

**Assessing Information Sharing and Changes in Knowledge, Attitude, and Skill  
among Farmer Field School Participants from the Commonwealth of Dominica and  
Trinidad and Tobago**

**David Dolly**

Department of Agricultural Economics and Extension  
University of the West Indies  
Saint Augustine Campus  
Trinidad and Tobago

Telephone: 1-868-662-2002 Ext 3206 Fax: 1-868-662-8355

[farmdavid42@gmail.com](mailto:farmdavid42@gmail.com)

**Abstract**

*This study assessed information sharing and changes in knowledge, attitude, practice and skill among participants of the first set of farmer field schools conducted in the Commonwealth of Dominica and Trinidad and Tobago. Participants were small food crop producers who work with government extension agents. Non-participants were slightly younger than participants. Most non participants did not attend because the FFS schedule competed with other commitments. All participants reported an improved knowledge of IPM topics. The majority of participants reported improvement in nine identified IPM skills. There was one skill; Keeping insect zoos which did not improve. After the FFS, the majority of participants reported minimal improvements in the practices on their farms and more respect for pesticide dangers. They recognized the use of group problem solving. There was equal support and dissent that the FFS will continue when Government's involvement ceases. The majority of participants did not report changes in farming incomes as a result of using new FFS techniques. Half of the sample shared FFS information they learnt with one person, 27% shared with two persons, 13% shared with three, 4% shared with four and 2% shared with five.*

*These results revisit the debate whether the FFS can be the new technology transfer medium for small producers. Like other studies there is a difference between the school's contribution to experiential learning and its contribution to technology transfer. Caribbean practitioners will need to develop strategies which enhance the FFS to simultaneously improve experiential learning and facilitate technology transfer.*

**Key words:** Field school, changes, knowledge, attitude, skills, information sharing

### **Introduction**

This paper assesses the outcomes of Farmer Field Schools (FFS) among small food crop producers in the Commonwealth of Dominica and the twin island state of Trinidad and Tobago. There were major initiatives to introduce Farmer Field Schools by the Commonwealth Agricultural Bureau International (CABI). The process began with a training of trainers exercise which developed leadership capacity among Extension workers. Following these introductions, agricultural divisions in Trinidad and Tobago and Dominica conducted FFSs in 2003 and 2004. Small food crop producers who typically work with district extension officers in both countries attended the schools. This study will assess information sharing and changes in knowledge, attitude and skills among FFS participants after the schools were conducted.

There is an ongoing debate regarding the benefits of the Farmer Field School. One element of debate is in regard to information sharing and the extent of changes in knowledge, attitude and skill. These are constituent parts of a technology transfer mechanism. It is the view that while the FFS introduces new resolves to technology transfer it does not specifically address coverage of new technology among farmers. Yet both technology development and its spread through wide coverage are essential when defining successful Extension. According to Zijp (1999) three main functions of Extension are to: Transfer technology to and from farmers, Mobilise farmers and help farmers to organise themselves and thirdly to educate farmers and build capacity among them. Hence both coverage and technology development objectives must constitute a successful Farmer Field School outcome.

Dominica and Trinidad and Tobago contrast well in their economic disposition. Dominica traditionally relies on primary agricultural production, tourism and manufacturing to support its economy. Trinidad and Tobago is a producer of Natural Gas and Crude Oil and does not rely primarily on agriculture for its economic performance.

Since 1992, the agricultural sector's contribution to GDP has steadily declined from 2.5% to 1.2% in 2002 (Central Statistical Office, Trinidad and Tobago 2003). In 2007 this figure is still less than 2%. By comparison, Dominica's agriculture contributed 17.9% to that country's GDP in 2004 (HALCROW Group Ltd 2004).

National Food Security mandates both countries to maintain growth within the agricultural sector especially production for the domestic market by small food crop producers. The Farmer Field School has the potential to school producers in adopting environmentally friendly and cost effective cultivation methods. These are desirable elements in the new paradigm for sustained food production which must remain competitive while abiding with good agricultural practice (GAP) for local and export markets.

Because the FFS approach is learner centered, the method has potential to generate self directed improved attitude, skills and knowledge among small producers. If new learning outcomes can be shared among the farming community then the FFS could become a methodology of choice in transferring good agricultural practices to farmers thereby having desirable extension impact.

### **Philosophical Themes**

There are many FFS assessments in regard to methodological issues such as the conduct of agro ecological assessments, especially in relation to literacy levels of farmers. Many of these studies have been able to advise on techniques to improve the experiential learning environment. There is also an interest in financial sustainability in which Quizon, Feder, and Murgai (2001) had used early evidences from the Philippines and Indonesia to indicate that fiscal unsustainability of the FFS, if applied to a large scale, is a risk that cannot be ignored. Quizon's

study generated much reflection and provided impetus to find ways of developing a self-financed FFS. Yet many other concerns are about improving the training of trainers' mechanisms since this is a key process in disseminating the schools throughout an agricultural district.

