rural population, but to highlight the necessity for a clear targeting policy and coordination with other government entities responsible for improving rural welfare, so that agricultural technology development can be most effectively directed. A combination of rural development rhetoric and inconsistent targeting serves no one.

Overlooking the farmer—OFR also places considerable expectations on the abilities of farmers themselves to define problems and to recognize and test solutions. This has led to both excesses and omissions. In the first instance, there has been a tendency to believe that a complete description of a farming system will lead inevitably to the identification of ways of improving it. In a number of instances too much has been invested in descriptions and diagnostic work. This has served to increase our admiration for the complexity and rationality of farmers' strategies, but has often not resulted in any tangible improvement.

On the omission side, practitioners of OFR have shown a disappointing tendency to pay only lip service to the role of the farmer in the research process. OFR, like any other set of research methods, is subject to being carried out in a mechanical and unimaginative fashion. This has been one of the concerns of a considerable literature on farmer participatory research (e.g., Chambers et al. 1989) which in many cases has provided very accurate criticisms of the conduct of OFR.

Institutional capacity—From its beginning, OFR has been seen as a way of improving the effectiveness of national agricultural research and extension programs. Expectations regarding the responsiveness of government organizations have often proven to be unrealistic, however. The weakness of the civil service in many countries, combined with severely reduced budgets and almost total dependence on donor funding for agricultural research, has proven to be a less than ideal environment for the organizational changes implied by OFR. Too much time has been spent institutionalizing OFR as a separate entity, rather than seeing how it can contribute to the more effective functioning of the entire research organization. Shiny new departments and projects do little good if basic systems for managing research planning and reporting are not in place. In addition, location-specific research needs to be organized so it contributes to developing a critical mass of research resources aimed at particular problems.

The desirable versus the feasible—Finally, there have been instances where the breadth of vision of OFR has perhaps interfered with the pursuit of more limited but practical objectives. Complete descriptions of farming systems have often been accompanied by long lists of recommendations directed to an unspecified audience of researchers or policy makers. The systems perspective has at times led to a confusion of the desirable with the feasible (Johnston and Clark 1982:15). There is a great distance between the recognition of a problem and the development of a practical solution. OFR practitioners have at times seen themselves as pivot points for complex policy recommendations, rather than as important players in the slow and detailed process of technology generation.

The Accomplishments of OFR

OFR has grown and matured sufficiently so that in 1992 it need not feel unduly threatened by shifts in donor interest. OFR is a part of many national research programs in Asia, Africa, and Latin America (Merrill-Sands et al. 1989). Many extension services have been able to profit from an OFR approach (Merrill-Sands and Kaimowitz 1989). OFR is firmly established in research and extension programs in Eastern and Southern Africa (Anandajayasekeram and Rukuni n.d.). The methods and perspective of OFR are well known in the literature of agricultural development (e.g., Caldwell 1987, Upton 1987).

OFR is now being asked to pay more attention to impact assessment. It is certainly true that much work in agricultural research, including OFR, has not paid enough attention to monitoring and assessing outcomes. But as we think about how the conduct of OFR can be improved by assessing its impact, we should concentrate on the real value of such an exercise. We should not be overly impressed by the current posturing about impact among donors and others, which often represents no more than an excuse for shifting their directions to accommodate the latest political fashion, rather than an attempt to examine past assumptions, to learn from mistakes, or to modify and strengthen strategies.

Anyone can ask tough questions about impact. The only ones who gain, however, are those who are willing to examine their own expectations and commitments. There are a large number of researchers and extension agents who have long experience with OFR and who have devoted portions of their careers to improving the effectiveness of agricultural research. Keeping their expectations and commitment in mind, it will be useful to provide a brief review of the major accomplishments of OFR.

Technology generation—OFR has been responsible for bringing new technologies to resource-poor farmers. A recent review (Tripp 1991), for instance, shows that a wide variety of institutions in Africa, Asia, and Latin America have experience in generating useful technology through OFR. There is no question that OFR is able to put new technology into the hands of farmers. It is unfortunate that we have not placed sufficient emphasis on monitoring and reporting the results of OFR programs.

