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Kaligondang:
A Case History of an
IPM Sub-district

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Detailed Cases

Part 1: Background to the Case

The first part of this case discusses the purpose of the case, information collection, the organization of the case, and general background information on Kaligondang Sub-district.

1.1 The Case and Information Collection

The purpose of this case is to present a description and analysis of the development achieved by IPM trained farmers in one sub-district. The case reveals IPM farmers in the context of not only IPM field activities, but, because IPM is a community affair, in the context of their communities. The information presented in the study:

- is primarily qualitative;
- presents a historical description of the development of the roles of farmers in the implementation of IPM activities;
- describes farmers changing relationships with their world;
- provides an insight to the social benefits that have accrued to them within the context of their communities.

Information collection regarding IPM activities and the IPM farmers in Kaligondang Sub-district has evolved over time. Initially information was in the form of reports written about IPM activities by FAO Technical Assistance Team members who observed these activities as they occurred. The first field reports from Kaligondang Sub-district were written in 1995 and primarily concerned national program sponsored activities. The IPM trained farmers of Kaligondang forced a change in the focus of reports. By 1997 Technical Assistance Team Members were reporting on farmer conducted activities. In September of 1997 an IPM Field Leader from Sulawesi, having heard about Kaligondang, went to the sub-district to meet farmers in their fields and homes and learn from them about their activities. His report on his experience has also been included in this case.

1.2 Organization of the Case

This case consists of four parts. Part Two examines IPM activities that have formed the ‘menu’ of the National IPM Program in Kaligondang Sub-district. Part Three presents descriptions of IPM activities being conducted by farmers in the sub-district. Part Four will present an analysis of the information presented about Kaligondang Sub-district. Part Two and Part Three consist of general descriptions of activities which include ‘thumbnail cases’ providing examples of the activities in the sub-district. These thumbnail cases present field data that will be used for analytical purposes. Other field data is

presented in the form of 'IPM Field Notes' which are interlaced among the parts. These notes will also serve as material for analysis.

1.3 Kaligondang Sub-district

"Why did we choose to focus on Kaligondang Sub-district as an IPM Sub-district? Because:

- *There had already been lots of Field Schools conducted there, there were 25 Petani Pemandu, farmers had been conducting studies, Farmer Planning and Farmer Technical Meetings had been piloted there;*
- *Government officials seemed ready to support the idea;*
- *Petani Pemandu were active;*
- *There were active Farmers Groups;*
- *Farmers had proposed an association of Field School alumni;*
- *The key was that there was a good and active PHP."*

Sudiman, Field Leader

Kaligondang Sub-district, which consists of 18 villages, is about three miles south of the principle district town of Purbalingga District, the location of the UPK, in the province of Central Java. Ten of the 18 villages in the sub-district can be said to be "rice bowls", the 8 remaining villages have at most but a few hectares per village that are suitable for rice production. The total area devoted to rice production in the 10 rice producing villages is 845 hectares which yield, on an average annual basis, nearly 12,000 tons of rice.

The common cropping patterns of rice in the sub-district are (1) **rice - rice - rotation crop** or (2) **rice - rice - fallow**. The rice farmers were organized into 34 Farmers Groups as part of the activities of the PPL's (Field Extension Workers) in the sub-district during the 1980's. A total of 850 of these farmers have participated in rice IPM Field Schools conducted under the auspices of the Indonesian National IPM Program.

The PHP (IPM Field Trainer) and the Sub-district Agriculture Officer, both of whom have played a major role in planning National IPM Program activities in the area, provided the following analysis as to why they have focused IPM activities in the "rice bowl" villages.

"The eight villages that have had no IPM training activities have little potential as rice production areas. You could say that there is no suitable land available for the creation of rice fields in these village. An IPM Field School was organized for one of these villages that had a few hectares with some potential for growing rice, but there was little favorable response on the part of farmers there to the IPM Field School."

Eko Sugiyanto, PHP

“In those eight villages, farming is regarded as a sideline. There are no rice farmers.“

Sub-district Agriculture Officer

Part 2: National Program IPM Activities in Kaligondang

The following is a description of IPM activities that have taken place in Kaligondang Sub-district with funding support from the National IPM Program. Each general description of an activity is followed by a 'thumbnail' case which presents the activity as it was conducted in Kaligondang. In this chapter the activities that are presented are those that are part of the general 'menu' of National IPM Program supported activities. In Kaligondang Sub-district many of these 'nationally' supported activities are being replicated at the village and sub-district level with funds drawn from local sources including farmers. This 'replication' is usually the staging of IPM Field School s in villages supported by local funds or farmers' funds and using local farmers, Farmer IPM Trainers, as facilitators.

2.1 The IPM Field School

IPM activities began in Kaligondang Sub-district with the implementation of **IPM Field Schools**. These are where farmers not only learned about IPM, but they also gained experience in problem solving, critical thinking, and general field ecology. Taken together these are 'tools' that can be employed by farmers in a wide variety of situations. In a sense the Field School lays the foundation for a potentially wide variety of activities which lead to farmers conducting their own local level IPM programs, Community IPM.

The IPM Field School is a field based learning experience for 25 farmers. The Field School lasts for a full cropping season, meeting 12 times with an approximate length of four to five hours per meeting. Each meeting consists of a fairly set pattern of activities, agroecosystem field observation, analysis and presentations, special topics, and group dynamics. The IPM Field School meets throughout the cropping season in order that participants can observe and analyze the dynamics of the rice field ecology across a full season.

The primary learning material at a Field School is the rice field which is where most Field School activities take place. The size of the fields of an IPM Field School vary up to a total area of 1,000 m2. Field School plots receive two treatments. A set of plots will be designated to receive an IPM treatment and another set will be designated as non-IPM or Local Treatment. The primary difference between the two is that the non-IPM fields receive a basal treatment of carbofuran and only nitrogen fertilizer (this tends to be standard farmer practice). The IPM fields are treated based on decisions made by the farmer participants in the IPM Field School and usually reflect the principle of growing a healthy crop. Because of the importance of the field study plots to the learning process, the Field School meeting place is usually close to the

field study plots. Although it is important that the meeting place is out of the direct sun, any simple structure—such as a terrace or bamboo hut—or even a comfortable, shaded area will do.

Participants. IPM Farmer Field Schools are designed for 25 participants. This is not an arbitrary number. During field observations, agroecosystem analysis and other activities, farmers divide into five 'small groups' of five participants each. This is an ideal size for small group discussions. This number allows for sufficient diversity of opinion without being so large as to discourage less vocal participants from taking an active role. Five small group discussions and large group discussions of 25 participants can be easily managed by skilled facilitators. Larger groups may become either chaotic or passive depending on the temperament of the group. After the Field School is completed twenty-five farmers constitutes a neighborhood support group for IPM of a reasonable size within the context of a village.

Selection of participants takes place at a meeting led by the IPM Field School facilitator with the members of the Farmers Group from which participants will be drawn. At this meeting the Field School process is explained. The facilitator also explains to prospective participants that they will be expected to attend every week for the duration of the season. Prospective participants are given an opportunity to either agree (the 'learning contract') or withdraw.

Activities. The basic format of an IPM Field School for farmers consists of three activities: agroecosystem observation, analysis, and presentation of results; a 'special topic'; and a 'group dynamics' activity. Agroecosystem analysis is the Field School's *core activity*, and other activities are designed to support it.

Agroecosystem Analysis. The agroecosystem analysis process sharpens farmers skills in the areas of observation and decision making and helps develop their powers of critical thinking. The process begins with small group observations of the IPM and non-IPM plots. During the observation process participants collect field data—such as the number of tillers per hill and varieties of insects and their populations—and samples of insects and plants. These data are collected from ten rice hills. The facilitator is present throughout the observation to help participants in their observations.

Following the field observation, the farmers return to the meeting place and, using crayons, draw what they have just observed in the fields on a large piece of newsprint or poster paper. The drawings include pests and natural enemies observed in the fields (pests on one side, natural enemies on the other); a rice plant that indicates the size and stage of plant growth, along with other important features such as the number of tillers, the color of the plant and any visible damage; and important features of the environment (the water level in the field, sunlight, shade trees, weeds, and inputs). All members of the small group are involved in the creation of the drawing and analysis of data. While drawing, farmers discuss and analyze the data they have

collected in the field. Based on their analysis they determine a set of action decisions to be carried out in the field. A summation of these action decisions as agreed by the group is also included in the drawing.

