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Do Farmer Field School Graduates Retain and Share What They Learn?: An Investigation in Iloilo, Philippines[1]

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Abstract

The farmer field school (FFS) is a participatory approach of diffusing new science-based knowledge and information to farmers. It is deemed expensive because it is season long and involves hands-on activities. But if FFS graduates retain and disseminate their FFS-acquired knowledge and experiences - particularly through their informal communication channels - then FFS is a cost-effective and viable approach to agricultural extension on a large scale. This case study of 307 rice farmers in Iloilo, Philippines, investigates whether FFS graduates retain and diffuse the basic knowledge that they learn in a regular FFS. Knowledge scores are compared on topics typically covered for different groups of FFS and non-FFS farmers. Results show that FFS graduates have generally higher knowledge scores than their non-FFS counterparts. Data also show very little diffusion of FFS-acquired knowledge from field school graduates to other community members; but graduates retain their acquired knowledge.

Introduction

Major advances in farm technologies and the globalization of agricultural markets offer promising opportunities for improving the quality of life of farmers in developing countries. A major issue with these, however, concerns the effective and efficient delivery of the knowledge and information on these new advances and markets to dispersed farmers so that they can capitalize on these developments. How can farmers, particularly in developing countries, be reached, made aware and empowered to respond, so that they are able to participate in and benefit from new and emerging opportunities?

In the Philippines, extension practitioners have tried several approaches for diffusing new farming knowledge and other information to targeted beneficiaries. Mass media, especially the use of radio (Pfuhl, 1988), have been used extensively. Traditional media, such as songs, puppet shows and dramas, have also been tried, including in other Asian countries (Adhikarya, 1994; van de Fliert & Matteson, 1990; Heong, Escalada, Huan, 1998). These knowledge delivery systems have proven to be an efficient means for disseminating new innovations to a large audience (Rogers, 1995) rapidly. However, some have suggested that the limited exposure that communication media offers may not be sufficient for farmers to truly learn and fully understand new knowledge, particularly the ecological dimensions of farming practices that are the basis of a sustainable agricultural technology. Media alone may not be effective in changing farmers' awareness and knowledge (Bentley & Andrews, 1991). Also, while strategic extension campaigns can raise awareness and even improve knowledge, they do not guarantee sustained changes in more strongly held farming attitudes and practices (Escalada & Heong, 1993).

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Owing to the relatively low levels of education of farmers, extension practitioners in the Philippines have developed more intensive interventions that engage farmers directly in the knowledge discovery process. The farmer participatory research, or FPR (Escalada & Heong, 1993, Bunch 1989), and the farmer field school, or FFS (Kenmore, 1991, van de Fliert, 1993), are examples of these approaches that encourage greater knowledge retention and more sustainable farming practices.

Because they require farmers' hands-on participation in small, trainer-facilitated groups, the FPR and FFS approaches, unlike media campaigns, can be expensive -- both in time and in related training costs – especially when a large number of farmers are to be reached. Therefore, and not surprisingly, these participatory learning approaches have come to rely on interpersonal channels and group methods of interaction as practical mechanisms for diffusing greater awareness and facilitating learning among the larger group of "untrained" farmers more quickly.

This paper looks at the farmer field school (FFS) as an extension approach to disseminating new knowledge and information to farmers. In particular, it focuses on the extent to which the knowledge and information that originate from a typical farmer field school are retained and diffused by FFS graduates themselves to their non-FFS counterparts. Farmer-to-farmer extension is important because it is voluntary on the part of the farmers, it raises program coverage, allows FFS-acquired knowledge to spread more rapidly, and thereby makes the FFS a more viable and cost-effective approach to agricultural extension. Although this study focuses on the Philippine case, it has lessons for other countries and other extension methods that may rely heavily on informal farmer-to-farmer interaction channels for broad and rapid diffusion of new farming knowledge and information.