Such reporting is important for at least two reasons. First, faced with increasing pressure on budgets and a myriad of alternative proposals on how agricultural research resources should be invested, national and international research institutions need to demonstrate what they have accomplished. OFR has not done a good enough job of analyzing and presenting its results, and it is paying the price for this lack of attention in current budgetary battles.

A second, and perhaps more important, reason for emphasizing the follow-up of OFR activities is to make those activities more efficient. OFR defines research priorities based on an analysis of the conditions and problems of specific groups of farmers and it proposes a research agenda to address those priorities. OFR's advantage over much conventional research is this ability to define and justify objectives. But this is only useful if we are able to come to closure on these objectives: to pursue them towards location-specific technology generation; to apply them to the formulation and pursuit of larger research goals; or to uncover inadequacies in the original assumptions and thus reorient research efforts. If the issues of follow-up and reporting are overlooked, OFR loses much of its advantage.

Knowledge of farming systems—Although it is correct to focus attention on OFR as a method of adaptive, location-specific research, we should not lose sight of the fact that OFR has also greatly enhanced our understand of farming systems and has contributed towards reorienting some broader goals of agricultural research. OFR's impact is greater than the sum of instances of location-specific technology generation. A few examples follow.

OFR practitioners have long been interested in the way that farmers view crop varieties of different maturities (Haugerud and Collinson 1990). Crop maturity is of course an important variable for plant breeders, but in a number of instances OFR has proven to be the necessary link in identifying actual opportunities. In Tanzania, an early maturing maize was accommodated in the minor rainy season and not only addressed food shortages but allowed a more efficient use of the major rains for commercial crop production (Ringia 1991). In Ethiopia, an early maturing maize was used mostly for alleviating food shortages, but also proved to be useful in new intercropping combinations and crop rotations (Negassa et al. 1991). The impact of this work goes well beyond the specific examples; information from OFR has made an important contribution to the way that plant breeders marshall information for setting priorities.

Another contribution of OFR has been to show how plant breeding priorities must take account of the entire cropping system. In Pakistan, wheat scientists have demonstrated how crop rotation in rice-wheat and cotton-wheat systems influences the choice of technology for the wheat crop. This work has led to a significant shift away from selecting wheat varieties for ideal planting dates and toward selecting optimum

varieties for the planting dates dictated by the management of the entire farming system (Byerlee et al. 1986).

OFR has also served to broaden researchers' views of the farming system to include crop-livestock interactions. Experience from locations as varied as Ecuador (Cornick and Kirkby 1981), Egypt (Fitch 1983), and Pakistan (Byerlee et al. 1991) has shown how maize research often must address farmers' needs for adequate fodder supplies and recognize that management of the maize crop is partly determined by the fact that livestock are an integral part of the farming system.

Other characteristics of farming systems, such as the rationale for intercropping (Norman 1977), the importance of labor constraints (Low 1986), and the role of seasonal food shortages in cropping decisions (Collinson 1972) are now better understood by a wide range of researchers. This understanding has already been responsible for the development of new technology through OFR, and, perhaps more important, it forms part of a knowledge base that informs a wide range of research. OFR cannot be seen as an isolated research enterprise, and the information it develops will often be most useful for long-term plant breeding or crop management research strategies that go well beyond location-specific adaptive research.

OFR methods—Another important contribution of OFR has been the development of improved research methods. The comment is sometimes heard that researchers were talking to farmers and experimenting on their fields long before OFR was 'invented'. That argument entirely misses the point that OFR has helped provide much more effective research tools for diagnosis and for experimentation. OFR is *not* merely talking to farmers or planting a demonstration on farm. OFR is a well-integrated set of research methods. It involves carefully eliciting information and motivating farmers' contributions for an analysis of production constraints. The techniques for collecting and organizing that information have been improved over the past decade and a half. OFR also involves doing high quality experimentation under farmers' conditions. Whether farmers or researchers take major responsibility for managing the experiments, decisions on design, location, and method of analysis involve many difficult considerations which have become clearer thanks to the dedicated work of a large number of agronomists and others conducting OFR. Examples of innovative methodological advances developed for OFR in Africa include Anandajayasekeram (1985), Worman et al. (1990), Neeley et al. (1991), and Mutsaers and Walker (1991).