One member of each small group then presents these findings and decisions to the larger group. After this brief presentation of results the floor is opened for questions and discussion. Good large group discussions often involve the posing of alternative scenarios, for example questions such as “What would you do if....” This cycle of presentation, question and answer and discussion is repeated until all five small groups have presented their results. Agroecosystem drawings from previous weeks are kept on hand as a reference and as material for discussion later in the season.

Special Topics. Special topics support the agroecosystem analysis by delving more deeply into specific issues relating to the rice agroecosystem and IPM principles. Special topics also provide training in basic experimentation methods. Popular special topics include rat population dynamics and rat control, plant physiology, functions of insects and their interactions, issues surrounding pesticide use, and general field ecology. Good special topics do not degenerate into ‘chalk and talk sessions’. After the trainer introduces the topic and explains the steps to be used in the process, the participants, in small groups, take on the active management of the experiment or small group activity. As with agroecosystem analysis, the skills of observation, data collection and analysis are emphasized.

Group Dynamics. The purpose of the groups dynamics activity is to develop group cohesiveness and problem solving skills, and to encourage collaboration and creativity. These activities generally begin with an introduction by the trainer, who sets up a problem that the group needs to solve. Many of the exercises are physical and active, while others are more on the order of ‘brain teasers’. In either case, the group has some fun while sharing the experience of working together to overcome a specific problem.

Materials. Some of the materials required to support these activities include plywood sheets (as bases to draw on), large pieces of newsprint or poster paper, crayons, and large felt-tipped pens. Each Field School should also have as many ‘insect zoos’— a special topic activity— as there are small groups. Insect zoos consists of one hill of paddy, either in the field or in a pot or bucket, covered with narrow mesh netting or plastic. By placing various insects inside the netting, farmers can study interactions between insects and between insects and the plant under controlled conditions. With the help of insect zoos farmers can learn to answer questions for themselves, for example differentiating herbivores from predators, and the predation rates for rice field natural enemies.

Box A: An IPM Field School Conducted by Farmer IPM Trainers
22 February, 1997

Farmers Group: Sri Lestari III	Week: 8
Meeting Place: House of Farmer IPMTrainer	Age of Plants: 10 weeks

Rice Variety: Cisadane | Distance to Fields: 200 m.
Farmer IPM Trainers: Suhandi/ Susworo | Attendance: 20

Agroecosystem Analysis

Field Observations. Field observations began at 6:30 with Susworo calling the group together and asking the participants to divide themselves into four small groups of five farmers and go into the field. In the field there were four small plots, two IPM plots and two non-IPM plots (the non-IPM plots had been given a basal treatment of Furadan at transplanting and had not been treated with KCL). Each plot had ten stakes on a diagonal which marked the rice-hills that were to be observed. Each group observed the conditions in one of the learning plots. Four members would observe four rice hills and call out data to a non-observer. The non-observer was writing data down as it was called out by the observers. The role of non-observer shifted among the farmers so that each participant could have the opportunity to observe agroecosystem conditions. Each group had two plastic bags to collect field specimens. Among the samples collected by farmers were dragonflies, spiders, rice seed bugs and plants for use in analysis.

Small Group Discussion. Each small group took up crayons and began to draw the agroecosystem analysis, translating the data they had collected to the drawing that aids discussion, analysis, and presentation. Again each member of the group had a role. Some drew insects, others the plant, still others were adding up numbers. Discussion was open and lively. The primary action decision made by each group focused on whether or not they should spray pesticide. This decision was based on the balance between pests and natural enemies. There was also discussions regarding other issues such as water level. The rice seed bug (*walang sangit*) had arrived in large numbers and the farmers decided, rather than spray, they would set out baited traps for the seed bug (a traditional approach to controlling this insect in this area).

"There is an average of two to four rice seed bugs per hill. Our decision was to use a traditional approach to control these insects. We will use crab meat as a bait to trap the insects then collect and burn them."

Field School Participant

Presentations. The discussion was good. There were questions posed by farmers regarding the rice seed bug and its biology and there were scenario posing questions such as: *"What if the population of the rice seed bug becomes too large, could we still control it through trapping?"* Some farmers challenged the decision not to spray. When questions by farmers lagged the Farmer IPM Trainers also posed questions. At the end of the session Suhandi summarized the presentations and action decisions. He referred to the discussions and analyses of earlier meetings and asked participants about changes in the agroecosystem over the last eight weeks.

Special Topic. Susworo introduced the activity and provided directions on the activity. The topic concerned the flowering stage of the rice plant. The topic went off as planned with farmers examining what happens during this stage of plant growth by collecting plants and examining the flowering tillers. Discussion covered questions concerning the pests that usually arrive at this stage, the possible implications of damage due to pests at this stage, the number of tillers per hill, the number of panicles per tillers, the flowers per panicle, etc.

Group Dynamics. Suhandi asked participants to break into small groups. He told each group to draw a picture. He said that each member of a small group was to have a role in the drawing, but no one could talk to each other about the drawing or what they were trying to do. There was to be complete silence. After everyone had a chance to draw, each group hung its picture on the wall. The pictures were just lines. Then the groups were asked to draw another picture, but before doing so discuss what they wanted to draw and the process they would use to make the drawing. The results this time were real pictures. The groups were asked to analyzed the difference between the two exercises and why did the second exercise result in a real picture. Then they discussed the implications of this in terms of organizing and collaborating in groups on IPM related activities.

Insect Zoo. The group had made 'insect zoos' at a previous meeting and they were studying the life cycle of the brown plant hopper by means of these. Other materials were in evidence such as crayons, newsprint, plastic bags for collection samples, etc.

The two Farmer IPM Trainers talked about various planning and management decisions they had made.

"Snack money is being managed by the participant in whose house we are meeting. We give him the money once a month and he sees to it that we have enough snacks for all the participants. The snacks have been fine.
We are holding on to the compensation money of the group. They decided to save their weekly attendance compensation for use as a capital fund. The group intends to rent land as an IPM practice field where they will conduct their own follow-up activities.

"We held preparation meetings at the sub-district level for local officials and the officers of the Farmers Groups in the village. At that meeting we selected the Sri Lestari II group as the site for the Field School . We then held a meeting with the Sri Lestari II group to select participants, explain the Field School process, establish a learning contract, and determine place and time of meetings. The Farmers Group decided who would participate. No women were included in this Field School because most of the membership of the Farmers Group are men. We plan to conduct a Field School in this village during the dry season of 1997 that will have only women as participants."

Suhandi and Sisworo Farmer IPM Trainers

The information for the above thumbnail case was collected during a field survey of Field Schools that was conducted during February of 1997 to evaluate Field School implementation. The Field School was selected randomly for observation. The process conducted by the Farmer IPM Trainers was a good process. The Field School was well organized having preparation meetings, enough materials, acceptable attendance, and a Field School start-up synchronized with the transplanting of rice. Farmers were learning how to work in groups. Critical thinking was emphasized in both small and large group discussions as evidenced by the kinds of "what if . . " questions that were being posed. Participants were also learning about how to learn and in

a sense creating their own knowledge base as they conducted various small experiments such as the ‘insect zoo’.

In terms of control over Field School activities, key management decisions were primarily in the hands of the farmers. The Farmer IPM Trainer, in a meeting with Farmers Group leaders, determined the group that would participate. The Farmers Group selected participants. This is common practice in all nationally funded Field Schools. In this Field School, decisions regarding discretionary

funds (snacks and compensation) were made by the group and the Farmer IPM Trainer. In all National Program funded Field Schools, purchase of materials like seeds and fertilizers is done by the PHP and funds for snacks and participant compensation are the responsibility of the PHP. In this case, as in the case of most Farmer IPM Trainer led Field Schools, the PHP has allowed the Farmer IPM Trainer to manage these funds. Typically, in Field Schools conducted by PHPs, the group decides about the use of compensation funds. The agenda of the Field School was set by the Farmer IPM Trainer and consistent with the stage of growth of the plants in the field.