The Farmer Field School Approach in the Philippines

The field school approach, as pioneered by the Food and Agriculture Organization (FAO), is a way to introduce farmers to discovery based learning for dealing with pest management issues in particular, and crop management concerns in general. Because it educates rather than instructs, the field school is regarded as best suited for introducing knowledge-intensive technologies - such as integrated pest management (IPM) - to farmers who have little, if any, formal schooling. The ultimate aim of the field school is to improve farmers' knowledge and decision-making abilities so they can cope with pest and crop management problems on their own.

In the Philippines, the field school approach was initially set up to introduce knowledge on IPM to irrigated rice farmers. Field schools have since been established throughout the archipelago, with FFS activities already comprising a variety of farmers and crops, including upland and non-rice growers. The field school remains the main national extension approach used to enhance farmers IPM knowledge and skills in crop production (SEAMEO, 1997).

In the Philippine province of Iloilo, where this study is focused, the basic FFS still teaches the fundamental principles of agro-ecology, using participatory experimentation and open discussions with farmers. A typical school consists of a class with 25-30 farmers who undergo a season long (a half-day meeting each week over a 10-week period) experiential group learning program focused on crop and pest issues that confront them. Learning modules include topics on plant varieties, methods of seed selection, nutrient requirements and delivery, insect and disease management, field sanitation, and water and weed management. The aim is for farmers to gain an understanding and appreciation of the discovery-based learning methods in relation to these topics so they make good science-based crop and pest management decisions.

The majority of the field schools in the Philippines are government run and financed. Also, FFS sites are not randomly determined. Department of Agriculture (DA) and local political officials select the towns

and villages where the field schools are conducted. Typically, only one FFS is conducted in a *barangay* (village). These FFS sites are predominantly rice areas with local characteristics that make the field school more likely to succeed. In most FFS villages, as in our survey sites, field school participants are partly self-selected. Members of farm households are invited to participate in the field school. However, those accepted have to be available for the duration of the training and should be able to partake in regular learning activities (e.g., be able to read and write). Because of this non-random selection of field school sites and participants, one has to be careful of the biases entailed when comparing FFS and non-FFS sites and participants.

In order to diffuse FFS-acquired knowledge more rapidly, all FFS graduates are encouraged to share their knowledge and learning experiences with other farmers within their *barangays* (villages) and elsewhere. There are two basic approaches to this farmer-to-farmer dissemination. The first is the more formal approach of having farmer-graduates attend "training of farmer trainers" (TOFT) sessions so that they themselves can organize and facilitate field schools using local resources. According to SEAMEO (1997), however, only six TOFTs, - with each having about 25 FFS graduates in attendance – were actually conducted from 1994-1997. Apparently, the formal training of farmer trainers and their use as FFS facilitators are not clear and well-funded priorities of the Philippine program.

The second approach to dissemination relies on the transmission of FFS-acquired knowledge and information through the informal interactions among farmers. This type of farmer-to-farmer knowledge diffusion is the focus of this study. In this paper, we investigate whether there are any significant transfers of basic FFS-acquired knowledge and information to the farm population at large through this informal route. We focus only on the knowledge and information on key topics that a regular field school participant would acquire in the course of a typical Philippine FFS and trace how much of these are conveyed through the informal interaction networks of FFS graduates. If indeed there were significant farmer-to-farmer diffusion, then these benefits of the program help justify the costs of field school training. If there is no observed diffusion, then lessons might be learned on how agricultural extension systems that rely on informal farmer-to-farmer interactions for widespread and rapid knowledge and information diffusion might be improved.

Methodology

In 1995, Rola, Provido & Olanday (1998) initiated a survey to study the impact of the Integrated Pest Management Farmer Field School (IPM-FFS) on farmer pest management knowledge and practices in two villages in Iloilo, Philippines. From that survey, Rola et al.(1998) showed that FFS graduates had higher knowledge scores about IPM than the non-FFS (or NFFS) control group. Furthermore, farmers with high IPM knowledge scores were found to have significantly lower insecticide use (Rola, 1998). Our data and results come from a survey that builds on this work by Rola et al. (1998). The researchers surveyed 307 rice farmers in 11 *barangays* (or villages), all located in Rola's original study town and in two other neighboring towns.

