

Farmer Field Schools and the Future of Agricultural Extension in Africa

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Abstract

The continuing efforts to stimulate economic growth in Africa through agricultural development reflect the rise and fall of the different 'fads and fashions' in international development over the past 50 years. As the 'poor cousin' in most agricultural development strategies, agricultural extension and education has been particularly affected by the changing trends in external financing. Following the failure of rural development projects to significantly improve the welfare of the rural poor through the mid-1980s, the region witnessed a widespread abandonment of support for large-scale, state-run extension programs; the exception to this being the continued promotion of the Training & Visit (T&V) system by the World Bank. After pursuing alternative policies, such as the support of non-governmental organizations, the 'invisible hand of the marketplace' and, to a lesser extent, producer associations, a growing number of donors and governments have shown a renewed interest in once again backing state-sponsored agricultural extension programs.

Recently, interest has begun to coalesce around the potentials offered by the Farmer Field School (FFS) approach. Drawing upon field data collected from the two oldest FFS programs in Africa, this paper takes a brief look at the main elements in the FFS approach and its transfer to Africa. The results and conclusions center around six key issues: the responsiveness of the FFS approach to local conditions; FFS achievements in facilitating 'systems learning' on the part of farmers and supporting their increased involvement in knowledge generation; facilitation of farmer-to-farmer information exchange; local organizational development and the institutionalization of integrated pest and production management practices; positive impacts on the relationships between farmers, extension, and other stakeholders; and the specific challenges faced by extension in integrating the FFS approach into their programs. Some concluding observations are made on the progress, pitfalls, and potentials of the FFS approach to play a significant role in the revitalization of national extension programs within the region.

Introduction

Despite a renewal of donor interest in supporting national extension programs, a number of serious issues within the domain of extension practice remain to be addressed. While often masked under the new titles and phrases of the current development discourse, the challenges faced today reflect many of the perennial problems that have plagued development efforts over the past 50 years. These include, but are by no means limited to, the challenges of: becoming truly responsive to local conditions and concerns; facilitating constructive inter-organizational collaboration; fostering greater local self-reliance through individual capacity-building and local organizational development; addressing programmatic financial insecurity and low

educational levels of extension staff; and engaging indigenous knowledge, farmer inventiveness and farmer-to-farmer communication. In the case of African agricultural extension, attention has increasingly turned towards a loosely defined collection of 'participatory' approaches, none of which have asserted themselves in any form of operational dominance. Recently, however, interest has begun to coalesce around the potentials offered by the Farmer Field School (FFS) approach, based upon its tremendous success among smallholding farmers in South and Southeast Asia. As a potential template to guide state agencies in building concrete participatory practices into their programs, the FFS approach is increasingly being considered for mainstream

extension practice in a growing number of African countries.

Purpose

The purpose of this paper is to provide an overview of the introduction of the FFS approach to Africa and, through use of case study material, to highlight some of the successes achieved and difficulties encountered in the expanding use of the approach. Following a brief look at some of the key elements in the FFS approach, and its transfer to Africa, the paper highlights six key issues outlined below. Some concluding observations are made on the progress, pitfalls, and potentials of the FFS approach to play a significant role in the revitalization of national extension programs within the region.

Background

Asian Roots. The Integrated Pest Management (IPM) FFS emerged out of a decade of experimentation in implementing participatory farmer training activities in the Philippines, beginning in the late 1970s. Refinements in the Philippine program and the launching of a major new effort in Indonesia in the late 1980s led to the birth of the FFS movement that has since spread across the region and around the world (Pontius et al., 2000). Conceptually, the FFS approach weaves together reinforcing elements of adult education, agroecology and local organizational development (Jiggins et al., forthcoming). The educational focus of the approach is perhaps its most distinct feature, and is described as reflecting the 'experiential learning cycle' proposed by Kolb (1984): concrete experience, observation and reflection, generalization and abstract conceptualization, and active experimentation. Operationally, the FFS are organized around a season-long series of weekly meetings focusing on biology, agronomic and management issues, where farmers conduct agroecosystem analysis, identify problems and then design, carry out and interpret field experiments using IPM – non-IPM comparisons. In addition, the FFS also include a significant focus on group and individual capacity-building. The longer-term empowerment goals of FFS seek to enable graduates to continue expanding their knowledge and helping others learn, and to organize activities within their communities to institutionalize IPM practices. During the 1990s,

an estimated two million farmers were trained through the FFS in South and Southeast Asia (Pontius et al., 2000).