2.2 IPM Field Schools in Kaligondang, 1990-1997

IPM Field Schools were first conducted in 1990 in Kaligondang Sub-district with the implementation of 4 IPM Fields Schools by the local PHP who had been trained as an IPM Field Trainer. In 1991, 1 IPM Field School was conducted in the sub-district (in Kaligondang Village) by PPL’s under the tutelage of the PHP. Since then all of the rice IPM Field Schools in the sub-district have been conducted by Farmer IPM Trainers. All of the Farmer IPM Trainers are IPM Field School alumni who were trained in series of TOT’s for Farmer IPM Trainers that were conducted in Purbalingga District. (Four TOT’s for Farmer IPM Trainers have been conducted since 1990 in Purbalingga District which have resulted in there being a total of 111 Farmer IPM Trainers in the district. TOT’s typically last seven days, stressing facilitation skills, leadership skills, and technical information. TOT’s take place immediately before the season in which the TOT graduates will conduct Field Schools. The Farmer IPM Trainer conducted Field School is visited four times during its course by the PHP. This visit allows the PHP to support the Farmer IPM Trainer, conduct evaluation, and, with the Farmer IPM Trainer, plan out Special Topics for up-coming Field School meetings.) The Field Schools conducted by Farmer IPM Trainers have been funded by both the National IPM Program and local sources. By the end of the 1996-1997 rainy season, 29 National Program funded IPM Field Schools had been conducted by the 27 Farmer IPM Trainers in the ten rice bowl villages of Kaligondang Sub-district (see the following table).

Table 1. Implementation of Rice IPM Field Schools in Kecamatan Kaligondang, National Program Funded (1990-1997)

Desa	Rice IPM Field Schools			Total	Number of Farmer IPM Trainers
	By PHP	By Farmer IPM Trnrs	By PPL Plus PHP		
Kembaran Wetan	1	3		4	4
Arenan		1		1	
Kaligondang	1	4	1	6	4
Selanegara		1		1	
Penolih		4		4	2
Cilapar	1	3		4	3
Brecek		3		3	
Sempor Lor		4		4	6
Penaruban		2		2	
Tejasari	1	4		5	8
Total	4	29	1	34	27

In 1996 a rotation crop IPM Field School was conducted in Sempor Lor Village and a Follow-up Field School was conducted in Kaligondang Village during the rainy season of 1996-1997. Field Schools in rotation crops are very much like a rice Field School except the crop differs, in the case of Sempor Lor the crop was soybeans. Participants in these “post-Field School” Field Schools are made up of IPM trained farmers. This is because the rice IPM Field School provides an ecological understanding which rotation crop Field Schools are designed to build upon. Without that grounding a participant would be at a disadvantage.

2.3 Follow-up Field Schools

The Follow-up Field School is quite a different activity. The first Follow-up Field Schools were piloted in 1992-1993. In the present version there are four meetings where participants, made up of rice IPM Field School alumni, conduct a participatory planning exercise facilitated by a PHP which includes the following steps:

1. Identification of problem with analysis of cause and effect (see photo below).
2. Identification of goal based on problem analysis.
3. Analysis of alternative solutions to the problem and selection of a prime alternative.
4. Development of activity plans.

In general, the plans are developed by the farmers and the PHP does not know what will be the result of the process. The only constraints put on farmers is that the problem they identify ought to fall within the realm of rice production. Having facilitated the planning process the PHP will then help in the facilitation of the activity that was planned.

Below is presented a brief description of the Follow-up Field School in the village of Kaligondang. The Rukun Tani Farmers Group came into the Field School knowing what their problem was and the PHP was also well aware of what they wanted to do. This helped to speed the planning process along.

Box B: An IPM Follow-up Field School Main Season 1996-1997

"We selected Rukun Tani Farmers Group in Village Kaligondang for this Follow-up Field School for several reasons: the area is a local 'rice bowl', the group is active, and we wanted to provide an example of planning and organizing for local farmers. This village does not have well organized farmers although initial steps have been taken to start a farmers movement, we hope this will contribute to the movement."

Pak Eko Sugiyanto, PHP

"The participants learned to make plans and to think critically about how to solve problems. This was difficult at first because the farmers were unfamiliar with the process, however, by the end of the process they were able to develop their own plans."

Pak Tarno, farmer participant

"Every season, at about 20 days after transplanting, deadheart appears. Farmers here know that this is a result of rice stemborers. Lots of farmers turn to using pesticides at this point. So I posed the question 'does spraying solve the problem or increase it?' The cost of production increases when we spray and we kill natural enemies. After lots of discussion, as a group, we agreed that we needed to find out more about the impact of stemborer damage on yields."

Pak Suhardi, Farmer IPM Trainer

In this particular case the basic problem to be solved by a field study was identified at an earlier meeting of the Farmers Group (see following chapter regarding IPM farmer organizing with Farmer Groups). Thus having identified a problem, the group spent meetings analyzing the problem and deciding on the appropriate study to determine the influence of stemborer damage on plant yield. They decided that the variety of rice that they would plant would be Cisadane. With the help of the PHP they designed and conducted a study to be set within the context of a Field School whereby they replicated the damage caused by rice stemborers by means of selectively cutting tillers. They established ten 2 x 2 m. plots with the following study design:

First cut: 17 days after transplanting:	Second cut: 40 DAT
T 1: 10% of tillers cut from plants	T 4: 10% of tillers cut from plants
T 2: 20% of tillers cut from plants	T 5: 20% of tillers cut from plants
T 3: 30% of tillers cut from plants	T 6: 30% of tillers cut from plants

Third cut: 80 days after transplanting:

T 7: 5% of tillers cut from plants	T 9: 15% of tillers cut from plants

T 8: 10% of tillers cut from plants T 10: No tillers cut (control)
The study Field School met for 12 weeks to conduct agroecosystem observations and analysis which were facilitated by the PHP. The observations were to include: 20 hills per study plot, total numbers of tillers per hill, insect populations, agronomic factors such a water, etc. Special topics focused on the biology and life cycle of the stemborer as well as related topics. The last meeting, Week 13, was given over to taking yield cuts, analyzing study results, and deciding on follow-up activities for the following season including how they could inform other farmers about the results.

Results:

Treatment	Productive Tillers per Hill	Yield T/Ha.
T 1	14	10.3
T 2	12	10.5
T 3	12	10.5
T 4	13	10.8
T 5	11	9.3
T 6	13	10.2
T 7	14	10.2
T 8	15	10.0
T 9	15	10.3
T 10	14	10.2

"Our analysis was that a plant could lose up to 15% of its leaves during the generative stage without a resulting loss in yield. A plant could lose up to 30% of its leaves during the vegetative stage without yield loss. Thus plants can sustain damage because of their ability to compensate and different stages of growth without yield loss and we should not rush to spray when we see some damage. We need to pay attention to the overall balance within the agroecosystem and the ability of the plant to sustain damage before we decide to use pesticides. In this area the level of stemborer populations never reach a critical stage."

Pak Suhardi, participant

The farmers decided that they would make presentations of their study results to other farmers during the village meetings that are usually held before planting season and they would prepare a written report for other farmers groups in the area.

The Follow-up Field School in the above case contributed to strengthening individuals and groups in several ways. The group learned about problem analysis and planning through the planning process. The planning process was participatory in nature so they were able to master that process. They learned how studies can be designed and conducted to solve field problems. Critical thinking skills were improved through problem analysis and the testing of strongly held beliefs by means of field studies. Participants self-confidence was boosted by having conducted a study both in terms of increased understanding of field ecology and in terms of their certainty in their ability to learn about and discuss important issues.

2.4 Farmer Planning Meetings and Farmer Technical Meetings

Farmer Planning and Farmer Technical Meetings have been held in Kaligondang Sub-district since 1994. The Farmer Planning Meeting is focused on planning IPM activities to be conducted by IPM trained farmers at the village level. The Farmer Technical Meeting is a forum for reporting out the results of those and other activities. These activities were piloted in 1994 and then conducted again in 1995. By 1996 farmers were conducting their own farmers meetings and these replaced the National Program funded Farmers Planning and Technical Meetings which were then conducted in other sub-districts.