Selection of the Villages

The researchers looked for *barangays* that had similar characteristics and were close in distance to each other. First, three towns were chosen as a stratum for the selection of the villages. These include Rola et al.'s (1998) original study site of Zarraga, and the two adjoining towns of Leganes and Santa Barbara. All Zarraga *barangays*, except for one, had field schools already; Leganes had about a 50:50 ratio of FFS and non-FFS (NFFS) *barangays*; and Santa Barbara had only one *barangay* that already had an FFS. The researchers opted for more NFFS *barangays* (or villages where no FFS were conducted) from Santa Barbara, and more of the FFS *barangays* (or villages where FFS were conducted) from Leganes and Zarraga. In all, 10 *barangays* were selected, five FFS and five NFFS villages, as shown in Table 1. All

these villages were chosen in consultation with local DA officials and other local knowledgeable people, so that they each have the same basic characteristics that would make them also suitable for having an FFS.

Table 1
Study Sites: Leganes, Santa Barbara and Zarraga, Iloilo, 2000

	FFS (N=5)	Non-FFS (N=5)
Leganes	Lapayon	Guinobatan**
	San Vicente	
Sta. Barbara	Lanag	Agutayan/Lupa*/***
		Balabag***
		Cabugao Norte*
Zarraga	Inagdangan Centro**	Gines**/***
	Talibong**	

Note:
* Sustainable agriculture (SA) training was conducted in these sites
** Farmer support team (FST) training was conducted in these sites
***With some residents having attended FFS

Among other things, they are all predominantly agricultural, irrigated, rice-growing, and with average farm sizes of between 1 and 1.5 hectares per household.

In the survey villages, there were two other agricultural extension approaches that were implemented previously. Both however were relatively short-term, privately funded efforts, and focused on limited topics. The first was training on Sustainable Agriculture (SA), an NGO-sponsored effort focused on nutrient management and conducted in two of our five NFFS villages. The second intervention was the Farmer Support Team (FST), a two-day training focused solely on pesticide use safety. The FST was conducted in two FFS villages and two NFFS *barangays* in our study. In general, the extent of non-FFS extension interventions in the survey villages (see Table 1) has been relatively minor. However, one might still exercise caution when interpreting FFS program impacts from comparing the knowledge and performance of FFS and NFFS participants in the surveys. After all, the study is not a full evaluation of the national FFS program. It is a case study that examines whether there is knowledge retention and farmer-to-farmer spread of FFS-acquired knowledge and practices.

Selection of Household Respondents

From the local office of the DA, the researchers obtained for each *barangay*, a list of all the farmers, their places of residence, their farm sizes and the irrigation status of their farms. In the FFS *barangays*, farmers who were FFS graduates were automatically chosen as part of the survey sample. In some instances, there was no list of FFS graduates that was readily available and the researchers had to look at the FFS graduation pictures and identify the graduates. In all, 72 FFS graduates were interviewed. Each FFS graduate was then asked to provide the names and addresses of members of the *barangay*, as well as residents of other study *barangays*, to whom he/she had disseminated his/her FFS-acquired knowledge (following a what may be loosely called a "snowball sampling" approach). A total of 76 names and addresses were generated, although only 32 (42%) of them were tracked down within the study villages. About 90% of the FFS graduates in the FFS *barangays* were part of the sample. The remaining 10% could not be found during the survey period or were no longer involved in farming.

These 32 farmers, or the FFS knowledge recipients in the study, comprised the first–level snowball sample in our FFS and NFFS *barangays*. Unfortunately, following on these informal communication networks, the researchers could not identify a second-level snowball sample, as the first-level 32 respondents could not clearly identify further recipients of their FFS-acquired knowledge.

