An Assessment of the Implementation and Outcomes of Recent Farmer Field Schools to Improve Vegetable Production in Trinidad and Tobago

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Abstract

Following major initiatives by the Commonwealth Agricultural Bureau International and Trinidad and Tobago's Ministry of Agriculture Lands and Marine Resources, 14 Farmer Field Schools (FFS) were conducted from August 2003 to January 2006 in seven extension districts in Trinidad and Tobago, West Indies. This paper assesses these schools according to the six key elements highlighted by Simpson and Owens (2002) regarding the FFS approach in Africa. The researcher attended school field days and interviewed 12 master trainers. The researcher surveyed a population of 24 participants and a sample of 16 non-participants. The researcher interviewed six volunteer participants and observed the efforts of the central planning process over the course of a year. The school has relevance and responds to local concerns (Key 1). The school used participatory mechanisms which generated new knowledge regarding location-specific crop husbandry practices (Key 2). Information flows and farmer-to-farmer participation were usefully productive (Key 3). There is a new initiative to build useful organizational relationships (Key 4). Relationships between scientists, extension workers, and farmers improved (Key 5). The FFS can be integrated into existing programs but would need more administrative support and funding (Key 6). In one community, the FFS participants were different from a sample of non-participants in several ways. There were similarities between the findings of this assessment and those of Simpson and Owens (2002). Recommendations included the continued use of the FFS among small producers in Trinidad and Tobago, and further assessment of quantitative benefits, including the rates of adoption and diffusion and cost effectiveness.

Keywords: Farmer Field School Systems, Extension Program Effectiveness

Introduction

While the petroleum industry and financial service enterprises have provided stability to the Trinidad and Tobago economy over the past several decades, the agricultural sector had not fared as well. Trinidad and Tobago is dependent on agricultural imports to feed and clothe its million plus population (Ministry of Agriculture, 2006). Seepsersad (2003) stated, "The country is a net food importer; in 1999, the value of food imports was 181% of the value of food exports. There is a great deal of concern about national food security and household food security" (p. 6). Agriculture makes up about 2% of the country's GDP and employs approximately 10% of the labor force. Dolly (2005) noted that a promising approach towards agricultural self-reliance and food security in Trinidad and Tobago is developing and using Farmer Field Schools (FFS). The FFS could improve production efficiencies among vegetable producers in the first instance while sustaining the agro ecological environment in which growers operate.

In the year 2000 the Commonwealth Agricultural Bureau International (CABI) began introducing the FFS approach to agricultural extension in the Caribbean region; including Trinidad and Tobago. Beginning in 2003, CABI and Trinidad and Tobago's Ministry of Agriculture Lands and Marine Resources (MALMR) began to support widespread use of this method of experiential learning among the country's small food crop producers. The Extension Training and Information Services (ETIS) of the MALMR facilitated two FFS in the Caura Valley community. The ETIS subsequently facilitated 12 more schools in 2005 and 2006 in seven other extension districts throughout Trinidad. Research in South Asia, Southeast Asia, and Africa has shown that FFS can provide an approach that "offers a much needed breath of fresh air and hope for the future" (Simpson & Owens, 2002, p. 411.) Little has been reported, however, of the impact of FFS in the Caribbean region.

Conceptual Framework

The conceptual framework of this study is based on Simpson and Owens (2002) six key challenges facing extension FFS programs: Relevance and response to local concerns; instilling systems learning and the generation of new knowledge; facilitating information flows and farmer to farmer communication; local institutionalization and organizational development; impact on relationships and consequent changes in relationships; and integrating the FFS into existing programs.

The FFS is an experiential learner-centered technique that provides opportunities for a person to engage in an activity, review it critically, draw some useful insight from an analysis, and apply the result to a practical situation (Gonsalves, et al, 2005). In the FFS, farmers attend weekly sessions on designated plots where they learn experientially. Facilitators demonstrate different cultivation practices and compare these practices with Integrated Pest Management (IPM). The school participants eventually determine the most appropriate and environmentally-friendly technologies for local vegetable crop production. These technologies are expected to reduce cost of production.

