PRONAF'S FARMER FIELD FORA

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Introduction

Farmer field fora (FFF) is a participatory and cost-effective tool for empowering farmers to share knowledge among themselves using farmer facilitators. Although less known, FFF is similar to the well-known Farmer Field Schools (FFS) approach to human resource development in agriculture, particularly in integrated pest management (IPM) training on environmentally sound practices. The FFF drew strongly from the experience gained from the FFS approach (PRONAF[1], 2004). The FFF also takes experiences from the "champ de diversité" (CD, diversified field) to refine and reorient the experimentations and in situ conservation of genetic resources (FAO, 2005).

From 1999 to 2003, the International Institute of Tropical Agriculture[2] (IITA), through the PRONAF project, tested and used FFS as a key method to empower farmers and disseminate technologies. However, between 2003 and 2011, the IFAD- funded Cowpea Project, a PRONAF-IITA project, adjusted the FFS model to the FFF approach. IITA has conducted a large number of FFFs in Benin, Burkina Faso, Cameroon, Ghana, Mali, Niger, northern Nigeria, Senegal, and Togo, to name a few countries.

The introduction of FFF by PRONAF/IITA in Benin and its adaptation to the sub-Saharan Africa context is an innovation that has achieved significant success (Agli et al., 2002). Two studies in Benin have assessed and confirmed the effectiveness of FFF on cowpea and vegetable pest management and technology adoption (Goossens and Arodokoun, 2006; Agli, Coulibaly and Adeoti, 2002). The success of FFF has been replicated in a large number of development projects in Benin, Burkina Faso, Mali, and other PRONAF countries. From 2004 to 2005, FFF was used successfully as Farmer Welfare Fora (FWF) by PRONAF and the PPLS (Multidisciplinary Program to Fight HIV/AIDS) in a World Bank-supported national rural development project against HIV/AIDS in Benin. FWF disseminated information on cowpea and other crop technologies and HIV/AIDS and built capacity for choices to sustain and improve livelihoods.

What is the Farmer Field Fora Approach?

Definition

The FFF is a participatory approach developed from the Food and Agriculture Organization's (FAO) FFS model as an alternative learning or problem-solving approach designed to serve the needs of smallholder farmers. It is a participatory and cost-effective tool to empower smallholders with knowledge and information for optimal decision making about adoption of innovations.

The word "fora" is preferred to "school" to reflect the aspect of exchange of experiences and knowledge among farmers, scientists, and extension agents (Navarro, 2008). Both FFS and FFF are based on the non-formal education principle that adults learn best from direct experiences holding relevance for solving their existing or immediate problems (Knowles, Holton, and Swanson, 1998), as indicated by an ancient Chinese proverb: *"If I hear it, I forget it. If I see it, I remember it. If I discover it, I own it for life."*

FFF aim to empower farmers as effective demanders of extension services by strengthening their analytical, planning,

[1] PRONAF: "Projet Niébé pour l'Afrique" (cowpea project for Africa). In 2000, the Swiss Development Cooperation (SDC), the International Fund for Agricultural Development (IFAD), the International Institute of Tropical Agriculture (IITA) and the National Agricultural Research and Extension Systems (NARES) initiated PRONAF project to enhance the development and dissemination of improved and affordable cowpea technologies in west and central Africa. The goal of PRONAF is to enhance livelihoods of rural poor through empowerment and gender-equitable access to cowpea value chain opportunities.

[2] The International Institute of Tropical Agriculture (IITA) is a non-profit organization founded in 1967. It is one of the world's leading research partners in finding solutions for hunger, malnutrition, and poverty. IITA award-winning research for development (R4D) addresses the development needs of tropical countries. IITA works with partners to enhance crop quality and productivity, reduce producer and consumer risks, and generate wealth from agriculture.

monitoring, decision-making and evaluation capacities to the related development of their agricultural businesses.

Objectives

The main objective of FFF is to build the capacities of farmers to become experts in the development of technologies and managerial practices to solve specific problems within the agro-ecological context of farming. The FFF approach strengthens information and knowledge bases of farmers to plan and conduct experiments and use the results to improve productivity. This approach is believed to empower them to act according to their needs.