'To Africa with Love'. Through the efforts of the FAO Global IPM Facility (GIF), the IPM FFS approach was first introduced in West Africa through a season-long training of trainers (TOT), and three associated FFS, held in 1995 in Ghana. Since the initial TOT, the Ghana program has continued to expand, both geographically and into new crops. With the establishment of a National IPM Secretariat and support from the Deutsche Gesellschaft fuer Technische Zusammenarbeit (GTz), nearly 6,000 farmers and 400 extension agents have been trained through FFS in integrated production and pest management (IPPM) practices, covering over a dozen different crop species.

Following the efforts in Ghana, the first TOT and FFS were held in Mali in 1997. A National IPM Program was established in Mali in 1998, and in 1999 a major FFS effort on irrigated rice was launched in the Office du Niger (ON), Mali. Through the support of the Dutch government, a second TOT was held in 2000, this time focusing on training farmers who were to organize FFS in their villages in 2001, with technical support from local extension agents. As in the case of Ghana, there are national plans for an expansion of IPPM FFS activities into vegetable, cowpea and cotton production.

At the same time that programs in Ghana and Mali were taking shape, similar efforts were launched in several countries in East and southern Africa. To date, the FAO GIF has helped to start, or is currently working with pilot, FFS programs in over a dozen countries, from Senegal to South Africa. Several of these have moved beyond the pilot stage and are expanding their activities.

Research Methods & Data Sources

The information used in this paper is based largely upon field data collected during an institutional analysis of two of the oldest African IPPM programs, in Ghana and Mali (Simpson, 2001). Qualitative data collection methods were used, consisting of focus group and individual interviews with participating and non-participating farmers, as well as interviews with FFS Program Administrators and Field Staff, District Administrators, scientists, participating

non-Governmental Organizations (NGO) and University Faculty. The first phase of the study was directed towards identifying and making contact with the principle organizations involved with the FFS. This was followed by a widening exploration into the relationships between these different stakeholders for evidence of changes in attitudes and behaviors regarding each other, the generation and exchange of IPPM knowledge and their perception of future possibilities.

In the case of Ghana, field visits were made to 11 FFS sites in urban, peri-urban and rural locations. Sites were selected in consultation with program staff for their relative strengths and weaknesses in terms of local organization development. In the case of the ON, Mali, visits were made to 6 of the 16 villages hosting FFS. Local extension staff members were asked to identify villages with 'high' levels of local organizational development, as well as those with 'weak' levels of development. In total, between the two countries, contacts were made with over 130 farmers, and more than 40 members of the different organizations.

Findings

Findings from the fieldwork are organized around the six key challenges facing extension programs, as mentioned above.

Relevancy and responsiveness of FFS to local concerns. One of the perennial stumbling blocks in African agricultural development has been the lack of relevancy of research themes and extension 'messages' to the majority of concerns faced by the continent's smallholder farmers. Evidence from Ghana and Mali underlines the importance of this issue to the success of FFS activities. In the case of Ghana, the first IPM FFS targeted an irrigation perimeter where farmers were using pesticides, significantly raising the cost of production. During the first FFS, IPPM experimental plots produced a dramatic US\$ 100 cost savings over existing farmers' practices (Ketelaar et al., 1995). After subsequent FFS, reported adoption levels of basic IPPM practices reached 100% within the perimeter. The FFS on vegetables and plantains have also achieved notable success in terms of adoption rates of IPPM practices. These successes appear to be linked with two features: first, prior to holding FFS in new areas, program staffs have been able to identify viable solutions for at least some of the major local problems,

through conducting pre-FFS agroecosystem analyses and technology validation trials. Secondly, site-specific agroecosystem analyses are conducted, with FFS participants, to fine-tune the overall FFS agenda and to target local concerns and select promising technologies for subsequent experimentation. In instances where adequate attention has not been paid to ensuring local relevancy, the results have been predictable.