A review of the FFS methodology by Rolings (2002) had noted that while the traditional technology transfer paradigm seeks to transfer knowledge through demonstrations and lectures, the FFS uses Adult education which is self directed and which energizes discovery learning. Rolings hypothesised that complex lessons learned in the FFS do not easily diffuse on their own. He likened the circumstance to a child learning to read or practice arithmetic in school. Rolings reiterates that each child had to learn and practice in school again and again. This is quite a consequence for the FFS which is expensive to routinely repeat. Being sensitive to the coverage element for Extension methods, Roling recommended more research into the spin off effects of the FFS. Roling's perspective begins to suggest that having improved the knowledge attitude and skills of the producers, it could be incumbent upon them to share their new learning with community members in a major spin off effect.

Some studies thus far have assessed quantitative changes regarding diffusion and adoption of discovered technologies of the FFS. A study of Quizon, Rola, & James, 2002 in Indonesia and the Philippines found that while there is very little diffusion of FFS knowledge from school graduates to other community members, graduates were retaining their FFS-acquired knowledge. Then Feder, Murgai and Quizon (2004) found there was no significant diffusion of knowledge to other farmers who resided in the same village.

In relative contrast, Simpson and Owens (2002) have estimated high farmer-to-farmer communication in many African countries which conducted the FFS. Several types of information sharing occurred such as between immediate family members, among secondary contacts outside of the immediate family, at small group meetings and with non participants. There were even reported sharing of unsolicited advice with neighbours. Simpson and Owens further reported that in some cases production savings were articulated and resulted in information flows leading to the adoption of alternative techniques.

More recently, Nederlof and Okdonkor (2007) provided evidence among Cowpea Farmer Field Schools in Ghana. They discovered that the FFS was used as a tool to transfer messages rather than foster experiential learning among farmers. These messages were about technologies that work without the traditional top-down 'order' from facilitators and extension officers. In so doing the technologies were acceptable and appropriate to farmers. Nederlof and Oknodor felt that scientist needed to establish more collaboration based on mutual respect between scientist, facilitators and farmers. They felt that the experiential learning element was still focused on researchers' objectives rather than what is appropriate for farmers. Whether the FFS is seen as an experiential learning technique based on adult education principles or as a method of technology transfer, would have depended on the goals that the observer ascribes to the FFS. These goals and the values from them can be economic, farmer empowerment, ability to experiment or ability to make effective decisions.

The study reported here assesses learning outcomes and whether such outcomes are shared beyond school participants. It seeks to understand whether a knowledge-empowered participant will share new information and ideas. The study's interest is timely in order to inform the continued usefulness of the methodology as a technology-transfer mechanism. The study will pioneer interest on the question of impact in the Caribbean region. Since the FFS intervention within the Caribbean, there have been no impact studies as has been done in Asia, Africa, and Latin America.

Hence the issue of FFS impact bears relevance to understanding the dimension of technology transfer among small producers in the Caribbean as exemplified by the Commonwealth of Dominica and Trinidad and Tobago and in the interest of good extension practice. This study will investigate technology-transfer impact from the viewpoint of reported changes in knowledge, attitude, and skill after the FFS. It will investigate information sharing after the FFS. It will also characterise the non participant and the participant on completion of the first set of schools in the two study island territories. It can begin to give to the Caribbean region advice on getting the FFS Extension ready.

### **Purpose and Objectives**

- To compare selected demographic and socioeconomic features of participants and non participants.
- To investigate the nature and content of information sharing and knowledge gained after participants attended FFS's in Dominica and Trinidad and Tobago.
- To compare changes in knowledge of IPM practices during a past two year period among non participant FFS community members and their participant counterparts who attended a Farmer Field School.
- To compare changes in IPM skills and abilities during a past two year period among non participant FFS community members and their participant counterparts who attended a Farmer Field School.
- To compare changes in IPM practices during a past two year period among non participant FFS community members and their participant counterparts who attended a Farmer Field School.
- To compare changes in attitudes to IPM practices during a past two year period among non participant FFS community members and their participant counterparts who attended a Farmer Field School.

### **Method**

The researcher interviewed 16 participants who attended the FFS in Dominica and 47 participants in Trinidad. Also interviewed were 20 and 23 non participants respectively. Non participants were those food crop producers from the community who knew of the school and decided not to participate. The researcher enquired of demographic and socioeconomic factors; information sharing behaviour among producers and reported changes in knowledge, attitude, and skills.