Participants at a workshop on farmer participatory methods for ecological crop management highlighted problems encountered by extension practitioners that may be redressed by FFS (Chung, 2000; Donis, 2000; Edwards, 2000; Gore, 2000; Magloire, 2000; Phillip, 2000; Ramroop, Hill, Dowlath, & Ganpat, 2000). Identified problems included: crop protection units in most countries are under-staffed and -funded, thus, are unable to cope with multiple possible pest control initiatives; extension links with farmers are still "top down" despite calls for more "bottom up" approaches; accompanying research is

lacking especially due to a shortage of funds; agricultural input suppliers dominate the transfer of pesticide technology; farmers still prefer to use broad-spectrum pesticides, which are readily available but do not easily focus on specific pest targets. Despite this prevailing situation, some farmers are becoming aware of newer target-specific pesticides and bio-pesticides. Finally, a lack of policy on IPM or any type of pesticide control prevails.

Functional mechanisms that impact on successful extension results are expected to transfer technology to and from farmers, mobilize farmers, help them to organize themselves, and educate farmers to build their capacity (Zijp 1999). In the case of vegetable producers in Trinidad and Tobago, the technology transfer mechanisms concern the role of IPM in cultivation practices. The FFS may be used to convey appropriate IPM methodology and other technologies to farmers. The FFS can effectively impact on successful extension. It is expected that FFS may eventually facilitate better extension–research linkages at reduced costs.

Munuya (2003) has classified five sets of factors which generally affect the technology transfer related to IPM as follows: Government policy and regulations, IPM as a process of social learning, psychological factors in adoption, delivery systems for IPM, and training. Bonzo and Radhakarrishna (2005) noted the value of the FFS in providing farmer participatory research and small farmer group associations among a large group of small farmers in Indonesia. The suggestions of Bonzo et al (2005), Munuya (2003) and Zijp (1999) concerning Farmer Field Schools (FFS), extension impact and the role of IPM were taken into account and were modified to reflect the recognition of the six key issues identified by Simpson and Owen (2002). These issues need to be resolved if the FFS is to be an effective vehicle for transfer and acceptance of technology in Trinidad and Tobago.

In Trinidad and Tobago, farmers typically engage in crop cultivations that tend to use more pesticide and fertilizers than is required. It is not unusual for farmers to use agrochemical cocktails containing up to four or five different pesticides in unwarranted application routines (Dolly, 2000). This undesirable practice presents a severe threat to the agro ecological environment and incurs more economic cost to a country that does not produce most of the inputs that are applied during cultivation.

CABI's activities began with a training workshop in which international experts from the Philippines, Kenya and Nicaragua engaged crop protection specialists, extension, and university personnel. The local experts became familiar with the concept of participatory methodologies, recent approaches to integrated pest management (IPM), and the practice of a field school.

Following an initial workshop in August 2000, the Commonwealth Agricultural Bureau International (CABI) and the Food and Agricultural Organization (FAO) with funding from the European Union (EU) conducted a Training of Trainers workshop among the representatives from the Dutch, French, and English-speaking Caribbean. Trinidad and Tobago's Ministry of Agriculture, Lands and Marine Resources (MALMR) hosted the event and facilitated an FFS from August to December 2002. This FFS occurred in Aranguez, a major vegetable-growing community located in the north west of the island of Trinidad. Trainers were expected to return to their respective national locations and implement field schools. Graduate trainers of the MALMR formed a committee for the promotion of farmer participatory approaches in Trinidad and Tobago. Until January 2006, this committee had presided over 14 schools in Trinidad.

Table 1 juxtaposes Simpson and Owens (2002) challenges facing extension FFS programs with problems identified by Dolly (2005) that may be improved by implementing FFS in Trinidad and Tobago.

Table 1

Key Extension Challenges of Simpson and Owens (2002) in Relation to a Situational Analysis

Key Extension Challenges of Simpson and Owens (2002)	**Situations which the FFS may improve based on reports of Caribbean Practitioners, FFS experiences in other countries and expectations for Extension**
Relevance and Response to local concerns.	Too many pest control problems, Excessive use of inputs. High cost of pesticides and other inputs. Need for appropriate technology.
Instilling Systems Learning and the Generation of new knowledge.	Lack of knowledge of IPM & the Agro ecological systems in which cultivation occurs.
Facilitating Information flows and farmer to farmer communication.	Unwarranted 'Top Down Approaches' Limited information gathering and sharing among farmers.
Local institutionalization and organizational development.	Underfunded and Understaffed institutions, Lack of Policy, Lack of Farmer Group initiative.
Impact on relationships and consequent changes in relationships.	Weak linkages between Extension, Research and Farmers.
Integrating the FFS into existing programs.	Weak mechanisms between new programs and traditional ones.