This difficulty was also expressed in focus group discussions in each FFS *barangay*, where participants generally agreed: there were no significant transfers of FFS knowledge and practices from FFS alumni to the community at large through these informal village networks. For these reasons, the snowball sampling was stopped at this level. The remaining NFFS farmer respondents (all household heads) in the FFS *barangays* were randomly selected from a village list of NFFS farm households with the same farm size and land tenure status as the FFS respondents, but excluded landowners who were not residing in the area. In the NFFS *barangays*, the farm households were chosen via stratified random sampling at the village level. The strata include farm size and whether they owned irrigated farms. All remaining NFFS farmers selected in this manner were household heads. All had no direct interactions with a FFS graduate presently or in the past.

In all, 307 households were interviewed, classified into: 68 FFS graduates residing in FFS *barangays*; 4 FFS graduates residing in NFFS *barangays*; 89 NFFS residing in FFS *barangays*; and 146 NFFS residing in NFFS *barangays*. There were also three FFS knowledge recipients in two NFFS villages.

Household Survey

A pre-tested survey questionnaire was used to, among other things: (a) gather information and document farmers' informal networks and sources of knowledge about cropping practices and (b) administer a knowledge test on topics covered in the typical FFS. Each interview lasted for approximately an hour and a small token given of appreciation was given to each respondent after the interview. The pre-test and actual household surveys were done between early January to middle of March 2000. In addition to this formal survey, focus group discussions were held in each *barangay* to get a better understanding of the communication patterns and networks in the area and to confirm general activities and other events that had taken place within each barangay. Mostly farmer leaders (10-12 farmers) in the village, but with a good number of women, participated in these group discussions.

Survey Results

Household Respondent Characteristics

In general, the survey data, shown in Table 2, suggest that some personal characteristics of the typical FFS graduate are different from those of the average NFFS farmer in the NFFS *barangay*. This suggests that FFS graduates are different, particularly with regard to three characteristics as noted in the table: their gender, tenure status, and the presence of other sources of incomes in their households.

Table 2 shows that the proportion of female FFS participants in the sample is significantly higher than what occurs from the representative drawing of NFFS farmers in NFFS villages. This suggests that there are significantly more women FFS participants than what would otherwise be from a more random drawing of farm household heads in the village. While women partake in decision making, they are not usually the principal farm decision makers in Philippine farming households. It appears then that FFS participants are not properly selected for the field schools to have the greatest impact on farming practices. From the focus group discussions, it was learned that this overrepresentation of women owes mainly to their having both the time and the patience to sit in the weekly class for the whole season.

It is shown in Table 2 that compared with the control group of NFFS farmers in NFFS villages, relatively more FFS graduates are tenants, relatively more NFFS farmers are owner-operators. Also, more FFS respondents (48.5%) have other sources of income than NFFS farmers (34.3%). These differences are statistically significant and suggest that perhaps FFS graduates are less likely to consider themselves as full-time farmers, although it is difficult to explain why these specific differences between FFS and non-FFS farmers are observed. In any case, this issue goes back to how participants are selected into the FFS program. FFS participation is voluntary although some candidates are encouraged to attend. The survey asked FFS graduates how they came to participate in the school. About 60% mentioned that they were encouraged by a *barangay* official; and another 15% claimed to have been encouraged by the DA official/technician. Farmers who are closer, whether socially or spatially, to these officials have a better chance of being asked to know of and participate in the field school.

Table 2
Survey Respondent Characteristics, According to Their Own FFS Status and the FFS Status of Their Village