What We Learned along the Way

OFR is here to stay. It has proven its worth as a means of generating technology, as a source of useful knowledge about farming conditions, and as a stimulus for effective research methods. These will remain, no matter what the latest development fashion, buzzword, or donor demand happens to be. The future will not be easy, however, and researchers will want to take advantage of what has been learned along the way. This section outlines a few points that seem to be particularly important.

The complexity of OFR—If one reviews cases where OFR has been successful in providing new technology to farmers, one striking commonality is the complexity of the research path. OFR is often represented in various training manuals as a short series of steps, starting with diagnosis and ending with technology delivery, adorned perhaps with a few feedback loops. The reality turns out to be much more complicated. There are two separate issues that deserve attention. The first involves the quality of the research. Most farmers operate under very difficult circumstances and the skills required to develop adequate technological alternatives are considerable. OFR provides an effective means for organizing a research program, but it does not substitute for well-trained agronomists and social scientists. Table 1 provides a summary of the technical issues that were examined in a series of cases where OFR was able to generate new technology.

The second issue is the flexibility required for successful OFR. In almost no case are the original priorities and hypotheses of a successful OFR program maintained through to technology development. Researchers must be prepared to adjust their program based on the outcomes of successive research cycles. One of the principal sources of such changes is the farmers themselves. In the majority of cases where OFR has successfully

brought technology to farmers, the technology development (not to mention the identification of the research themes and the testing of alternatives) has profited from strong farmer participation. The technologies originally proposed to address particular problems have often been modified or adapted by farmers before widespread adoption is possible. OFR must be able to encourage this type of participation.

Table 2 shows how the research programs of successful OFR were continually adjusted during the course of technology generation.

OFR as part of a larger research strategy— Another point that needs to be addressed is the recognition of a well-defined role for OFR. OFR will be effective only if it is seen as part of a larger

Table 1. Examples of technical issues in on-farm research

Case	Technology	Main types of on-farm experiments
Rwanda	Climbing beans for farmers growing bush beans.	Diagnostic ('minus-one') trials on production constraints; on-farm variety trials (farmer-managed); demonstration of basic technology for growing climbing beans; in second stage, further variety, fertility, and intercropping trials, and agro-forestry trials (farmer-managed).
Ghana	Improved maize varieties, row planting, improved plant spacing, fertilizer use.	Exploratory factorial experiments; screening maize varieties; density and spatial arrangements; NPK response; timing and method of fertilizer applications; verification/demonstrations.
Nigeria	Alley farming of *Leucaena* and *Gliricidia* spp. in yam/maize and cassava/maize fields; use of tree foliage for feeding small ruminants.	Farmer-managed experiments with alley farming; on-farm experiments on management of alley farms; on-farm animal feeding experiments (on-station trials used to get information for technology design early in research process and later to investigate farmers' adaptations to the technology).
Philippines	Dry seeding early maturing rice varieties to intensify cropping patterns.	Adaptive trials (extension-managed) on variety, establishment, fertilizer, weed and insect control; package demonstrated on large plots in farmers' fields.
Indonesia	Insect control and improved plant stand management for maize planted in rotation with maize or upland rice.	Exploratory and verification experiments on plant stand management; plant protection with insecticide included in exploratory, insect control, and verification experiments; experiments on N dose and timing, P dose and variety.
Pakistan	Improved maize variety.	Farmer-managed verification experiment to examine new variety, phosphorus application and early thinning; experiments on phosphorus response; variety experiments (on-station experiments on variety x plant density).
Northern Peru	For beans intercropped with maize: varietal dissemination, change from broadcasting to row planting, increased plant density, fertilizer use.	Variety trials; variety x planting systems trials; exploratory trials to investigate establishment problems; fertilizer and *Rhizobium* inoculation.
Panama	For maize in a maize-bean rotation: chemical weed control and/or zero tillage, row planting and improved plant spacing, elimination of use of inappropriate fertilizers.	Exploratory factorial experiments on density, weed control, N and P; types of chemical weed control; demonstrations on improved plant density and spatial arrangements, chemical weed control, and zero tillage.
Central Peru	Diffused light storage of seed potatoes.	Small demonstration and test stores in highlands; research/ demonstration stores in coastal locations.