Purpose

The purpose of this paper was to assess these 14 FFS in Trinidad and Tobago from the perspective of the Simpson and Owens (2002) six key elements facing extension programs and FFS. These are: relevancy and responsiveness of FFS to local concerns, systems learning and the generation of new knowledge, information flow and farmer to farmer communication, institutionalization and local organizational development, changes in relationships, and the integration of the FFS into existing programs.

Methods

During the period 2000 to present, the researcher recorded many observations while the participants conducted agro-ecological systems assessments (AESA) among different regimes of crop production practices regarding tomato, cabbage, eggplant, and sweet peppers. These crops are of economic importance. Vegetable production regimes related to current farmer

practices, variety trials, fertilizer trials and IPM practices were the subject of observations during the FFS. Different cultivation environments from seedling establishment to harvest became bases for comparisons from which appropriate and low cost practices could be derived by consensus. The researcher interviewed all 12 participants who attended the master trainers workshop held in the vegetable growing area in Aranguez, Trinidad at a closing evaluation session held on 15th December, 2002.

The researcher surveyed a population of 24 participants who attended a second field school in the Caura Valley and a random sample of 16 non-participants from the environment in which the school was conducted. The researcher conducted interviews during a two-week period after the second school of August to November 2003. The valley has a recorded population of 70 small producers, of which 45 were active. Therefore, from the active population, 53% (24) attended the school. The random sample of 16 non participants represents approximately 36% of active growers. Both populations were questioned about their knowledge of IPM production practices, impressions about the FFS and related issues. The researcher conducted focused interviews with six volunteer participants who were prepared to speak about their experiences during the FFS.

The researcher became a member of the farmer participatory approaches committee of the Extension, Training and Information Services of the MALMR. The researcher made observations of the committee's FFS initiatives while attending monthly meetings. The researcher studied recorded minutes of twelve monthly meetings during 2005. The researcher also observed the activities of the Caura Valley Farmers Association (CVFA, 2004) which had a central role in organizing the field schools in the Caura Valley. The researcher attended five field days of five schools which occurred during 2005.

Results and Discussion

The findings related to each of the six key issues identified by Simpson and Owens (2002) is presented below.

Relevance and responsiveness of FFS to local concerns

From the responses of the master trainers, participating farmers and members of the farmer participatory approach committee, the FFS engaged an understanding of current pest and nutrition problems and the ways to resolve them in the local environment. Participants acquired skills to identify pest and natural enemies which could replace costly pesticide applications. They understood how pests continued their invasions as the crop matured. They began to understand alternative pesticides which were made of biological material and which could be manufactured by them from indigenous material in the local environment. The farmers appreciated the need for environmentally friendly approaches and began to implement these approaches in their day to day cultivations.

The farmers became more mindful of detailed field inspections and have begun to put in place superior daily inspection regimes instead of the cursory glances they usually make. They accepted the need for soil testing in order to "know what you are dealing with".

These FFS outcomes indicated a potential to respond to local concerns in which local initiative can provide alternatives to more expensive pest-control solutions among numerous pests attacks. This was similar to a finding of Simpson and Owens (2002) in Africa.

Systems learning and the generation of new knowledge

The farmers became more aware of an agro-ecological system in which pest

could be differently defined especially within the context of harmful and beneficial insects and weeds. They better understood how an agricultural environment could be tinkered with in order to obtain a healthier crop. Some farmers began to conduct experiments which could generate the desired intelligence or knowledge for their own subsystems within agro ecological environments. Some producers tried their own methods of biological control. Others tested cultivations without applying chemical fertilizers and pesticides and with the use of mulches made from newspapers and other locally available material. They became confident in their own investigative abilities.

All stakeholders began to share a common vocabulary with regard to crop husbandry techniques. The farmers were now willing to use language which once seemed to only emanate from a formal research effort. Likewise the scientists and extension officers were prepared to adopt alternative terminology which would mutually benefit higher standards of crop husbandry.

A more useful participatory mechanism had begun to generate the knowledge needed to care for the crops in specific agro ecological systems. Simpson and Owens (2002) similarly reported that FFS participants in Africa had begun their own experiments and understood a systems approach to the dynamics of insect pest populations and the physiological life cycle of plant needs. Although African counterparts had conducted experiments, Simpson and Owens felt that participants did not understand what an experiment really entailed. In Trinidad, this understanding was very apparent and was attributed to the level of schooling which participants have attained.