Characteristic	FFS Barangay		Non-FFS Barangay
	FFS Graduate	Non-FFS Farmer	Non-FFS Farmer
No. of Respondents	68	89	146
Age (in years)			
Mean	51.91	51.22	54.30
SD	11.57	13.81	14.08
Number of years in school			
Mean	8.82	8.20	8.59
SD	3.47	3.40	3.94
Sex (%)			
Male	42.65**	75.28	73.97
Female	57.35**	24.72	26.03
Total	100.00	100.00	100.00
Marital Status (%)			
Single	7.35	7.87	10.27
Married	80.88	86.52	81.51
Others	11.76	5.62	8.22
Total	100.00	100.00	100.00
Tenure Status (%)			
Owners	20.59*	26.97	37.67
Certificate of Land Transfer	10.29	6.74	11.64
Lessees	14.71	13.48	14.38
Tenants	42.65	32.58	30.82
Others	11.76	20.22	5.48
Total	100.00	100.00	100.00
Presence of Other Sources of Income (%)			
Yes	48.53*	31.46	34.25
No	51.47	68.54	65.75
Total	100.00	100.00	100.00
Household Buying Rice (%)			
Yes	63.24	79.78	63.70
No	36.76	20.22	36.30
Total	100.00	100.00	100.00

Notes:

* Significantly different from control at .05 level of significance, based on z-test.
** Significantly different from control at .01 level of significance, based on z-test

Knowledge Diffusion by FFS Graduates

During the early part of the field survey, the 72 FFS graduates in our sample were asked to whom in particular - whether within or outside their village - did they share the pest and crop management knowledge they learned from the FFS. These 72 field school alumni named 76 farmers as their direct beneficiaries. However, only 50 of these 72, or 69% of, FFS graduates shared their field school experience with others. Thus, not all FFS graduates actually conveyed their 'specialized' knowledge to others; as almost one third of the FFS respondents did not. But among those who did, they shared with about two other farmers each, on average.

Over one third (38%) of the 76 FFS knowledge recipients were relatives of the FFS graduates, while over half (54%) were co-farmers (Table 3). The majority of informal FFS knowledge sharing largely took place within the FFS *barangay*. However, the FFS graduates actively networked outside their villages as well, with about one third of 76 FFS knowledge recipients residing outside the village of their FFS-knowledge source.

Table 3
FFS Graduates' Relationship with FFS Direct Recipients, Iloilo Study, 2000

Relationship	FFS recipients (N=76)	%
Immediate family		4
Other HH member	3	4
Relatives		34
Relatives within village	22	29
Relatives outside village	4	5
Non-relative		54
Co-farmer in the same village	21	28
Co-farmer in another village	19	25
Hired laborer	1	1
Others	6	8
Total	76	100

The 307 farmer-respondents named 500 links as their interpersonal communication sources and 530 links as the recipients of their knowledge sharing. Of these, one-third of their network members were relatives but more than half were co-farmers and others (e.g., DA staff). In knowledge seeking, farmers sought out people with the technical expertise in agriculture to answer their needs. Regardless of their FFS status, they interacted with DA personnel, co-farmers, and commercial agents, within and outside their *barangay*. This active interaction took place constantly, particularly between neighbors in almost daily encounters. Interpersonal networks appear to be the predominant method by which farmers acquire knowledge. Though we do not report the details here, our survey shows that both male and female farmers are active participants in the informal communication networks, with males seeking and sharing knowledge from their fellow males more than from females. Female farmers also seek

and share knowledge more with males than with fellow females. For FFS female graduates, there is a tendency to share what they have learned with their male relatives and male neighbors. An exception to these general observations is that female farmers who are indirect recipients of FFS knowledge shared more of their farming knowledge with other females.

This survey administered a knowledge test for all respondents. These tests consisted of specific crop and pest management questions covering five topics of which all but one is normally covered by typical farmer field schools in Iloilo province. These questions were grouped into the following categories: (1) knowledge of pest resistant varieties; (2) knowledge of certified seeds; (3) practices for seed health (or knowledge about the importance of seed health in productivity); (4) knowledge of nutrient management; and (5) knowledge of pest management. Seed health (or item 3 above) is the only topic not discussed directly in the field school. In all, the researchers expected FFS graduates to have better knowledge scores than NFFS farmers and anticipated FFS knowledge recipients to have better scores than their NFFS counterparts who have never been directly exposed to FFS. Also, it was expected that NFFS farmers who reside in FFS villages to have higher knowledge scores than NFFS farmers in NFFS *barangays*.