The strong relationship between desirable program impacts and attention to local conditions is even more apparent in the case of Mali. Historically, farmers in the ON have neither suffered from major pest problems, nor made significant use of pesticides. Although the FFS did attempt to focus on a broader range of non-pesticide resource management activities, it did so in a manner that caused the FFS experimental plots to require greater use of additional inputs and resulted in yields that were at best only marginally better (5%) (Nacro, 2000). Furthermore, many of the technical 'solutions' were tied to improved water management over which individual farmers had little control. Not surprisingly, none of the FFS farmers in the ON, while equally excited by the FFS process as those in Ghana, had adopted the new IPPM practices at the whole-field level.

Systems learning and the generation of new knowledge. The important distinction between the adult education and capacity-building goals of the FFS programs, and the more simplistic information diffusion objectives of most traditional extension programs, is immediately apparent in discussions with FFS graduates. When asked to identify the most significant areas of learning during the FFS, the widespread response from farmers in both programs was 'the bugs.' The focus on insect pest-plant and predator-prey interactions in the FFS offered farmers a truly novel window onto the life and death dramas unfolding within their fields, as well as insight into the role that insect 'friends' play in crop protection. Although most pronounced in the FFS on rice, farmers' fascination with the study of insect population dynamics was widespread in the other FFS as well.

The second most frequently cited aspect was that of the season-long plant life cycle approach. In the case of FFS on rice, this approach allowed farmers to examine such things as the ability of plants to compensate for

vegetative loss, the timing of input application, and water management needs. These two areas – the dynamics of insect populations and plant ecology – constitute the major pedagogic themes of the IPPM FFS. The fact that the majority of farmers walked away from the FFS experience reporting these aspects as their most significant areas of learning is a major achievement of the FFS programs.

In addition to the acquisition of ‘systems-level’ knowledge, FFS participants, like farmers throughout the sub-region (e.g. Simpson, 1999), reported conducting a number of ‘experiments’ after the FFS were completed. The majority of these experiments involved adaptations and new uses of technologies learned through the FFS. The most consistent and striking examples occurred among participants in the FFS on vegetables, where certain management practices, such as the use of neem infusions and mulching, covered in the FFS on tomatoes and cabbages, were transferred to other vegetable crops. As would be expected of any experimental effort, many of these initial adaptations were later rejected. Nevertheless, the fact that farmers recognized the potential of ‘spillover’ and were attempting to capitalize on adapting the technologies to new incidents of practices is of major importance.

Farmers also described carrying out a wide range of additional experiments focused on refining techniques learned in the FFS, as well as developing new variants of IPPM technologies (e.g. different recipes of neem spray). Other than the subject matter of the experiments, however, the FFS did not appear to have a major impact on either the frequency of farmer experimentation, or the basic approach used in conducting experiments. Perhaps most striking is the fact that farmers were not able to relate what their FFS facilitators had discussed with them regarding continued experimentation upon completion of the formal FFS activities. In fact, farmers in all locations had difficulty in understanding what was meant by ‘experimentation,’ even with significant ‘coaching’ from the IPPM Master Trainers and facilitators who were providing the translation during the interviews. The idea of their potential role as knowledge generators, or how they could approach solving different problems, was clearly not well established.

Information flow and farmer-to-farmer communication. As with previous extension approaches, FFS relies heavily on the farmer-to-farmer spread of information to accelerate the diffusion of new ideas. During village visits in both Ghana and Mali, the reported levels of farmer-to-farmer communication of techniques learned through the FFS were very high. Farmer estimates of the number of secondary contacts that they had made outside of their immediate family members ranged from 10 to 20 and, in the case of one highly active woman plantain farmer, over 100 such contacts. The majority of contacts were informal, typically initiated by people from the same village who approached individual FFS participants out of curiosity, although in a few instances FFS graduates independently organized small group meetings. A number of participants mentioned giving unsolicited advice to neighboring farmers, although on the whole this was less common, and in one village farmers reported feeling constrained from ‘telling others what to do’ by village elders. A significant number of farmers reported establishing close, almost apprenticeship-type, relations with one or two other farmers. Both participating and non-participating farmers also reported evidence of non-verbal communication in the form of ‘copying’ certain management techniques.