FFF is a participatory platform for improving decision-making capacity and stimulating local innovation for sustainable agricultural practice. FFF offer community-based and non-formal education to farmers and ensure that experiences and knowledge are shared between farmers, scientists and extension agents. In FFF, discovery-based learning is related to agro-ecological principles in a participatory learning process throughout a crop cycle. FFF develop capacities of farmers to define their own research agenda and follow-up activities. Moreover, they stimulate farmers to become facilitators of their own discovery and learning processes.

For PRONAF, FFF is also designed to achieve the following objectives (Gbaguidi, Coulibaly, and Agbahey, 2010):

- Increase cowpea production and incomes of farmers.
- Protect the environment through integrated and ecological production and protection of cowpea.
- Incorporate farmers' endogenous knowledge and practices in cowpea production and protection.
- Address financial insecurity of farmers.
- Guarantee sustainable and reduced cost of transfer of knowledge and technologies while increasing the competence of farmers and other agricultural development actors.
- Promote farmer-to-farmer extension based on FFF curricula.

Learning Principles and Curriculum Used

The FFF approach is an effective approach to technical education and capacity building. Farmers generate knowledge that is functional and necessary to improve their productivity and livelihoods. FFF help to empower farmers because, along with generating knowledge, farmers become users as well as owners of knowledge. FFF follow eight main principles:

***Working in small groups**:* The fora consist of groups of 15 to 30 farmer volunteers who agree to meet regularly (weekly) for 5 to 6 hours. The group is divided into subgroups of five or six farmers to perform field observations, data analysis, discussion, and decision making.

Comparison studies: The FFF approach is based on the use of comparison studies. Each subgroup has its own farmers' practice (FP) plots and integrated crop management (ICM) plots. In addition to the FFF plots, participatory action research (PAR) plots are installed to investigate or validate indigenous practices and technologies. All the plots are provided by farmers. At the end of the training, the outputs are shared among the farm owners and the participants who perform all the farming activities.

***Field as primary learning material**:* All learning is situated in the field. The field acts as a classroom where farmers learn.

Agro-ecosystem analysis approach: Agro-ecosystem analysis (AESA) is used as a decision-making tool for any farming or post-farming activity or operation. The aim of a FFF is to empower farmers to make decisions based on knowledge, field monitoring, pest and disease identification, and experimentation. Farmers are encouraged to use agro-ecosystem analysis to examine crop production problems, weigh available options, and thereby make informed crop management decisions.

***Season long learning-by-doing platform**:* The training is related to the seasonal cycle of the farming practice being investigated. For cowpea, this extends from land preparation to harvesting and storage.

***Learning materials are learner-developed**:* Farmers develop learning materials (for example, drawings based on observations of their field trials. These materials are always consistent with local conditions, are not very expensive to develop, and controlled by the learners (farmers), and thus can be discussed by the learners with others. At the end of the training, all the materials are kept by the leader of the group. Any of the participants, especially those who may become facilitators, can easily have access to the materials.

***Promoting indigenous knowledge*:** The farmers' innovations are identified, understood, characterized, and improved.

> *"Before all insects are pests for me. But now I know that in my field there are natural ennemies, pests and period for pest damage."*
>
> Athanase Alidjinou Atchakpa, 2002.

***Production of safe crops**:* Farmers are encouraged not to remove plants recovering from environmental or pest injury to promote natural defenses of crops to fight pest and insect attack. In addition, botanical pesticides as well as proper crop and plant management methods are used to reduce damage by insects and diseases. Chemicals are used only when the alternative methods fail. Safe crop production includes biological control of pests and diseases**.** Parasites, predators, and pathogens have long been recognized and used to control insect pests (see text box above). Some vertebrates (e.g., birds) are natural enemies and are also essential for

control systems. Conservation usually implies avoiding inappropriate pesticide applications (herbicides, fungicides, and insecticides all have impact on natural enemies of insects and disease pathogens) or improving soil organic matter necessary for beneficial soil microorganisms to prosper. Habitat protection and development, such as the provision of owl houses or mulching to provide cover for spiders, are more active methods of conserving natural enemies.