Knowledge scoring by topic is detailed in Rola et al. (2000). This survey asked from one (e.g., knowledge of certified seeds) to eight (e.g., knowledge of pest management) questions on each topic, with each question relating to a basic idea that would have been conveyed in the field school. A numerical score of 1 is assigned per correct answer. Table 4 is a classification of respondents according to whether they are (a) an FFS graduate, (b) a NFFS farmer residing in an FFS *barangay,* or (c) a NFFS farmer in a NFFS *barangay* (a control group member). Table 4 compares knowledge scores by topic for these three types of respondents. Results show that for all FFS topics, field school graduates have higher knowledge scores than NFFS farmers. Also, from a t-test of the differences between mean scores of farmer groups for each topic, Table 4 shows that FFS graduates have significantly higher knowledge of certified seeds, seed health, nutrient management, and pest management compared to our control group. However, there are no significant differences in the scores of NFFS residing in FFS *barangays* and their counterparts residing in NFFS villages (the control) for most knowledge topics. The control group shows a higher score for nutrient management than NFFS farmers in FFS villages

Table 4
Comparisons of Farmer Knowledge Scores on Sustainable Farming Practices, by FFS and NFFS in FFS Barangays Versus NFFS in NFFS Barangays, Iloilo Study 2000

	FFS Barangay		Non-FFS Barangay
	FFS Graduate	Non-FFS Farmer	Non-FFS Farmer(Control)
No. of Respondents	68	89	146
Knowledge Topics/Practices:			
Pest Management	6.85**	4.85	4.96
Nutrient Management	2.98**	2.54	2.72
Seed Health	5.40*	5.11	5.05
Pest Resistant Variety	2.44	2.43	2.36
Certified Seeds	0.92**	0.80	0.79

Note: Scoring system is explained in Appendix A.
* Significantly different from control at .05 level of significance, based on t-test
** Significantly different from control at .01 level of significance, based on t-test

This outcome may be explained perhaps by what had been noted earlier - the special training in nutrient management held previously in two of the NFFS *barangays*. Also, FFS farmers in the FFS *barangays* have lower pest management knowledge than farmers in the control *barangay.*

It is suggested in Table 4 results that while FFS raise the knowledge and awareness of pest and crop management practices among graduates, non-participants appear to be hardly affected even though, as noted earlier, farmers themselves claim to share knowledge directly with one another. Table 5 reinforces this basic finding. In here, using the same test scores, the knowledge levels of respondents according to their level of exposure to FFS is compared. Table 5 defines three different sets of farmers: (a) FFS graduates; (b) FFS knowledge recipients (or those NFFS farmers with whom FFS graduates claimed to have shared their field school experience); and (c) pure non-FFS farmers who have not had any direct links with FFS graduates. The pure NFFS farmers are residents of villages where no FFS graduate resides. These are the two villages of Cabugao Norte and Guinobatan. As noted in Table 1, each of these two villages were sites of a particular farmer-focused short training program centered on a limited topic. Results indicate that in general, the knowledge differences between field school alumni and other farmers are significant for pest and nutrient management. However, there are no significant differences in the knowledge scores of FFS knowledge recipients and all other NFFS farmers in our survey, except for nutrient management. The latter finding is fairly robust. It suggests that the informal interactions between FFS graduates and NFFS farmers currently are not at a level that can be relied on to transfer especially pest management knowledge on a wide scale. The FFS approach to extension has not produced a significant level of informal farmer-to-farmer transfer of knowledge that would make the field school approach more cost effective and viable.