Farmers Planning Meetings. The Farmers Planning Meeting is an activity designed to help farmers identify local issues, plan activities, share those plans with other farmers on a sub-district level, and leverage outside funding sources (whether local government at the village or district level or at the level of the National IPM Program) to support their activities. Another goal of this type of meeting was to begin to establish a network among IPM farmers at the sub-district level. Rice farmers tend to maintain friendships at a very local level, among neighbors and those who farm near them. Rarely do they have acquaintances among those farmers from outside their village let alone from across the sub-district. Thus this meeting was created to help farmers learn about what other farmers in their sub-district are facing, establish an awareness of the common focus and knowledge shared by IPM trained farmers, and begin to establish the basis for village and sub-district level IPM programming by farmers.

Box C: Farmers Planning Meeting, December 1995

The PHP and the district Field Leader facilitated the organizing of a committee to organize and facilitate the meeting. The committee was made up of representatives from six of the 'rice bowl' villages of the sub-district (two IPM trained farmers per village, usually Farmer IPM Trainers). This committee met to determine the nature of plans to be developed, the format for the plans, and how each group might conduct village level planning meetings. The representatives returned to their villages and met with other IPM alumni to formulate the plans which they would present at the Planning Meeting.

Pak Hadi Suwito a farmer from Village Tejasari said:

"Our group came up with the idea to study the use of urea tablets and Super Phosphate 36% (urea tablets and SP 36 were new approaches to fertilization being promoted by the government. *ed*.) *because we wanted to see if there was any proof for what had been promoted by the PPL. We weren't rejecting the urea tablets and SP 36. We wanted to determine the proper approach to*

using them in Village Tejalsari. The results of our study could then be applied by other farmers in the village."

Field School alumni from five villages (Tejasari, Arenan, Penolih, Kembaran Wetan, Sempor Lor and Kaligondang), six per village including two Farmer IPM Trainers per village, attended the Farmers Planning Meeting. Other attendees included not only the PHP and Field Leader, but Extension Workers from the sub-district, the Sub-District Extension Officer and the heads of each Village. The meeting was conducted in the house of the head of the village of Kaligondang on 19 December, 1995. The meeting started at 9:00 AM and closed at 1:30 PM. The IPM Field Leader and PHP facilitated the meeting. The agenda of the meeting included an opening, a presentation on the purpose of the meeting, presentations of plans, the editing of plans by the groups based on comments from participants, and the determination of a schedule for implementation and where funds would come from. Each group had written out its plans on newsprint and these were attached to the walls of the meeting room. The plans were presented by a member of each group. The meeting was facilitated by members of the organizing committee.

"This is meeting that will strengthen the network among IPM trained farmers, help farmers to share their experience, and contribute to a the continuation of IPM activities at the village level . This a meeting for and by farmers."

Pak Eko Sugiyanto, PHP

Examples of Some of the Activities Planned by Farmers

Farmers Group	Activity	Source of Funds	Schedule
Sri Mukti Group, Kaligondang	Rat control study, Urea tablet study; Promotion of IPM	Farmers and local government	95-96 Main Season
Sri Rejeki Group Arenan	Field School by Farmer IPM Trainers; Urea tablet study	Farmers and local government	95-96 Main Season
Kencana Group Tejasari	IPM Field School by Farmer IPM Trainers; Urea tablet and SP 36 study	Farmers and local government	95-96 Main Season
Sri Lestari Group Penolih	IPM leadership activities; Rat control; Urea tablet and SP 36 study	Farmers and local government	95-96 Main Season
Rukun Tani Group Sempor Lor	Urea tablet and SP 36 study; Rat control	Farmers and local government	95-96 Main Season
Karang Blimbing Group	Produce weeding	Farmers and local	95-96 Main

Kembaran Wetan	equipment; Repair irrigation	government	Season

After the presentation of their plans, the groups divided up and did further work on the technical aspects of implementing their plans based on comments made during their presentations. There was lots of discussion among and between groups.

"Funds for our study will come from our farmers group. Each member will contribute Rp. 1000"

Pak Atmo, Village Sempor Lor

"The our activities resulted from what we wanted to do including testing what Extension has been promoting. The activities that involve just our group will be supported by farmers in our group. As the rat control activity involves the whole village, we will seek support from the village."

Pak Hani, Village Penolih

"The meeting was very appropriate for us. We were able to negotiate among farmers from throughout the sub-district about the progress of our groups."

Farmer from Village Kembaran

"We should be able to bring back to life Farmers Groups from throughout the sub-district that are now 'asleep' by means of the activities that we have planned."

Farmer from Village Arenan

The wide variety of activities planned show that farmers were looking at their local problems, needs, and abilities. Critical thinking is evidenced is several cases by farmers desire to prove to themselves the effectiveness of urea tablets and SP36 and determine how these new approaches to fertilization can be used by farmers in their villages. Farmers were generally looking at issues that were at least group in nature if not at the level of the village. For example, rat control activities need to be carried out at the supra-group level. Sri Mukti Group was interested in spreading IPM knowledge to other farmers. That the meeting included other local agriculture officials and the Kepala Village was useful in demonstrating to these officials the abilities of farmers to plan and that the concerns of farmers are not that different from their own.

Farmers Technical Meetings. In 1995 the Farmers Planning Meeting was followed by the Farmers Technical Meeting nine days later. The agenda of the Technical Meeting included the review the results of activity plans that had been presented at the Planning Meeting during the 1994-1995 rainy season. The purpose of the Farmers Technical Meeting is to provide an opportunity for IPM farmers to share their experience, knowledge and skills through the discussion and analysis of field based problems and activities that have been implemented to resolve those problems. Like the Farmers Planning Meeting the Technical Meeting is designed to help create and support a network among IPM farmers.

Box D: Farmers Technical Meeting 28 December, 1995

Prior to the meeting the PHP and Field Leader formed a committee similar to the one they had formed for the Farmers Planning Meeting for farmers from Tejasari, Arenan, Sempor Lor, Kaligondang, Penaruban and Penolih. The committee determined the agenda of the Technical Meeting, designed a format for presentation of activity results, and inventoried activities previously planned that were conducted in their villages. Members of the committee returned to their villages to meet with their groups to write up presentations on those activities that their groups thought were most important. The Technical Meeting was held on 28 December, 1995 at the house of the head of Kaligondang Village. Thirty farmers participated in the meeting, five from each village including Farmer IPM Trainers. Extension Workers from the sub-district, the Sub-district Agriculture Officer, and village heads also attended the meeting. The agenda of the meeting included an opening, a presentation and discussion of field activities, and closing comments from farmers. The meeting was facilitated by the committee of farmers who had organized the meeting.

Farmers Group	Title of Presentation	Year Implemented
Tirta Kencana Group, Tejasari Village	Planting Distance Study	1995
Rukun Tani Group, Kaligondang Village	Analysis of Farmers' Activities	1995
Sri Rejeki Group, Sempor Lor Village	Fertilization Study	1995
Sri Murni Group, Penaruban Village	Using of empty milk tins to make farm tools	1995
Sri Lestari Group, Penolih Village	Fertilization Study	1995
Sri MuktiGroup, Arenan Village	Rat Control	1995

After the presentation of reports on field trials and other activities, the discussion was opened for general comments and further analysis of the reports by the participants in the meeting. Among the points made during this discussion were the following:

"The idea for conducting a study on optimal planting distances for rice arose because in Tejasari there is a wide variety of planting distances used by farmers and we wanted to know what was appropriate for our location. We did the study for two seasons and what seemed to be the best planting distance was 25 x 25 cm. The results of this study were provided to the farmers in Tejasari during farmer meetings that take place there. Now there are many farmers using this planting distance."

Pak Hadi Suwito, Village Tejasari

"We wanted to know if planting rice in straight rows was better than rows that were crooked. Straight rows yielded more and were easier to weed. We also tried out different planting distances."

Pak Riswoyo, Village Sempor Lor

"What we found, like those in Village Tejasari, was that a planting distance of 25 x 25 cm was best for us."