In terms of the content of these exchanges, the majority focused on specific technologies or management practices. Communication among FFS participants, on the other hand, tended to focus on emergent problems, as well as the spread of second-generation technologies, such as alternative preparations of neem spray. The larger, systems-level concepts, such as interactions between insect populations and plant-soil-water interactions, were reported to be less often discussed, similar to findings in Asia (Rola et al., 2001). Anecdotal evidence suggests that even within the same family, these more holistic concepts may not be communicated. Such observations would seem to be supported by the fact that, despite the novelty and high level of interest in the insects discussed in the FFS, none of the farmers interviewed had continued to use the insect zoos after their ‘school’ activities had been completed. In fact, very few reported carrying out even informal insect scouting in their fields.

Institutionalization and Local Organizational Development. To achieve substantive and enduring impact, training in the FFS has explicitly focused on issues of local institutionalization, both in terms of changes in individual behaviors regarding IPPM practices, and in the development of supportive organizational structures. The impact of the FFS on local organizational development showed two general, yet very distinct, trends which were dependent upon whether or not the FFS were held in locations with any existing structures (cooperatives, village associations, producers groups, etc.) for meeting basic economic needs (Simpson, 2001). In contexts where there were no existing local structures, the FFS tended to serve as the spark among participants to mobilize capital and identify income-generating projects. In areas with existing local structures, the FFS tended to play a much more limited technical input role, with any formal FFS 'group' identity quickly disappearing.

In 8 of 11 sites in Ghana, where there were no existing local organizations, the FFS tended to lead directly to the formation of economic interest groups, which serve as vehicles for members to pursue development objectives. Having gained their initial cohesiveness through the group-building activities of the FFS training, these groups typically went on to establish their own bank accounts, starting with capital generated through the sale of produce from the FFS test plots, and moving on to the collection of monthly membership dues.

Although the major share of the activities pursued by these groups was motivated by economic self-interest, some benefits did spill-over to the larger community. Examples include the clearing of bush around the village, contributions made to the construction of schools, and plans for the repair of local roads. Except for newly formed groups (often times still involved in formal FFS activities), the discussion of IPPM related issues is not reported as a strong area of activity within these groups.

The second trend, observed in five of the six sites visited in Mali, as well as three of the locations in Ghana, involved FFS held in sites with some type of pre-existing, local-level, organizational structure. In introducing the FFS to these localities, no apparent effort was made to work with or through the existing organizations, nor were the IPPM agendas of the

FFS later absorbed into the concerns of the larger organizations. Irrespective of their specific context and histories, the important observation related to these different organizations is that they tended to meet many of the major needs for local action among their members. As a result, there was little organizational impact of the IPPM FFS in these locations. In only two instances did FFS participants report having had more than two meetings since the completion of their field school.

Changes in Relationships. One of the hopes of the FFS approach is that the field schools will serve as a platform for improved exchanges and more constructive relationships between farmers, extension agents, researchers, and other stakeholders. In both Ghana and Mali, farmers reported that their opinions of extension had change significantly through the FFS. By the end of the FFS, most farmers felt that they could not only ask extension agents questions, but, more importantly, that extension agents were perceived as having something useful to offer. The majority of extension agents also made positive reference to this new approach to working with farmers.

Despite these positive changes in farmer-extension relations, vestiges of the former Training & Visit (T&V) systems used in both countries were still evident in the behaviors of individual field agents. A number of agents continue to relate their current activities within the FFS using core T&V concepts and terminologies. More than indicating a simple linguistic artifact, program staff suggested that these references hint at the persistence of top-down attitudes held over from the T&V period. Interestingly, in Mali, farmers still expect extension agents to make repeated visits to 'reinforce' and 'consolidate' the teachings of the FFS, *à la* T&V, because that is what extension agents have always done.