### **Results**

#### *Demographic and Socioeconomic Analysis*

Most participants and non participants were typically ranged in age for food crop producers in the Caribbean with 65% of the participants being over the age of 40years, likewise 54% of the non participants. A chi square test of difference measured significant age differences between both groups at the .05% level. However, the chi square test of difference between all producers in both countries measured no significant differences. It can be concluded that the non participant is younger in both territories.

There were more males in both participant and non participant populations but there was no significant difference between the number of males and females. In the Trinidad and Tobago sample, the most popular 'other' occupation among the participants was reportedly that of a

‘housewife.’ There were no clear trends in ‘other occupations’ among the populations of non participants in Trinidad and Tobago and both sets of populations in Dominica.

Among the participants, the most popular plot size was a larger 5 acre. Among the non participants the most popular plot size was shared between two sizes namely, .3 acre and 2 acres. Generally, the non participant plot sizes were smaller than those of the participants.

Many of the participants and non participants privately owned their plots in Dominica. In Trinidad and Tobago, the most popular form of ownership among both groups was a temporary ownership arrangement between the Government and the producer.

The majority of producers did not report changes in farming incomes as a result of using new techniques from the FFS training. Neither did the non participants report a change in the use of new techniques over the past two years.

Most non participants did not attend the FFS because of varying reasons which commonly pertained to competing personal schedules when the FFS was held.

#### *Improved Knowledge of IPM Techniques*

This enquiry regarded the following IPM topics: Knowing how good and bad pests live in my field; knowing how the soil, air and water cause my crop to grow, the safe use of chemicals, natural enemies of crops, managing the type of soil in my plot, managing the use of water in my plot, the use of plants (bush medicine) to kill my pests and pollution effects of pesticides. All participants reported an improved knowledge in these topics.

#### *Skill Changes*

Participants reported category of skill changes according to the type of skills. The first category of skills is as follows: Solving crop protection problems with fewer pesticides, Explaining pest problems to the person’s extension officer, communicating pest problems to fellow farmers, identifying plant disease symptoms, the use of the correct fertilizer. The majority of participants reported ‘very much more’ changes regarding these skills.

The second category of skills was as follows: Conducting experiments on the farm, Integrated Pest Management, crop rotation and fallowing to improve soil fertility

The majority of participants felt these skills were improved ‘somewhat more’ rather than ‘very much’.

The third category of skills was as follows: Establishing insect zoos. The majority of participants felt there was no improvement in this skill.

Non participants were not familiar with IPM skills

#### *Practice Changes*

There was minimal reported improvement in IPM farm practices among the participants after the FFS. There were no improvements among three practices which traditionally were not employed and which may have more recognition in an IPM regime. These were: Hand weeding, the use of trap crops, the use of natural mulches.

The remaining practices which were investigated and for which there were no reported improvements were using increased land area, planting different crops, using less inputs of inorganic fertilizer, pesticides and weed killers

There were reported changes in three practices as follows: Examining crops more closely for diseases, keeping the area sanitary, and reading labels on pesticide bottles.

### *Attitude Changes*

The most significant attitudinal change reported was that of more respect for pesticide dangers. The participants saw the need to use protective clothing. They saw the need to transport pesticides safely and to dispose of empty containers more safely. Participants recognized the use of solving problems in a group effort.

An equal number of participants felt that the FFS would not continue after the Ministry of Agriculture no longer leads the initiative.

### *Information Sharing*

Half of the population shared information they learnt at the FFS with one person. Twenty seven percent shared with two persons. Thirteen percent shared with three. Approximately four percent shared with four persons and two percent shared with five persons. The most popular person with whom information was shared was a farmer's friend. Minimally popular were neighbors and family members. Participants generally shared topics related to IPM practices

Both participants and non participants reported regularly learning about new practices from the media.

## **Discussion**

This analysis suggests similar results to those conducted in Indonesia. where Feder et al, (2004) had discovered that information-sharing behaviour was limited to immediate family members. This analysis further qualifies the sharing as taking place among the farmer's primary groups.

Farmers from both countries have gained new knowledge and skill regarding IPM but they have not engaged this into routine practice. They still seem heavily influenced. by the norms of applying inputs of pesticides, weed killers and fertilizers to their crops. They thus reported much attitude, skill and knowledge change in topics related to those practices.

While participants report new knowledge about IPM and an appreciation of major benefits, the participants still lack a more comprehensive appreciation of IPM'S potential as a new and major shift in the approach to food crop production practices. They also lack confidence in applying the approach as an experiential learning philosophy, As in Indonesia, these trained FFS farmers are making modest gains in knowledge about IPM.