Cost Issues of FFF

One of the critical issues about FFF is the high cost of implementation when FFF is compared with the classical technology transfer approach -- training and visit (T and V). However, FFF costs are justified in that FFF are not only a participatory technology transfer approach but build on the capacity of farmers. Moreover, FFF processes cover all plant management practices in the field and beyond. To reduce FFF implementation cost, the PRONAF project developed a strategy based on the transfer of facilitation competence to farmers. The strategy has reduced the cost of the training because the transport and per diem of outside facilitators were eliminated. A study by Gbaguidi, Coulibaly, and Adégbidi (2008) showed that the unit cost of training using external facilitators is $102 USD; that provided by farmers as facilitators is $28. Many have questioned the issue of cost and the quality of the training provided by farmers and external facilitators. A study would be required to evaluate the quality and cost implications of the training delivered by farmers and external facilitators.

The farmer facilitators have successfully trained other farmers in Benin, Burkina Faso, Ghana, Mali, Niger, Nigeria, and Senegal since 2001. In Niger, trained farmers organized themselves into small groups of six to eight farmer facilitators to train farmers in their villages or others in nearby villages. An individual or participant contributes a lump sum of $2 toward the training course for purchase of inputs such as manure, seeds, pesticides, soap, and batteries. In Burkina Faso, crops produced by the farmers during the FFF training are sold, and the money realized is used to sponsor the subsequent FFF training.

Training Outcomes

IITA/PRONAF reports indicate that more than 10,000 farmers have benefited from FFF in the eight project countries (Benin, Burkina Faso, Cameroon, Ghana, Mali, Niger, northern Nigeria, and Senegal). Each country has trained more than 150 farmer facilitators who are used by IITA and other development groups to train more farmers. Field applications of plant-based insecticides such as aqueous extract from neem (*Azadirachta indica*), papaya leaves (*Carica papaya*) and *Hyptis suavelens* have been promoted actively by farmers through the FFF in the nine project countries. Storage techniques such as solar drying, double and triple bagging, and the use of hermetic drums were also disseminated to farmers through FFF and other training sessions. Specific achievements of FFF include promotion of local knowledge and dissemination of sustainable integrated cowpea and soybean production technologies.

Some of the technologies that have spread widely and been used by poor farmers, including rural women (Nathaniels, 2005), were high-yielding crop varieties with pest and disease resistance that results in need for fewer insecticide sprays (i.e., only targeted applications were needed). In addition, use of agro-ecosystem analysis as a decision-making tool, seed germination testing, and use of best cultural practices are associated with the FFF.

The main achievements of FFF/PRONAF in the use of improved plant varieties are noted in the five countries below.

- In **Mali**, PRONAF has produced approximately 20 tons of certified cowpea seeds and disseminated seven varieties of cowpea, including drought-tolerant varieties (CZ1-94-5C, CZ1-94-23-1, and CZ1-94-23-2); Striga- and Alectra-resistant varieties (IT 93K876-12, IT 93K876-30); and dual-purpose varieties (KVx426-4 and *Amary shô*).
- In **Niger**, elite varieties of cowpea that were multiplied and disseminated had these characteristics: major pest resistance (HTR, TN 88-63, KVx30-309-6G, TN27-80, and IT90K-372-1-2); high yield (TN256-80, TN 5-78, IN92E-10, and IN96E-26); dual-purpose (IT96D-759 and TN93-80); and Striga resistance (HTR; IN96-4-5; IN94B-2-1).
- In **Nigeria**, FFF have facilitated the diffusion of nine varieties of cowpea. These are high-yielding grain varieties, such as IAR-00-1006 (1955 kg/ha), IT98K-506-1 (1818 kg/ha), IAR-1696 (1665 kg/ha), and IT97K-499-35 (1579 kg/ha); dual-purpose varieties (IT98K-412-8, IT98K-92-4, and IT98K697), and Striga- and Alectra-resistant varieties (IAR-00-1074 and IT99K-216-24-2).
- In **Burkina Faso**, 12 varieties of cowpea were multiplied and disseminated. The main characteristics of these varieties are: high yield potential (404019-6J, KVx403P-20T, and Moussa); resistance to Striga (IT 89DE-58-6 and KVx542-119); resistance to aphids (KVx741-16, KVx741-14, KVx685-7, and KVx693-9); and serving as a trap crop (with effect on *Striga hermonthica*) (KVx-404-22-2, KVx-396-4-5-2D, and TVU1509);
- In **Benin**, the variety KVx 396-18 was introduced and disseminated.