The vastly different organizational contexts within the two countries have greatly influenced the individual character of their inter-organizational alliances. One of the key relationships, at least in terms of potential, is that between research-extension. In Mali, researchers were broadly integrated into the planning and implementation of the initial round of TOT. In the Ghana program, researcher participation has been inconsistent, with some researchers becoming quite resentful of their

treatment in the training program. Despite the differing levels of involvement in training, the degree of post-TOT contact between researchers and farmer participants in the FFS has remained virtually nil in both countries. The inertia of existing research agendas, crushing organizational demands and uncertain pay-offs of engaging in unfocused FFS-based activities were cited as reasons for this outcome. The relationship between national FFS efforts and NGOs showed a similar pattern of differences and similarities between the two cases. In the Ghana program, explicit efforts have been undertaken to forge partnerships between the national IPPM program and representatives of a federation of NGOs. However, only one of these partnerships appears to have taken hold. In the case of Mali, no efforts have been made to date to build partnerships with NGOs, although it is uncertain whether suitable partner organizations exist. The result in both of the countries is that the IPPM FFS efforts are essentially government-sponsored and run activities, and will probably remain so well into the future. Perhaps more significantly, there is little evidence to suggest that the FFS have contributed to the emergence of 'learning communities' that bring together farmers, extension agents, researchers and others.

The most fruitful area of inter-organizational collaboration appears to be between the IPPM programs and other governmental structures and projects. The best examples to date are those that have been stimulated by the interaction between the GTz IPPM project and various stakeholders in Ghana. The project has helped to initiate a national crop protection policy dialogue (PPRS, 2000). In another instance, collaboration was initiated with the tertiary education program for extension agents, being offered through the University of Cape Coast, where course material was developed on the principles and practice of participatory technology development, including elements of the FFS approach (Owens et al., 2001). Perhaps the important feature of these examples is that they have not blindly followed a general call for 'greater collaboration and coordination' but have identified and pursued specific opportunities building upon common interests and secondary resources.

The integration of FFS into existing programs. The operational integration of the FFS approach into the existing extension programs in

both countries has created a number of additional challenges. Interviews with extension staff in Ghana revealed a trend towards the use of an implicit, farmer-to-farmer extension strategy, as well as a major emphasis on local group formation. Although each offers significant promise, in neither instance do current practices show evidence of being based upon an explicit plan. There has been no apparent assessment of the suitability of the TOT in preparing field agents to implement these activities, the requirements for program support, possible follow-on activities, or the potential synergism or conflicts that might exist with other on-going activities.

There also appears to be a growing concern among program staff in both countries over the ability of the TOT to effectively alter the behavior of field agents. In both Ghana and Mali, the weakness in farmers' understanding of and involvement in experimentation was attributed by program staff to the weak educational backgrounds of field staff, and engrained patterns of 'service delivery' behavior acquired during the previous period of T&V programs. This view is echoed by the leader of the GTz-supported project in Ghana, who observed that the level of experimentation among farmers appears to be more a result of the influence of the local extension officer than the FFS process itself.

Critics (Quizon et al. 2000) have increasingly mentioned the issue of financial burden of implementing FFS programs. Although the calculation of training costs is rife with difficulties, estimates of costs per farmer for FFS training in several East African programs vary between US\$ 9-35, depending on whether extension agents or farmer facilitators are used (Dragon, 2001). Innovations such as the use of a decentralized FFS approach in Ghana that have reduced cost levels to US\$ 8-10 per farmer, and a self-financing FFS model in Tanzania (FAO, 2002), provide further options for reducing costs. This route is already being explored in ON, Mali, where two-person farmer facilitator teams are now leading FFS.

Conclusions

Given the historical dearth of positive impacts from traditional service delivery approaches to agricultural extension in Africa, the FFS approach offers a much needed breath of fresh air and hope for the future. While

certainly no silver bullet, with the appropriate care the FFS approach has shown that it is capable of being highly responsive to local needs over a wide range of conditions, and with a wide range of crops. The approach has also made significant strides in providing the opportunity for farmers to acquire an understanding of important 'systems' concepts and relationships. FFS 'graduates' have proven to be willing and able to communicate viable, new IPPM technologies to others in their immediate localities and beyond, and in some cases have made significant contributions to local social development. Enough evidence is beginning to emerge to give hope that, with time, even the fiscal challenges may be overcome.