Pak Muntako, Village Sempor Lor

"Because of our study we have succeeded in involving all farmers in controlling rats, IPM and non-IPM farmers alike."

Pak Hani, Village Penolih

At the end of the meeting the farmers agreed that they needed to share what they had learned at the meeting with other farmers in their villages. This they would do through the forums available to them such as their group meetings.

One of the immediate outcomes of these meetings was that participants became aware of the need for a forum that would help IPM farmers to develop and maintain a network among themselves at the sub-district level. The **IPM Field School Farmer Alumni Association** was created in 1996 by those who had participated in the Farmer Planning and Technical meetings. The meetings of the association provide a forum for the of strengthening of the connection among the IPM farmers of the sub-district. Farmers are continuing to do field trials and studies and the information gained by farmers through these studies is shared by means of the meetings of the association.

2.5 Areal Planning Workshops for IPM Farmers

In early November of 1996 a series of training activities took place in the sub-district with the goal of helping farmers to determine plans for activities that would help establish Kaligondang Sub-district as an IPM Sub-district. To do this the PHP from the sub-district and the Field Leader from the district trained the Farmer IPM Trainers of Kaligondang Sub-district, two from each of the ten rice bowl villages, in an areal planning process. The Farmer IPM Trainers returned to their villages and helped IPM alumni farmers to develop village level IPM activity plans. These plans were to focus on activities that would lead to the creation of IPM Villages. These plans were then synthesized by the Farmer IPM Trainers at a final meeting into a sub-district level plan for the creation of an IPM Sub-district.

Several steps were involved in the planning process:

- Identification of a vision of what an IPM Village would look like. This was a drawing exercise where farmers brainstormed a list of what they thought would be the characteristics of an IPM village and then used these to draw a picture of an IPM village.

- Next the participants inventoried village resources and problems by drawing a map of their village and using symbols to identify resources and problems that extant in their village.

- Farmers were then asked to identify a strategy that would make use of their resources to deal with existing problems and achieve an IPM village.

- Farmers then analyzed resources available to them.

- Finally plans were developed for activities that would be the first step in developing an IPM village.

A Village Level Workshop. The following example details the results of the above steps in the development of a village level plan. The example comes from Kaligondang Village.

Box E: An IPM Village - A Village Plan for Kaligondang

Vision for an IPM Village:

Farmers implementing IPM principles
Routine meetings of IPM farmers
Farmers are using balanced fertilization
Farmers are using superior seed stock
Lots of natural enemies
The environment is healthy
The irrigation system functions well
Organic fertilizers are being used
Planting distances are optimal
The well being of farmers has increased
Farmers doing comparative studies
The science of IPM has been spread among all farmers
Pests and diseases not a problem
Rice production increased
Improved storage facilities for rice
Knowledge of IPM Field School alumni is increased
Farmers conducting regular field observations

Resources Available:

There are Field School alumni
Local officials are supporting IPM
86 hectare of rice fields
There is an area subject to rat damage
There is a meeting place for farmers
There are four Farmer IPM Trainers
The group has capital
There is a Farmers Group
There are rice storage facilities
There are women farmers
The Farmers Group meets
There are sickles
There is equipment for eradicating rats
There are & have been IPM studies
Irrigation system is good, channels are clean
Tools for field prep such as plowing available (a tractor)
There is an area subject to damage from floods

Analysis of Resources

What's good?	What needs improvement?	How to improve it?
Farmers use fertilizer	The kinds of fertilizer being used	Field study
Farmers meetings leaders	Attendance	Need better approach by Farmers Group
Post-harvest storage	Need better thrashing	Demonstration of thrashing equipment
Irrigation	Ditches need maintained	Farmers need to work together on this

Strategy

Conduct field studies/field trials.
Make known the results of our studies to other farmers.
Widen the network among farmers.

Work Plan

Kind of Activity	When	Those Responsible	Source of Funds
Balanced Fertilization	96/97	Sutanto, Tarjono, Sucheri, Munarja,Rismanto, Suhardi, Madreja, Sokaji, Suwara	Farmers
Rice Variety Study (Membrano)	97	Sutano, Suhardi, Kuswari, Saheri, Sucheri, Sokarji, Jamiati	Farmers
Planting Distance Study	97/98	Sumarto, Rismanto, Hadisutaryo	Farmers
Organic Fertilizer Study	97/98	Suhardi, Kuswari	Farmers

One village level official who had followed the process stated, "These plans will be very useful. We can submit these plans for funding through our agriculture development fund. These funds have in the past gone unused and were shifted over to infrastructure development. These plans will give us the means to provide support to agriculture development."

The plans of Village Kaligondong focused on the first two characteristics of their vision of a Village IPM: "Farmers are implementing IPM principles" and "Farmers are doing comparative studies". To see these characteristics

realized the farmers planned a set of studies that focus on some of the issues that they identified as needing action in their analysis of their resources.

From Village to Sub-district. Farmer IPM Trainers from Kaligondang Village then met with Farmer IPM Trainers who had conducted areal planning workshops in the other rice growing villages of Kaligondang Sub-district to determine a plan for creating an IPM Sub-district. The process followed the same steps that were carried out at the village level: identify a vision, map out resources, set a strategy, analyze resources, and develop a set of action plans. The following list was generated as the Farmer IPM Trainer visualized what would be the characteristics that would typify Kaligondang Sub-district if it were to become an IPM Kecamantan.

Quarterly meetings of farmers
Routine field observations conducted by farmers
There is a network among IPM farmers
The environment is safe
IPM being implemented by all farmers groups
All farmers using high-yielding varieties
Farmers conducting field studies
Pesticide use has gone down

Action plan titles developed at the sub-district level to achieve the above vision included:

Promotion of IPM to non-IPM farmers via IPM Field Schools and meetings
Establishing a network of IPM farmers at the sub-district level
Establishing routine IPM meetings at the village level
Establishment of IPM field trial site
Varietal trials
Fertilization studies
Irrigation system maintenance

The above plans were formulated in a morning workshop. In the afternoon of the same day the plans for were presented to the Sub-district Head and village officials including village heads. The Sub-district Head provided a boost to the farmer planners by asking that Village Development Boards (Bangdes) and the Village Council (LKMD) support the plans developed during the workshop with funds from village development budgets. The Sub-district Head said, *"In order to speed up the process of Kaligondang Sub-district becoming an "IPM Sub-district", every village that has been represented at this workshop should use these plans as part of the village development plans of. Bangdes and LKMD should decrease their focus on infrastructure and begin to focus on human resource development for farmers by means of IPM activities."*

The Areal Planning Workshops succeeded at several levels. One they provided momentum to farmer planners and organizers. They had plans in

hand that were based on an analysis of their conditions and how they could act to improve those conditions. They had a vision of what they wanted to do at both a village and sub-district level. They were able to speak clearly about their strengths and weaknesses and to consider both of these factors as they developed activity plans. The workshop process gave them access to local officials and the Sub-district Head, people with whom they might not ordinarily engage in negotiations over resources. They were greeted by an important policy statement by the Sub-district head which further boosted their self-confidence and their belief in the appropriateness of their efforts.

2.6 Farmer IPM Trainers Technical Meeting

Farmer IPM Trainers participate in a seven day TOT as was briefly explained above in the section of Field Schools. Further training and leadership for Farmer IPM Trainer is provided by means of Farmer IPM Trainer Technical Workshops. These workshops take place at the district level and include Farmer IPM Trainer from throughout the district. During a year there are six of these workshops. Not all Farmer IPM Trainer attend these workshops, typically only recent TOT graduates are in attendance. The Farmer IPM Trainer Technical Meeting is designed to provide an opportunity for the enhancement of training and leadership skills of farmers who have been trained as Farmer IPM Trainer. The meeting should respond to the needs of Farmer IPM Trainer based on the evaluations of Farmer IPM Trainer led Field Schools and input from the Farmer IPM Trainer. While this activity is not a sub-district level activity, the workshops have a major impact on Farmer IPM Trainer in the sub-district and the Field Schools that they conduct. Thus an example has been provided of one of the workshops which took place in 1996.