Information flow and farmer-to-farmer communication

Farmers felt more confident to share information with the input suppliers, IPM specialists, and extension workers. The information shared was through a "to and from" process rather than the typical "top down from the extension office scenarios" to which all were accustomed. The farmers noted that it was typical only to know about the "bad" products they used. However, since their exposure to the school, participants have recognized options regarding appropriate replacements.

Farmers became even more aware of how community members generally do not share information among themselves. Yet the participatory experiences during the school made them more confident to illustrate the value of sharing information. There became an unwritten and valuable feeling that information locked is information wasted. The gestures of sharing and critiquing one another's viewpoint during the FFS exercises influenced a new prowess to share knowledge more freely and to be secure about one's own approach to crop husbandry. All participants felt confident that they could listen to their farming colleagues, if these were trained as facilitators.

Participants felt that non-participants missed an excellent opportunity to begin to share information more freely. The participants intended to pass on to non-participants what was learnt at the school. Some recommended that researchers specially investigate why farmers are not always beneficially interacting with one another. Interviewed non-participants from the Caura Valley reported a willingness to listen to their colleagues with regard to IPM methodologies.

In most of the FFS farming communities, males usually dominate views regarding resolutions to pest problems. During the FFS, however, females became more confident in sharing their ideas on matters which they would have normally kept to themselves. Some intended to take information back to household members who did not attend. Some participants and non-participants reported that they usually

share cultivation methodologies with community members. These are early indications regarding the potential for farmer-to-farmer information flows. More investigations are recommended to validate these observations. Some farmers noted that they were more confident to discuss pest invasions with local pesticide agencies.

The participants noted that the school did not generate convincing factual information about reduced cost of production in relation to profitable yield. They noted that this would be a major conduit for information sharing among community members given their business objectives. Simpson and Owens (2002) reported that in some African contexts the production savings were articulated and resulted in information flows leading to the adoption of alternative techniques.

Institutionalization and local organizational development

Evidence regarding institutionalization and local organizational development emerged mainly from the committee meetings of the MALMR and observations of the activities of the CABI. A persistent item for discussion at committee meetings was the current lack of research support in order to provide technical assistance that can help validate and further test new and emerging local practices. This support must be present in order to identify diseases, test changes in soil texture and composition, assess new innovations, identify and culture natural enemies, and detect requirements for the smooth transition to the limited use of chemical pesticides. Even though the Caura Valley Farmers Association (CVFA) is represented on the national committee, this institution has relinquished a frontline advisory responsibility for IPM practices to the MALMR. Additionally, initial relationships with input suppliers have also waned. The MALMR is unable to fill this void completely.

In interviews with master trainers, they predicted the difficulty to maintain sustained technical assistance that will be required and that the committee meetings are now experiencing. The trainers were familiar with the understaffed and underfunded crop protection units which would be unable to provide technical services to the FFS.

For a successful school, there must be strengthened relationships between the frontline services of the typical extension system and research units of the MALMR. The committee promoted itself among the fraternity of staff in the MALMR and was able to obtain additional funds in order to employ an extension officer to specially work with schools within a county. The committee was able to aggressively encourage new schools. The committee recognized the importance of a sensitization process among their extension colleagues and the MALMR research staff. These facts underscore the importance of local organizational development in order to maintain the schools.

The CVFA seeks the interest of all members of the Caura Valley village community. The group has a special women's arm which serves the interest of women. The group actively seeks funds to continue numerous self help projects which are of benefit to the valley. The CVFA jointly participated (with extension workers and scientists) in visits to schools in other extension districts.

When visiting other schools and interacting with other farmers, CVFA members demonstrated remarkable intelligence and leadership regarding the conduct of the FFS and topics of mutual interest. The CVFA was able to launch an innovation where members school themselves in an expansive poly culture cultivation of eight crops within an agro ecosystem and with the use of IPM. The CVFA generated support from a FAO project and a United Nations Development Program project.

None of the remaining schools were supported by the involvement of a farmers' group. It will be important to engage the group dimension in the institution process. CVFA's initiatives are instructive to organizational development that could sustain the FFS. One member of the CVFA became a member of the FFS committee of the Extension Training and Information Services in January 2006. It should be probable and possible to include greater farmer representation on this committee and representation of private input suppliers and other stakeholders within the industry.

By comparison, Simpson and Owens (2002) reported the FFS ability to mobilize initiatives where there were no existing structures as in the case of the developing FFS committee of the MALMR. Where there were previous structures, the FFS group identity quickly disappeared. The CVFA initiatives attested an alternative trend which a previous structure may develop.