After decades of stagnation, one of the most uplifting findings is that of the capacity of the FFS experience to bring a sense of real vitality into the interactions between extensionists and farmers. This is perhaps best illustrated through the example of Ghana, where District extension directors are increasingly investing their limited budgetary resources in providing FFS training for their field staff because they believe that, among the choices available, it offers the best potential for generating positive impacts among farmers. The additional knowledge and new attitudes being brought to the field by those extension agents participating in the tertiary education program in Ghana hold the promise of yielding even more substantive changes, and deserves to be watched closely in the years to come.

The bright examples of success shown by the FFS are not without its shadows. If close attention is not paid, the focus and relevancy of the FFS is not necessarily any greater than a more traditional delivery-oriented program. The lack of broad diffusion of the core 'systems' concepts and relationships, around which the IPPM FFS are structured, is troubling. So, too, is the low level of farmers' self-awareness and actualization, in terms of their real and possible roles in knowledge generation. As suspected by extension program leaders, this latter failure may be closely linked with the education levels and training of field agents – an obstacle that may not be surmountable in a single, season-long TOT. In addition to these possible weaknesses, the ingrained attitudes and patterns of behavior acquired under a decade or more of T&V implementation lay close to the surface, and

without continued support to the contrary, may begin to reassert themselves and eat away at the initial gains in improved interpersonal farmer-extensionist relations. There is a chance, too, that the FFS may develop an 'elite' bias, favoring those who are literate and numerate, and leaving out the often majority of illiterate farmers. Already the content of the FFS is based almost entirely on perceptions and knowledge of 'western' science. Those that have the most experience with these views and who have the skills to utilize the printed mediums in which this knowledge is stored have a distinct advantage, to say nothing of the fact that much may be lost in ignoring the accumulated local knowledge.

Perhaps the area with the greatest need, and potential, for improvement is that of local institutionalization. The process of institutionalization, as the enduring change in shared patterns of belief, expectations and relationships, is the key to many of the other issues already mentioned. Ensuring continued relevancy, establishing greater local involvement in knowledge generation, establishing a means through which more broad-based, intra- and inter-group sharing of knowledge and experience can be achieved, sustaining improved relationships with outside stakeholder groups – all are issues that could benefit from a higher degree of integrated planning and a more concrete grounding of the FFS in community-level social interaction. Of particular importance will be an explicit effort to establish an identity for, and build a functional relationship between, the FFS and the communities in which they are held. The potential power of engaging the social capital of existing, viable local organizations, found in many of the region's communities, must not be overlooked. In the long run, the magnitude of the benefits emanating from the FFS and its ability to become an institutionalized local source of information and community problem solving (e.g. Braun et al., 2000) will be closely tied to their establishing a greater, enduring social presence in communities where schools are held. Capturing these potentials, however, will require a fundamental change of how FFS are perceived, from the current notion of 'schools without walls,' to a more institutionally enlightened view of 'schools that never close.'

The encouraging performance of the FFS to date, and the fact that those areas of

greatest weakness have possible solutions, is a source of much hope for the future of FFS in improving agricultural extension in Africa. If FFS programs can maintain their vigilance in avoiding the deadening effects of rote implementation, recognize and respond to areas of weakness, and capitalize on the full potentials of the dynamic adult education and capacity-building themes embodied in the FFS approach, then the upper bounds of potential for widespread and enduring impact are very high indeed. In this regards, the older, more mature Asian programs may offer a glimpse of what the future may bring. To gain these heights, however, fundamental changes will be needed in many of the bureaucratic and attitudinal foundations embodied in most state-run extension programs. The interest in change is, of course, a necessity, but by itself is not sufficient. There must also be a sustained will, accompanied by both an understanding that there is no single answer for all problems, and a willingness to continually explore new ground.

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