Box F: Farmer IPM Trainer Technical Meeting
Purbalingga District, 28-29 October, 1996

Background

This meeting was the second for the Purblingga Farmer IPM Trainer. Twenty-six Farmer IPM Trainer, among them two women, from the six sub-districts in Purbalingga attended the meeting. Among these farmers, 18 had conducted or were currently conducting Field Schools and eight people will be conducting their first Field Schools in the upcoming main season (the 96-97 Rainy Season). There were 6 PHPs, one from each sub-district, and a district and a regional Field Leader.

Process

The meeting began with a review of the proposed agenda and an agreement between participants and the organizer of the meeting, the district Field Leader II, about the content of the meeting. The Field Leader suggested a schedule

which focused on Field School implementation issues. He proposed that the first day be used to review Field School leadership topics and, because the farmers were staying the night, they might want to suggest some topics for the following day based on small group discussions to be held in the evening. He suggested that the evening discussion groups could focus on any topic as long as they dealt with IPM. The evening discussion groups, there were to be five small groups, were to consist of Farmer IPM Trainer from more than one sub-district. The farmers agreed to this and the meeting proceeded.

Farmer IPM Trainer Meeting Activities

28 October	
13:00 to 13:30	Opening and discussion of agenda for the meeting.
13:30 to 17:00	Field School Leadership
19:00 to 21:00	Small Group Discussions
29 October	
08:30 to 10:00	Conducting the Agroecosystem Analysis and Special Topics
10:30 to 12:30	Develop Follow-up Plans For Alumni IPM Field School Activities
13:30 to 14:00	Determine agenda for next Farmer IPM Trainer Meeting
14:00 to 16:00	Concluding discussion and comments

28 October

Because the Farmer IPM Trainer had varying backgrounds, some had conducted field schools, some were in the process of doing so, and some had just gone through their TOT, the district Field Leader was challenged to come up with an activity that would be of use to all participants as well as be interesting to them. The Field Leader settled on an activity that would make use of photographs of Field Schools to help participants to focus their attention on various aspects of Field School leadership. Using a simple evaluation method, the participants would be asked to analyze and discuss what was happening in the photographs.

The group was divided into five small groups. Each group was given a set of photographs which had scenes of various Field School activities and covered the entire Field School process (from preparation meetings to closing Field School field days). Each group was to first discuss what was going on in the picture. Then each group was to write on newsprint what they saw that was being done well, what needed improvement, and how that improvement could be made. (This analytical approach makes use of simple but effective evaluation method for examining training activities). Farmer IPM Trainer who had previously conducted Field Schools were asked to compare what they saw in the photographs with their experience and why such things (as were in the photographs) happened. Finally, each small group was to present the results of their discussions. All participants were generally active in this session, especially in the small groups. The farmers were usually able to find something positive to say about what was happening in each photograph and identified ways that these activities could be improved.

Agroecosystem Drawing: An Example of Comments Based on a Photograph of Field School Farmers Doing Their Agroecosystem Drawings

What is good?	What needs improvement?	How to improve?
1. Participants have roles, some drawing, some remind checking data, etc. encourage to	1. There are participants who are just sitting around talking	1. The leader should and participants be active
2. There are drawings from that IPM and non-IPM fields	2. Some drawings are not clear	2. Use colors better portray conditions
3. Drawings and information seem complete		
4. Drawings from previous weeks are attached to walls, can see weekly development of crop		

The Evening Session

The Farmer IPM Trainer discussions during the evening were very active. The Farmer IPM Trainer decided that they would hold a contest among participants of current Field School to see who could design a group dynamics exercise. The small group discussions were focused on the implementation of Field Schools. The Farmer IPM Trainer suggested that some of the following day's schedule be given over to a review of how to conduct the Agroecosystem Analysis and Special Topics sessions.

29 October

The second day began with a review of the Agroecosystem Analysis and Special Topics activities. This discussion was led by the district Field Leader and consisted of him presenting the steps in the process of these activities and asking the Farmer IPM Trainer about problems that they had faced in conducting these activities and how the Farmer IPM Trainer and solved them.

The second session was focused on developing ideas/plans for follow-up activities for IPM Field School alumni groups. The Farmer IPM Trainer were asked to identify possible activities to strengthen alumni groups and expand IPM in their areas.

Alumni Follow-up Activities

Group	Activity	When	Funding
Sido Rejo	Field School for those who haven't yet attended one	Rainy Season 1996-1997	Group Funded

Wirosaba	Planting improved var.; rice IPM Field School; Develop farmer media.	Rainy Season 1996-1997	Group Funded
Paliman-Kulon	Urea tablets study; Routine IPM mtgs.	Rainy Season 1996-1997	Group Funded
Penolih	Conduct IPM Field School	Rainy Season 1996-1997	Group Funded
Penam-bungan	Golden Control	Rainy Season 1996-1997	Group Funded
Sela-Program Negara	Soybean IPM Field School	Rainy Season 1996-1997	National
Kemangkon	Conduct IPM Field School	Rainy Season 1996-1997	Group Funded
Kedungjati	Test Cisadane	Rainy Season 1996-1997	Group Funded
Bancar	Establish routine IPM meetings for IPM alumni	The 6th day of each month	Group Funded

The Farmer IPM Trainers suggested the following topics for the next meeting:

1. More specific information on special topics
2. Information on insects and life cycles
3. Administration and reporting
4. Planning of an inter-group contest

During the discussion session at the end of the meeting, several farmers commented that the meeting was useful. When asked if they would like to hold similar meetings even if they weren't supported by project funds the group was enthusiastic in saying they could do such a thing. One farmer suggested that what they needed was to form an organization of Farmer IPM Trainer. At this point several other farmers agreed. Another farmer suggested that they call themselves 'Mitra Tani'. There was unanimous agreement to these suggestions, officers, a president and secretary, were identified, and the group agreed to meet on 17 November at the village center office in Bancar where they would hold a session to develop a plan of work.

2.7 Discussion

In Kaligondang Sub-district, since 1990 there have been several types of IPM activities conducted with funding support from the National IPM program. These activities have included rice IPM Field Schools conducted by both the PHP and Farmer IPM Trainers, soy bean IPM Field Schools, and Follow-up Field Schools, Farmers Planning Meetings, Farmers Technical Meetings, and Areal Planning Workshops. These sub-district level activities have been backed up and supported by two types of activities at the district level, the TOT for Farmer IPM Trainers and the Farmer IPM Trainers Workshops. The management team of the Field Leader located in the city of Purbalingga, the primary city of the district, and the five PHPs which cover the six sub-districts

of Purbalingga District, have been responsible for the planning, implementation, evaluation of these activities. Their vision, support , and commitment have resulted in high quality field activities. Similar activities have been implemented throughout all of sub-districts and districts of all of the 12 provinces implementing rice based IPM activities.

Table 2. National IPM Program Field IPM Activities in Kaligondang Sub-district and Farmers Trained in Rice IPM and as Farmer IPM Trainers (1990-1997)

Desa	Rice IPM Field Schools	Non-Rice IPM Field Schools	Follow-up Field Schools	Farmers Planning Meetings	Farmer Technical Meetings	Areal Planning Workshops	Farmer IPM Trainers	Farmers Trained in Rice IPM
Kembaran Wetan	4		1			1	4	100
Arenan	1					1		25
Kaligondang	6	1	2			1	4	150
Selanegara	1					1		25
Penolih	4					1	2	100
Cilapar	4		1			1	3	100
Brecek	3					1		75
Sempor Lor	4					1	6	100
Penaruban	2					1		50
Tejasari	5		1			1	8	125
Kecamatan Level Activities				2	2	2		
Total	34	1	5	2	2	12	27	850

The role of farmers in the context of these activities has changed from 1990 to 1997. The first Field Schools provided some level of participation to farmers in the context of needs identification and some decisions about funds. By 1994, Farmer IPM Trainers were conducting Field Schools and by the end of the 1996-1997 rainy season they had conducted 29 of the 34 Field Schools that had been funded by the National IPM Program. In other words Farmer IPM Trainers have trained 725 farmers in rice IPM and the PHP has trained 125 farmers.