Changes in relationships

Farmers felt more at ease in communicating with University of the West Indies personnel, input suppliers, and the local extension officer. They felt more confident in interacting with their own colleagues, even those who did not participate in the schools. They attributed changes in relationship to the type of counseling in which they were engaged during the group dynamic sessions. These sessions were routinely included during the weekly field events of the school. The farmers lauded the efforts of facilitators in helping to develop the type of confidence they now have in dealing with personnel who had much formal education. To quote one male farmer, "I feel confident to explain to a person on any level with big words or small words."

Many farmers noted that they have never spent such relatively high percentages of time with the extension workers and other stakeholders. They appreciated the feedback they were receiving about current field problems. For instance, there were immediate attempts to investigate further pests and disease pathogens by encouraging and training farmers to establish "insect zoos" in order to learn the behavior of insects within the agro-ecological system.

Owens and Simpson (2002) also concluded that FFS had a positive impact on the relationships developed among stakeholders. They alluded to the expectations that the farmers still looked towards traditional relationships which were additional to those of the FFS. This was the same result among the participants in Trinidad and Tobago.

The integration of FFS into existing programs

Participating farmers reported that the process provided a new opportunity to create direct linkages between themselves and researchers, resulting in increased awareness and collaboration. Participants agreed that the process improves field visiting and the conduct of the traditional result demonstrations. They believed that the process also provides an opportunity for joint ownership of discoveries and publications. The school provided a conduit for emphasizing the new requirements for marketing as set out by local and international trading, especially for niche markets.

To have sustained integration, master trainers recommended further effective outreach to entire farming communities. Non-compliance among some community members can still affect the agro ecological system of an entire area. The trainers cited a lack of permanent funding as a possible impediment to encourage more farmers. Among the schools there is generally no funding formula in place for a more sustained effort. Nevertheless, sustained funding mechanisms have begun in some districts and must be vigorously pursued in all. One school sold its tomato crop in an effort to gain funds for a future school.

Technical agencies can share personnel cost through initial incremental contributions, which may be eventually weaned. Indigenous funding efforts would stimulate positive government policy and would minimize a return to traditional reliance on Government funding among researchers, farmers, extension workers, and administrators. The FFS must demonstrate the cost effectiveness of the schools.

Specific Findings among the Caura Valley Farmers

Caura Valley participants were similar to their non-participant counterparts in several ways. Neither group kept appropriate farm records. All schools conducted thus far had demonstrated the value of record keeping and farmers responded well to the appropriate forms of record keeping that were used. The school can therefore help to improve the record keeping behavior among small producers such as those in the study.

There were less than 50% (range 12-38%) of the Caura Valley participants who sought advice from expected sources such as the area's extension officer, the agribusiness shop, neighbors, and relatives. Yet those who participated reported an ability to speak more easily with the extension officer, the agribusiness shopkeeper, and university personnel following the conduct of the schools. This circumstance underscores the improved communication flows that the schools are developing.

There were more females among participants than among non-participants. The participants had a mean age of 44.75 years, which was ten years younger than the non-participants. The mean lengths of time that participants and non-participants farmed in the valley were respectively 19.46 and 27 years. The FFS attracted a younger participant who may understand more long term implications in vegetable production. Females will tend to accept strategic and practical opportunity such as the FFS more readily than males.

Reported mean monthly farm family incomes for both groups were $TT 3,409.52 (participant) and $TT 3,197.5 (non-participant). Yet mean monthly expenditures were respectively $TT 2,516.27 and $TT 1,883.33. The participants therefore reported spending more money on a monthly basis and may have been more easily attracted to what appears to be a new cost effective idea such as the FFS. ($TT6.31=$US1.00 January 2006).

Radio was the most common communication facility that farmers owned. Very few participants and non participants owned cell phones or had access to cable television. Smaller percentages of non participants owned communication facilities. Outreach activities to engage attention must understand the status of communication resources among the farmers.

Those who did not attend the school reported that they were not prepared to afford the time during three months of cultivation. Some felt they don't need the training. Some did not know about the activity.

Implications

Table 2 presents the implications of this assessment in relationship to Simpson and Owens (2002) challenges facing FFS, current extension practice in Trinidad and Tobago, experiences in Africa and other experiences.