Complementary Effects of FFF

The impacts of FFF go beyond the limits of the initial project involving cowpea. Farmers trained by PRONAF on cowpea have transferred the practices and technologies learned from FFF to other crops (Agli, Coulibaly, and Adeoti, 2001), as acknowledged by Alexis, one of the trained farmers in Benin.

"I was trained of cowpea IPM but now I'm applying the FFF knowledge on tomato, cotton, maize . . . "

Alexis, Atchakpa, Collines, Benin, 2002.

In Benin, the principles of the FFF model were adapted to form the Farmer Welfare Fora (FWF) to address health issues. About 200 farmers were trained on positive living in the HIV context, farmer vulnerability identification, HIV prevention and management, improvement of natural defense to infections, reducing vulnerability to HIV, and requirements for a healthy body, among other health topics. About 500 rural households have been empowered through the FWF in 25 villages in the past two years (Gbaguidi, Coulibaly, Adéoti, and Allomasso, 2006).

Many projects in PRONAF countries have used the FFF to train technicians and farmers. In Ghana, Niger, and Nigeria, for example, the following IFAD projects have used the FFF approach:

- PAIIP (Programme d'Appui aux Initiatives et Innovations Paysannes d'Aguié) in Niger.
- PSN II – FIDA (Programme Spécial National / UT Ouallam) in Niger.
- PDR-San (Projet de Développement Rural de San) in **Mali.**
- The Community-based Agriculture and Rural Development Programme (CBARDDP) in **Nigeria.**
- RTIMP (Root and Tuber Improvement and Marketing Program) in **Ghana.**

The following IFAD-funded projects in Benin, Burkina Faso, and Niger have benefitted from the FFF approach:

- Institut de Formation et d'Action pour le Développement des Initiatives Communautaires Durables (IFAD-NGO), Office Béninois pour la Promotion de l'Agriculture Biologique (OBEPAB), Vredeseilanden Country Office Benin (VECO), Projet de renforcement des capacités d'Adaptation des acteurs Ruraux Béninois face aux Changements Climatiques / Initiatives pour un Développement Intégré Durable (PARBCC/IDID), Projet de Sécurité Alimentaire par l'Intensification Agricole (PSAIA), Programme de Promotion des Filières Agricoles, (ProFA of HELVETAS-Benin) in Benin.
- In **Burkina Faso**, Organisation Catholique pour le Développement Sociale (OCADES), Projet Agriculture Durable (PAD), Projet de Développement Rural (PDR), and Association Taar Wend Panga (TWP) have used the FFF approach.
- In **Niger** the projects include PADER's Projet d'Appui au Développement Rural / BAD, AFR 014 de LUX DEVELOPMENT and Zinder.

Extension educators and agricultural producers have also benefited from FFF training through various IITA projects in other countries:

- Potential use of botanical extracts on vegetables as alternative to chemical in peri-urban zones of Benin, Ivory Coast, Ghana, and Togo.
- Diffusion of cost-effective technologies for the control of mycotoxin contamination for increased health and income in Burkina Faso, Tanzania, and Mozambique.

These projects were financed by CORAF/WECARD and the Austrian Development Agency, and the Federal Ministry of Finance, respectively.

A startling change observed in the Aguié region in Niger is the increasing involvement of women in the programs of FFF and participation in open discussion and exchange of ideas at meetings. The Aguié region is a fundamentalist Islamic society where, normally, no room is given to women at group meeting settings such as FFF sessions, but there both sexes mix to express divergent views. The tradition before the introduction of FFF was that women were allowed only to engage in some small-scale activities such as marketing and craftsmanship (soap, dyeing, and pottery). Under no circumstances were they allowed to participate in public debates on village economics and other development-related issues. In all the villages involved in FFF, women did not only participate in the discussions (starting from FFF sessions) but also committed themselves to activities including agricultural research activities for the community at large. The progressive involvement of women in programs changed the traditional perspectives, sensitivity, and knowledge on women participation in programs (PRONAF –Niger, 2002).