Source: Tripp (1991).

Table 2. Examples of modifications in the process of on-farm research

Case	Identification and modification of priorities	Farmer modifications to technology
Rwanda	Initial research interest in fertility and disease control; climbing beans performed well in variety trials and attracted farmer interest; special interest paid to staking materials for climbing beans, leading to agroforestry experiments.	Farmers chose varieties not only on basis of grain yield but also for grain cooking qualities and production and palatability of leaves; farmers experimented with various intercrops with climbing beans, particularly sweet potatoes and bananas; farmers did not accept row planting of climbing beans.
Ghana	Best-bet maize varieties identified rapidly; emphasis placed on developing practical recommendations for planting and fertilizer application; weed control research postponed; fertilizer recommendations adjusted according to changing prices.	Sighting poles found to be more practical than string for line planting; effectiveness of farmer practice of applying basal fertilizer after germination confirmed in experiments.
Nigeria	Soil fertility initially found to be a more important concern for farmers than fodder production; women as important clients of research.	Management of hedgerows (spacing, structure, pruning) modified by farmers; farmers experimented with alley farms in a wide variety of crops; farmers used hedgerow trees for purposes beyond those originally envisioned.
Philippines	Early cropping systems experimentation identified wet seeding as the most appropriate technology for most of Iloilo, but subsequent on-farm tests showed dry seeding to be superior in certain environments.	Farmers used less fertilizer than recommended; only farmers with light soils used pre-emergent herbicides.
Indonesia	Initial interest in low adoption of improved maize varieties, but no clear differences between old and new recommended maize varieties; plant population and nutrition observed to be problems; hypotheses that high planting densities were caused by fodder needs or poor seed quality rejected in favor of importance of shootfly.	
Pakistan	Farmers' plant population management, and weeding and thinning practices thought to be inadequate, but subsequent analysis showed them to be efficient for managing maize for grain and fodder; densities varied for local and improved maize.	
Northern Peru	Initial interest in disease resistance; more efficient plant type, yield, and establishment; the need to row plant some trials led to discovery that row planting was a feasible technology.	Shallower planting of new variety; development of market potential for new variety; adoption of fungicides as commercial opportunities increased; change in planting distances.
Panama	Interviews and observations showed main problem was weed control; plant spacing and density had to be improved concomitantly with weed control; improved weed control could be linked to reduced tillage to address erosion problems.	Light tractor harrowing substituted for manual chopping of crop residues in zero tillage by farmers with labour shortage; homemade shield devised by farmers to help direct application of contact herbicide.
Central Peru	Initial interest in potato storage changed to focus on importance of seed potato storage, particularly for new varieties; if farmers on coast could store own seed potatoes, costs of production lowered.	Farmers adopted principle of diffused light storage and used local materials to construct a variety of seed stores or to improve other storage techniques.

Source: Tripp (1991).

research strategy (Byerlee et al. 1991). The methods and perspectives of OFR will play a leading role in the organization of adaptive research and will also contribute to priority setting for longer-term research. This priority setting needs to include identification of the relative strengths of the public sector and the private sector in agricultural research. It also needs to be more articulate regarding the role of agricultural technology in meeting national goals for rural development. Agricultural research cannot be expected to bear the entire burden, and national research programs should be very clear in identifying their potential contributions.

Sustainability and bottom-up planning—The growing interest in sustainable agriculture is a reminder that agricultural research needs to address both farmers' and society's needs. There is no doubt that little progress will be made in developing resource-conserving technology acceptable to farmers without following the lead and the lessons of OFR (Harrington 1992). In this context, the image held by some of OFR as simply a way of polling farmers' opinions and summing them up needs to be examined. OFR has placed much emphasis on 'bottom-up' planning, and this remains an important objective. But both researchers and farmers are participants. 'Top-down' technologies have been successfully introduced through the use of OFR techniques. Farmers may not immediately see the rationale for something like alley cropping, for instance, but the use of OFR to discuss, test, and adjust this technology has led to its successful introduction (Reynolds et al. 1991). OFR is not distinguished by exclusive reliance on grass-roots technology development, but rather by a respect for grass-roots knowledge and aspirations. Ideas for technological change may come from anyone; there is an open forum. The touchstone of the OFR perspective is whether or not the research proceeds with a consideration for the ideas of the farmers and an acknowledgement of the tradeoffs involved in adapting technology to their conditions.