Table 2

Summary of FFS Outcomes in Trinidad and Tobago (T&T) and Lessons Learned

FFS challenges of Simpson and Owens (2002)	**FFS outcomes among 14 schools in T&T**	**Comparing reported African and other experiences**
Relevance and response to local concerns.	Producers used the FFS to simultaneously resolve numerous pest problems by using integrated solutions, and incorporating locally based technologies	New locally based solutions in Africa had cost savings which led to widespread adoption. In T&T the FFS must still demonstrate cost savings in order to influence widespread adoption.
Instilling systems learning and the generation of new knowledge.	All stakeholders obtained a better appreciation of the agro-ecological system (AES) in which vegetables are cultivated. Producers are better able to apply an IPM system.	This is a similar finding in Africa alongside a commitment to life-long learning about the AES. Additionally T&T producers generated new knowledge through their own experiments.
Facilitating information flows and farmer to farmer communication.	Top-down approaches were exchanged for bottom-up ones. Information flows were improved.	There was a constraint which African village elders imposed on info sharing. Initial evidence in T&T suggested a motivated client who became keen to share knowledge and who is ready to contribute ideas to new solutions.
Local institutionalization and organizational development.	New committees representing farmers, agents, and researchers demonstrated better successes. A more focused "technologies transfer unit" is becoming apparent in the local MALMR. The unit has the potential to sustain the FFS	Bonzo et al. (2005) demonstrated farmer group leaders were eager to dialogue with the government after the FFS. Braun, Thiele, and Hernandez (2000) demonstrated FFS sustainability through farmer research committees which had similar objectives as in T&T.
Impact on relationships and consequent changes in relationships.	Farmers feel confident to develop productive relationships with all stakeholders. More "to and from" relationships are occurring.	Zijp (1999) ascertained this requirement for technology transfer. In both Africa and T&T there are improved constructive relationships between agents and farmers. However such relationships needed more staff and costly resources.
Integrating the FFS into existing programs.	Integrating mechanisms can link with marketing standards, farmers, and consumer groups.	These mechanisms are neither in Africa nor T&T. They should be pursued.

Educational importance and applications

The Farmer Field Schools had relevance and responded to local concerns regarding the need for more appropriate technology to preserve the agro-ecological environment in which the farmers cultivate vegetables. The school engaged a useful participatory mechanism among scientists, extension staff, and producers which generated new knowledge regarding crop husbandry practices in agro-ecological zones. Despite traditional reluctance to share information, communication flow in farmer-to-farmer participation became evident.

There is a new initiative to build useful organizational relationships made especially evident by the formation of a special committee to support and facilitate schools. The FFS can be integrated into existing programs but would need more administrative support and funding. According to van de Fliert and Braun (1997), the achievement of impact in any extension technology-transfer endeavor requires qualitative and quantitative changes. Qualitative changes concern farmer capacities, practices, collective action, and support systems. Quantitative changes concern reaching a considerable number of people and generating income.

Much qualitative change has occurred during the conduct of these schools. There is an increase in the capacity of the farmer to better understand the agro-ecological environment. A consequence is a better chance to use less costly chemical pesticides and other inputs. Collective action has improved and support systems more easily complement and facilitate decision-making among producers with regard to vegetable production techniques.

More schools would need to be conducted in order to assess quantitative changes regarding diffusion, adoption, and cost effectiveness. A study in Indonesia and the Philippines indicated that the FFS approach did not shift the cost of the exercise from the customary public purse to the farming community (Quizon, Gershon, & Rinku, 2001). Another study (Quizon, Rola, & James, 2002) 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. Gershon, Murgai, and Quizon (2004) concluded that there were useful qualitative changes, such as the ones reported in this study. Yet there was no significant diffusion of knowledge to other farmers who resided in the same village. Most of the farmers who partook of the FFS in Trinidad and Tobago were the core group of producers with whom the extension service frequently relates. Now that this relationship has been enriched, it becomes incumbent to attract a larger number of producers to the FFS.

The researcher recommends studies regarding quantitative changes as a result of the FFS in the Caribbean. These could be accomplished as more schools are conducted in the ongoing initiatives to introduce the methodology to the region.

The FFS is a justified educational and training activity. The FFS has the ability to inform intelligence for appropriate environmentally friendly technologies. The FFS successfully facilitated learning so that a population of vegetable producers from Trinidad and Tobago understood and practiced IPM. The school's philosophy and method can be encouraged and tested among small producers in other parts of the country and in the rest of the Caribbean where there are similar types of producers.

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