These results bring focus to the debate whether the FFS can be the new technology transfer medium for small producers in the Caribbean region. Like other studies there is a difference between the school's contribution to experiential learning and its contribution to technology transfer among members of farming communities. Practitioners will need to put strategies in place which can enhance the FFS to simultaneously improve experiential learning while facilitating technology transfer.

There are indicators from this study that the school can impact on the newer paradigms regarding cultivation for sustained agro ecological environments.

Given the farmers' attitude that the Government services must be a part of initiatives, more schools will need to be established to further understand the best mechanisms to meet separate objectives of experiential learning and technology transfer.

## **Educational Importance, Implications, and Applications**

If among communities, FFS participants can share information gained and positively improve their knowledge, skills, and attitudes regarding integrated pest management, the school

can reduce the cost of managing underfunded and overburdened 'Top-Down' extension systems for vegetable producers in the Caribbean. Such systems could be partly relieved of specific educational responsibilities by the experiential learning abilities and participatory leadership which the Farmer Field Schools may develop among its participants. This goal is still futuristic but not impossible to achieve. Before this goal is achieved, Caribbean governments will still need to continue the FFS until appropriate weaning from the government purse takes place. Alternatively or complementarily, non government organizations may seek local and international funding to engage the FFS.

In the Cameroon, David (2007) had discovered that the FFS graduates in a cocoa integrated crop pest management project demonstrated farmer to farmer diffusion. Yet David suggested that the FFS can only be sustained if the appropriate local and national level institutions, support systems and policies related to agricultural extension and research are developed. This is further concurrence that local support systems in the Caribbean will need to conduct more schools through a national support system.

In this study, information sharing was minimal, but if seen as a first level of interaction, much more networking may be accomplished. For instance, can there be IPM clubs as has been reported in Vietnam by van de Fliert et al. (2007). Or can the positive attitude regarding problem solving in groups be further exploited? Or can farmers' new confidence to communicate with the Extension officer and other facilitators be used to generate new exchanges within the extension environment? These are exploratory questions which the study recommends for further consideration and investigation.

### References

- Caribbean Development Bank and Government of Dominica. (2003). *Country Poverty Assessment (2003) Report Volume 1&2: A survey of Living Conditions in Dominica*. Halcrow Group Ltd in association with Decision Economics, Canada.
- David, S. (2007). Learning to think for ourselves: Knowledge improvement and social benefits among farmer field school participants in Cameroon. *Journal of International Agricultural Extension and Education*, 14(2), 35-50.
- Feder, G., Murgai, R., & Quizon, J.B. (2004). The acquisition and diffusion of knowledge: The case of pest management training in farmer field schools. Indonesia. *Journal of Agricultural Economics*, 55(2), 217-339.
- Nederlof, S. E. & Odonokor, E. N. (2007). Lessons from an experiential learning process: The case of cowpea farmer field schools in Ghana. *Journal of Agricultural Education and Extension* 12 (4), 249-271
- Quizon, J. Feder, G. & Murgai, R. (2001). Fiscal sustainability of agricultural extension: The case of the farmer field school. *Journal of International Agricultural and Extension Education*, Spring 2001 13-22
- Quizon, J.B., Rola, A. C., & Jamais, S.B. (2002). Do farmer field school graduates retain and share what they learn? An investigation in Iloilo, Philippines. *Journal of International Agricultural Extension and Education*, 9(1), 65-74.
- Republic of Trinidad and Tobago Central Statistical Office Ministry of Planning and Development. (2003). *Pocket Digest*. CSO, Port of Spain. March 2002 13pp
- Rolings, N. (n.d.) *Issues and Challenges for FFS: An introductory Overview*. Plenary Theme Paper presented at the International Workshop on Farmer Field Schools (FFS): Emerging Issues and Challenges, Yogyakarta, Indonesia.

- Simpson, B.M. & Owens, M. (2002). Farmer field schools and the future of agricultural extension in Africa. *Proceedings of the Annual Conference of the Association for International Agricultural Extension and Education*, 18, 405-412
- Fliert, V. D., Dung, Tien, N., Hennksen, Ole and Dalsgaard, Tang, J. P. (2007) From collective decision-making and action: Farmer field schools in Vietnam. *Journal of Agricultural Education and Extension*, 13(3) 245-256
- Zijp, W. (1999). *Practicing pluralism and facilitating transition*. Keynote address presented at the Annual Conference of the Association for International Agricultural Extension and Education, Port of Spain, Trinidad and Tobago.