This shift in control of activities has also taken place in Farmer Planning and Farmer Technical Meetings. The pilot meetings were run by the PHP and Field Leader. The succeeding meetings were organized and run by Farmer IPM Trainers and other IPM farmers. Follow-up Field Schools and the Areal Planning Workshops featured participatory planning approaches. Thus since the first Field Schools were conducted, farmers in Kaligondang Sub-district have achieved an ever increasing control over National IPM Program activities in their sub-district.

Planning for activities has been a major focus of IPM activities in the sub-district. The Follow-up Field Schools of 1993 laid the initial planning foundation in four villages, Kembaran Wetan, Kaligondang, Cilapar, and Tejasari. The Farmer Planning Meetings of 1995 built on that foundation, including those four plus two other villages. The Areal Planning Activity of 1996 involved all ten villages constituting the rice bowl area of Kaligondang Sub-district. The Follow-up Field School in Village Kaligondang also had a

planning component. These activities have resulted in there being a formidable group of farmers who know what it means to plan an activity and they can do so in detail. When called upon, either as individuals or as groups, they can look at their problems and resources in the context of a vision and develop activities that take advantage of their strengths and minimize their weaknesses within the context of an overall goal. This has resulted in their being able to successfully leverage resources and opportunities out of local level officials as well as increasing their self-confidence.
There has also been a stress on field studies. There will be more on this in the following chapter, but for now it is important to note that Follow-up Field Schools have laid the groundwork among their participants to help them study field problems and think critically about the solutions or proposed solutions from outsiders. The results of these studies, unlike what often happens with university or research center research results, is immediately spread to other farmers (or more than one farmer is involved in the study to begin with) and the results are used. This is a result of the credibility that neighbors have for neighbors, even more so when all of these neighbors are part of the same network and have a similar understanding of ricefield ecology and the ability to understand what study results mean in the context of that ecology.

Finally, Farmer IPM Trainers have received considerable training and experience, not only in Kaligondang Sub-district, but in all project provinces. The goal of this 'investment' has been to create teams of Farmer IPM Trainers that could organize and move forward village and sub-district level IPM programs as well as train other farmers in IPM. In this chapter we have seen evidence of the 'investment', in the following chapter we will begin to see how the 'dividends' are benefiting the farmers of Kaligondang Sub-district.

This chapter has sought to lay the foundation for understanding what has and is taking place in Kaligondang Sub-district. The activities discussed have been those that have received funding support from the National IPM Program. The following chapter will present activities that have been planned and conducted by IPM farmers as they have begun to develop their own local level IPM programs.

Part 3: Farmer Led Activities

IPM alumni, primarily Farmer IPM Trainers, have followed-up on activities that they planned within the context of the Farmer Planning Meetings and Areal Planning Workshops described in the last chapter. They have also conducted their own planning activities. Specific activities implemented include routine group meetings at the village level, field studies conducted by IPM alumni groups and by individuals, routine field observations conducted by IPM alumni groups, and 'Farmers Movement' activities. In starting their programs Farmer IPM Trainers found that concomitant with the field activities that they wished to conduct, several organizing activities needed to be conducted. This chapter begins with the organizing activities of Farmer IPM Trainers. As in the previous chapter, the IPM activities being conducted by farmers will be described in general and 'thumbnail' cases will be used to provide a more detailed picture of examples of these activities.

3.1 IPM Farmer Organizing Activities

There have been three basic categories of village level meetings that grew directly out of the Areal Planning Workshops of 1996. The first type of meeting involved the presentation of results from the workshops to farmers at the Village level by the Farmer IPM Trainers who had participated in the workshops with the intention of seeking input and consensus from all farmers at a Farmer Group level. The second category of meetings that have been held were those with village government officials and they were intended to lead to access to village resources in support of farmer conducted IPM activities. The final kind of meetings are those which have been focused on creating or re-establishing Farmers Groups as an active force in the villages in support of farmers needs. This last category of meetings, in the words of farmers, are "routine meetings" of Farmers Groups. They are routine in the sense of their being held at regular and defined intervals, farmers, all farmers, can count on them taking place. These meetings were also discussed in the plans resulting from the Areal Planning Workshops, participants wanted to see these meetings taking place, without them they would not realize their vision of an IPM Sub-district.

Farmers Group Meetings. The IPM farmers who developed the plan for the creation of an 'IPM Village' understood that successful implementation required the involvement of more than just themselves. Thus they set out to begin to involve members of the various Farmers Groups in their villages. From Kaligondang Village comes an example of what happened in the 'rice bowl' villages of Kaligondang Sub-district. The IPM farmers and Farmer IPM Trainers that had been involved in the Areal Planning Workshop began first to build consensus at the farmers level for the implementation of the plans that

would lead to the development of Kaligondang Village as an IPM Village. They did this by going to the heads of each of the Farmers Groups in the village and proposing that they present the results of the Areal Planning Workshop at Farmers Group meetings. These meetings took place in early December of 1996. The following is a case from one of those meetings which provides an example of how these meetings proceeded.

Box G: Rukun Tani Farmers Group Planning Meeting Kaligondang Village

Participants in the meeting included farmers who were members of the Farmers Group and interested in the further development of an IPM program for their Farmers Group, Rasmadi, the Head of the Farmers Group, the PHP, PPL, and a few officials from the village. The idea for the meeting came from one of the Farmer IPM Trainer, Suhardi, who had participated in the Areal Planning workshop. He had suggested to the PHP that given the development of a basic plan for the village during the Areal Planning workshop, going to the Farmers Group would allow the group to determine how it could further the realization of Kaligondang Village as an IPM Village. The PHP urged the Suhardi to go ahead with his idea and a meeting date was set with Rasmadi.

Suhardi began the meeting by providing a summary of the characteristics of an IPM Village that had been developed during the Areal Planning Workshop for Kaligondang Village which included the following:

Farmers implementing IPM principles
IPM farmers group meeting routinely
Farmers using balanced fertilization
Farmers using superior seed stock
Environment healthy
Irrigation system functioning well
Organic fertilizers being used
Planting distances optimal
Farmers well being increased
Farmers doing comparative studies
Farmers applying science of IPM
Rice production increased
Storage facilities for rice improved
Field School alumni knowledge increased
Farmers conducting regular field observations

Eko Sugiyanto, the PHP, mentioned that a general strategy had been identified in the Areal Planning workshops held at the village and sub-district levels. He went on to say that the strategy identified by the Farmer IPM Trainers to be employed for establishing Kaligondang Sub-district as an IPM Sub-district was:

"Increase the skills and abilities of farmers with the goal of farmers becoming more critical in their thinking so that they would not automatically implement the requests or recommendations of officials. Thus by conducting field studies farmers could increase their understanding and discover for themselves what they wanted to know. Given this, farmers would not have to depend on outsiders for recommendations, but they would be able to create the conditions that they wanted for themselves."

Suhardi said that IPM farmers from Kaligondang Village had determined a strategy of:

"Conducting field studies and making known the results of our studies to other farmers through an increasingly wider network among farmers at the village

level. We are suggesting that the Farmers Group determine what studies it would like to be involved in given this strategy."

Thus participants in the meeting were provided a review of what had taken place up to the present point in time and provided a challenge to come up with ideas. Rasmadi suggested:

"You are well provided with experience that you (the farmers attending the meeting) have gained through the Follow-up Field School and other IPM activities. You should go ahead and determine for yourselves what studies you would like to conduct."

Suhardi led the group through a brainstorming session in which the group identified problems that they were presently facing in the field. Among those problems were:

- Present rice varieties used in the village are unable to withstand periods of high rainfall or periods of drought.
- Farmers lack knowledge about implementing balanced fertilization.
- Farmers are using a wide variety of planting distances, which is best?

Two other studies were suggested. Thus the following list of studies were determined as a work plan for the Tani Rukun Farmers Group.