Table 5
Comparisons of Farmer Knowledge Scores on Sustainable Farming Practices, by FFS, FFS Knowledge Recipients, and NFFS, Iloilo Study, 2000

	FFS Graduate	FFS Knowledge Recipient	Pure Non FFS (Control)
No. of Respondents	68	32	60
Knowledge Topics/Practices:			
Pest Management	6.85**	5.47	4.93
Nutrient Management	2.98**	2.91*	2.57
Seed Health	5.40	5.12	5.28
Pest Resistant Variety	2.44	2.28	2.37
Certified Seeds	0.92	0.81	0.83

Note: Scoring system is explained in Appendix A.
* Significantly different from control at .05 level of significance, based on t-test.
** Significantly different from control at .01 level of significance, based on t-test.
Control group is composed of residents of villages which did not have FFS graduates.

Knowledge Retention Among FFS Graduates

Do FFS graduates retain what they learn from the field school? In Table 6, the FFS graduates in this survey are grouped according to the year they participated in field school. “Old” graduates attended the school before 1995, while the rest were tagged as “new” graduates. In all, 51 of these FFS respondents are “old” and 18 are “new” graduates. Three graduates could not recall their dates of FFS attendance and were dropped. As in the two previous tables, Table 6 compares knowledge scores on the same five FFS topics. Both the chi-square and t-tests showed no significant differences in the knowledge scores of

"old" FFS graduates versus "new" field school alumni in each of the five topics. This means that FFS knowledge is retained by the graduates.

Table 6
Comparisons of Farmer Knowledge Scores on Sustainable Farming Practices, Old (before 1995) Versus New (after 1995) FFS Graduates, Iloilo Study, 2000

	FFS Graduate	
	Before 1995	After 1995
No. of Respondents	51	18
Knowledge Topics/Practices:		
Pest Management	6.80	6.94
Nutrient Management	3.08	2.83
Seed Health	5.29	5.50
Pest Resistant Variety	2.51	2.28
Certified Seeds	0.92	0.89

Conclusions

Knowledge and information are key to rural farm development. In most developing countries, a critical challenge for agricultural extension lies with conveying the major advances in agricultural technologies and markets to farmers efficiently and in a timely manner. For this, several extension approaches have come to rely on day-to-day farmer-to-farmer interactions in order to generate more widespread and rapid agricultural knowledge diffusion, and thereby more cost effective approaches to agricultural extension as well. The farmer field school is one such approach that depends on informal local farmer networks to diffuse new knowledge and information to other farmers.

The results show that in the villages surveyed in this study, farmers actively cultivate interpersonal networks and use these networks for acquiring much of their new knowledge and information. There is considerable informal knowledge sharing that takes place within a village. These results also show that FFS participants learn from the field school experience and retain most of the basic knowledge they learned in these schools. However, it appears that FFS-acquired knowledge and information do not flow readily through the informal farmer-to-farmer interactions that take place in typical rural Philippine setting. In terms of acquiring new knowledge and information, NFFS farmers do not appear to have benefited from the national field school program.

This study did not investigate the reasons for this failure of informal farmer-to-farmer networks in conveying FFS-acquired knowledge to non-FFS farmers. One can only conjecture some possible explanations for this. One possibility is that the new knowledge -- which is based largely on IPM and was the focus of the field schools in the surveyed villages -- is very abstract for most farmers; it does not diffuse well to other community members without the exploratory activities that are the key part of the FFS approach itself. This suggests that while the FFS approach may convey new knowledge intensive technologies to participants, follow-up farmer-to-farmer informal communication alone cannot be relied on to diffuse this new knowledge to others in the community.

A second possibility is that most FFS participants themselves are outside the informal network of farmers that exchange information on a regular basis. As was noted from this survey, a disproportional number of FFS graduates were women, owing mainly to their having both the time and the patience to sit in the weekly class for the whole season. While women partake in decision making, they are not usually the principal farm decision makers, nor are they generally treated as important sources of farming information in the typical rural village in this study area. Still another explanation is that perhaps the field school approach needs significantly more time (than what has transpired since its formal inception as a national program in 1993) for FFS-acquired knowledge to filter down from graduates to other farmers through informal farmer-to-farmer channels. In all, it is important to investigate these reasons further so that more appropriate agricultural extension strategies can be designed for quickly diffusing new knowledge based technologies and other information on a wide scale.

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