Institutional development—Finally, a particularly important lesson we have learned along the way is that OFR cannot substitute for strong national institutions. OFR has both been part of the solution and part of the problem. OFR has been part of the solution in offering an effective way to organize adaptive research. There are many instances where national research programs are more effective at targeting technology generation and more efficient at utilizing field-level data because of OFR. The management of OFR has proven to be less than straightforward, however, and it is only recently that a comprehensive set of guidelines for the organization of OFR has become available (Merrill-Sands et al. 1991).

But OFR has also been part of the problem in the sense that its presence in national research programs is often due to special donor projects. The proliferation of individual donor projects undermines the capacity of national institutions to take decisions or define overall strategies (Morss 1984). In Zambia, for example, 20 different donors fund over 150 projects in the Ministry of Agriculture (Kean and Wood 1992). It is recognized by many that a long-term commitment to institution-building in Africa is necessary (Eicher 1989). It is currently fashionable to be quite critical of the performance of national agricultural research programs, but current donor strategies, although often presented in terms of 'capacity building', may weaken rather than support national programs' ability to adapt the methods and perspectives of OFR to their own goals. OFR has a much better chance for survival in a stable institutional environment with long-term funding and career prospects, rather than as part of a short-term special project.

Conclusions

In considering the future of OFR, it may be best to return to the four expectations that contributed to its growth. We pointed out that the role of technology, support for government institutions, a faith in people's own skills and knowledge, and a sense of awe regarding the complex systems that farmers manage, were four strong motivations for the development of OFR. We also saw that these factors play an important role in many other rural development movements. To the extent possible, it would be sensible for those involved in rural development to focus on those motivations, which appear to be widely shared, rather than on the particular movements, which are often a source of dissention and controversy.

But it is probably inevitable that development programs and donor strategies will continue to be organized around these types of movements ('new

directions' or 'development fads', depending on one's point of view.) The ideal situation would be to take advantage of the missionary zeal provided by such movements, without getting involved in the missionary self-righteousness that usually accompanies them. Not only are many of the motivations stable through time, but the basic problems to be addressed are constant: limited funds and limited institutions must devise ways of improving the productivity and welfare of rural people whose poverty is embedded in complex and challenging agricultural systems.

OFR is now at a point where it can stop competing as a movement and concentrate on the factors that have motivated its development. Agricultural technology is far from being a complete answer to rural poverty, but we have enough examples of success and of further potential that we believe the investment is well justified. Such technology must be developed in close collaboration with the farmers who will use it, and OFR offers a strategy for appropriate types of research. The current movement toward privatization will undoubtedly contribute to improving the agricultural economies of many countries, and will hopefully make public sector institutions leaner and more efficient. But the invisible hand will not make its presence felt everywhere, and there will be a continuing need for government to address many of the basic problems of resource-poor farming populations. OFR was conceived to help meet those needs.

OFR can make a strong contribution to technology generation and to strengthening local institutions. In doing so it must pay increased attention to the demands of administrators and donors for more precise planning and more competent impact measurement. These are reasonable requests, and will contribute to improving the efficiency of OFR and to ensuring that OFR leads to increasing farm productivity. But attention must also be paid to two other motivating factors for OFR. We cannot forget that OFR is also built on a respect for farmers and their knowledge and aspirations, as well as on a sense of wonder at the complexity of their farming systems. In our rush to measure impact we should not overlook the role that this more human side of OFR plays in the effective management and flow of information in a research organization. It provides much of the motivation and the spirit for the people — researchers, farmers, and extension agents — who participate in OFR. It has been part of the balance of OFR, and indeed of any successful effort at rural development. Administrators or donors who ignore these expectations and overlook the spirit and the beliefs of the people carrying out the work will negate most of the benefits that improved impact measurement systems can provide.

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