Upscaling of FFF

FFF, like FFSs, were initially formed to address agricultural production concerns. However, farmers needed to sell the extra output obtained from the application of approved agricultural production practices, so the need arose to strengthen the agribusiness capacities of farmers (Swanson, 2006). FFF were reoriented to meet the new challenges and opportunities. It is therefore important to revise the curriculum of FFF to transform production to meet market-driven demands (Swanson, 2006).

The main advantages that commercial stakeholders derive from being part of an effective value chain are reduced costs of doing business, increased revenues, enhanced bargaining power, and improved access to technology, information, and capital. These benefits ensure that stakeholders become innovative in production and marketing so as to make high

quality products available to meet the demands of customers (Swanson, 2006).

Graduates of FFF working individually to improve their livelihoods are formed into FFF networks. Networks can act as intermediary or nexus organizations that link farmers to service providers, markets, and information. Networks can also link farmers to suppliers of seeds and fertilizers. The networks of FFF graduates are linked to extension and research agencies so they can learn about and test new technologies with commercial potential when they become available.

Lessons Learned

Collaboration with other organizations is essential for sharing the useful technologies assembled under FFF/PRONAF on a wide scale. To this end, several efforts have been made to create awareness of technologies and practices of FFF among development NGOs and projects to encourage their staff members to participate in practical training offered by FFF (PEDUNE, 2009).

The assessment of FFF in Benin indicated that the approach has been successful in at least five areas:

- The practical, task-based training through observing and doing was easily shared with family, friends and children, and new understanding spread through existing community ties and networks.
- FFF encourage farmers to interpret information in new ways and to gather new information and test new ideas, which is an important basis for alternative decision making.
- It appears that, rather than stimulating new arrangements, FFF have been incorporated in the existing institutional system of entrepreneurial activity and decision making, which is dominated by members of the leading/original families and influential persons in the villages and their wives.
- The FFF approach is a mechanism that promotes group formation/networking to raise awareness of common problems and opportunities, as well as build farmers' self-confidence and develop their leadership capacity.
- Participation in FFF gave new confidence to women, as indicated by Marcelline (Benin cowpea producer) in the following box.

> *"Now I can speak in front of a crowd, which I could not do before my training through FFF."*
>
> Marcelline, Davihoue-Ablome, 2002.

The lack of assistance to respond to demand of farmers for market facilitation provides a great challenge as they struggle to change from subsistence farming to more commercialized farming enterprises. Thus, the need exists to rethink the role of extension and train/retrain extension educators accordingly. Extension advisors are often not comfortable or capable of changing their role from providing mainly technical messages to serving more in the role of information broker.

FFF are considered as stepping-stones to empower networks, federations, and associations. These networks can play the important role of supporting farmers socially and technically. They can also be used as an effective platform for smallholder farmers with common interests to gain an increased access to markets. Market information is not always available to rural and often illiterate farmers, however. In East Africa, FFS networks provided market information that has been crucial for enhancing farmers' access to markets (Braun and Duveskog, 2010).

The prospects of forming networks can be strengthened if attention to networking is paid at the implementation phase of longer term projects. For example, the processes and criteria used for selecting participants and site should be transparent; follow-up support to farmer facilitators and development of FFF alumni and farmer-driven networks should be encouraged during the implementation of FFF.

The current extension practice is targeted at improving technical skills only, not on managerial knowledge and skills. A demand exists for more attention to be paid to capacity building of the rural poor in financial management, marketing, standards and quality assurance, and use of information and communication tools to meet needs expressed by networks.

As the FFF networks grow and take on more complex initiatives, the need also exists for more investments in training and equipping the networks with relevant information and data, including improved communication technology to bridge the information gap and enhance the diversification of business opportunities while increasing operational efficiencies. Computer access and usage skills, coupled with access to the Internet, must be priorities for development. Further, the revolving funds being used in operating in some FFF networks need to be nurtured into more sustainable and long-term investment ventures to support the networks in developing viable income-generating activities.

Recommendations

To ensure the sustainability of FFF, it is recommended that:

- The degradation in the quality of training provided by alumni farmers during the farmer-led training process should be analyzed.

- Suitable training methods should be identified.
- Continuous refresher courses for both facilitators and farmers promoted as facilitators should be provided.
- The factors affecting the adoption of FFF and FFS approaches into national extension services should be identified and addressed accordingly.

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