Title of Study	**Implemented by whom**	**When**	**Source of Funds**
1 Planting distance	5 Farmers	12/96-3/97	Farmers Group
2 Balanced Fertilization	3 Farmers	12/96-3/97	Farmers Group
3 Varietal Study (Maros/Membrano)	1 Farmer	12/96-3/97	Farmers Group
4 Stemborer Study	3 Farmers plus Group	12/96-3/97	Follow-up Field School
5 Broadcast Sowing (using Maros)	2 Farmers	12/96-3/97	Extens. Funds

The Farmers Group was only able to fund three studies. The PHP said he would suggest to his Field Leader that a Follow-up Field School could be conducted in Kaligondang Village to help support the Stemborer study. The PPL volunteered that Agriculture Extension had funds available to support the broadcast sowing study. The PHP and PPL volunteered to assist with the study designs if the group found such assistance useful. The group agreed upon the proposed studies and the offers of both financial and technical assistance from the PHP and PPL. Further, the group agreed that study designs would be the subject of a follow-up meeting.

Several interesting points arise within the context of this case. The Farmer IPM Trainer, Suhardi, took over the meeting and was able to bring out a consensus among the participants to support the concept of creating an IPM Village. He further kept the group focused on studies which had been identified as a basic part of creating an IPM Village. Indeed, it was his goal to have the Farmers Group actively participate in the creation of an IPM Village.

The studies chosen were ones that these farmers, most of them IPM farmers or interested in IPM, could do with a fair certainty of success. This is a basic principle in organizing, chose achievable goals. When a group succeeds in achieving its goal, the group will be motivated by its success, be stronger as a group, and be able to tackle more difficult challenges as they arise. The complex issues around the organizing work that would be needed given the IPM Sub-district workplan (creating IPM associations, etc.) were left for a later date or for the Farmer IPM Trainers themselves.

The studies concerning planting distances and broadcast sowing (numbers one and five) are studies of contradictory approaches to rice growing. The first, fairly consistent measured distances between rice hills, requires transplanting of three to four plants per hill. This is time consuming and is a significant cost to farmers who usually hire in labor for this purpose. The second approach is cheaper and faster but carries social consequences as labor would not be hired. Finally, the process of fertilization now promoted in Indonesia makes use of urea in tablet forms. Granulized urea has been outlawed or is unavailable in rice growing areas. Broadcast sowing makes use of granulated fertilizer that can also be broadcast. The farmers of Tani Rukun Farmers Group proposed to test the broadcast sowing approach that is being promoted by the Extension system of Indonesia.

The studies that were proposed in this meeting fit within what was proposed during the Areal Planning Workshop. In fact studies proposed for Kaligondang Village during the workshop included balance fertilization, rice varietal studies, and a planting distance study. Thus the farmers participating in the Areal Planning Workshop were fully aware of issues within their groups and predicted fairly well the studies that would be useful at the village level (see the last chapter).

Meetings with Village Government Officials. One level of follow-up to the Farmers Group planning meetings were meetings that took place at the village level between IPM farmers and village officials in most of the rice bowl villages of the sub-district. As the sub-district head had requested that farmer planned IPM activities become part of the village level development programs, IPM farmers and Farmer IPM Trainers went to work to make use of this new access to support that had never been available to them as farmers in the past. In Sempor Lor Village eight IPM farmers representing the Farmers Groups of Sempor Lor, the PHP and Field Leader met with the head of the village and members of the Village Development Board and the Village Council.

Box H: Farmers Meeting with Village Officials
Sempor Lor Village

The meeting took place at the Village Hall in Sempor Lor. The Village Head, Ms. Athidayadi opened the meeting by saying that the purpose of the meeting

was to review development plans and due to the presence of the farmers and agricultural officials the meeting would focus on agricultural issues. The results of IPM activities over six years in Sempor Lor were reviewed for the Village Head and she said:

"If we count the number of farmers trained versus the number of members of Farmers Groups in the village, we can see that not all farmers have participated in IPM Field Schools. So in keeping with the request of the Sub-district Head, IPM activities will become part of the village's development plans. The Farmers Groups and IPM Farmers should develop these plans according to what they see as necessary."

Atmo, a Farmer IPM Trainer who had recently been named to the Village Development Board, reviewed the IPM activity plans that had been developed by farmers and were to be implemented, some with Village Development Board funding support.

"There are four categories of activities.

1. Field Studies. Agronomic studies such as fertilizer studies will be conducted by individual farmers and the Farmers Groups with village funding support, March through June, 1997.

2. Promoting of IPM through Field Schools. An IPM Field School for women farmers will by conducted between March through June, 1997. The Field School will be supported by village funds and conducted by two Farmer IPM Trainer from Sempor Lor.

3. Application of IPM principles. The goal is to have IPM and the results of IPM field studies conducted by farmers applied throughout the village. The basic principle to be applied is 'grow a healthy plant'. These activities will be conducted as part of a 'farmers movement' and include:

- *Village-wide rat control campaign before plowing takes place at the start of the next planting season.*
- *Cleaning of irrigation channels to insure that farmers have enough water.*
- *Coordinated planting of high yielding varieties with optimal planting distances and good fertilization.Any costs involved in this will be borne by the Farmers Groups*

4. Continuation of prior activities. IPM farmers in the Farmers Groups have formed six observation teams to conduct field observations in a field (0.35 ha) rented by the IPM farmers as a study site. Following their observations the teams analyze the field data, take action decisions, and write reports on their observations. The results of the observations are presented to each Farmers Group on a weekly basis for dissemination among the farmers of their group. The IPM farmers make presentations of these reports at the routine Farmers Group meetings so that farmers both IPM trained farmers and non-trained farmers can learn more about IPM. This activity has been funded by IPM farmers."

The farmers explained that the Field School alumni have created an IPM fund which they have used to rent land as an IPM study field. When these farmers were participating in Field Schools they saved their weekly attendance compensation and charged themselves a fee of Rp 5000 per individual. This

money was used to rent village land (known as *tanah bengkok*, land that belongs to the village the yield from which is sold and used as salaries for local officials). This land was rented to IPM farmers at below market rates by the Village Head. By 1997 the group was renting 0.35 ha and had Rp. 1 million in the bank. This is the land that is used as the observation plot referred to by Atmo. In addition to its being the field observation site, it is also the site for IPM field studies.

There was a presentation by farmers regarding two studies that they had conducted: a study on planting distances and one on fertilization.

The Village Head agreed that it was both important for IPM trained farmers to continue conducting IPM activities so that they can be active contributors to the knowledge of other farmers in the village so that all might increase their yields. There was a general agreement by all present that the plans presented should be implemented as planned.

There was also an agreement regarding the methods IPM farmers conducting studies should use to tell others of their results.

- IPM Farmers would use the routine meetings of Farmers Groups as a forum for presenting study results.
- IPM Farmers would make presentations of study results at the general meeting of all village farmers at the Village Hall which is held each season before planting.
- Observation team leaders would keep the Heads of Farmer Groups informed of study results.
- The PHP and Field Leader will help farmers develop brochures to be printed with the help of the IPM National Program funds and these will be distributed to all Farmers Groups in the village and sub-district.

With this meeting IPM farmers were able to achieve access to local decision makers, leverage funds out of the village government for IPM activities, and achieve formal village policy support for their implementation of a Field School for women, conduct of field studies, and the implementation of one of the basic IPM principles of growing a healthy crop by IPM trained and non-trained farmers in Sempor Lor. The case demonstrates a dramatic shift in the relationship between farmers and local government. Farmers who were once dependent upon officials for direction have become farmers who are taking the initiative in negotiating for village government support. One of the Farmer IPM Trainers has, in a sense, had his capabilities officially recognized with his recent selection to the Village Development Board.

The support of the Sub-district Head in achieving these breakthroughs was important. He was able to see the commitment and focus of IPM farmers and Farmer IPM Trainers at the Areal Planning Workshop. He understood that these farmers represent a positive force for development in his sub-district.

His support led to meetings like this is the ten villages that form the rice bowl in Kecamantan Kaligondang. The government has for many years extolled the process of "bottom-up" planning with little real success in actually operationalizing it. IPM farmers have operationalized this concept for the Kaligondang Sub-district Head.

"Routine Meetings" of Farmers Groups. When they were created as part of the Extension System, Farmers Groups were organized by PPLs and were meant to meet on a regular basis to receive recommendations, instructions, and establish annual planting plans with input requirements in support of Village Cooperative Units. Over time as PPLs were shifted around, younger PPLs came into the system, or the basic weaknesses in the organizational structures of Farmers Groups led to the erosion of their vitality. Many Farmers Groups became inactive. That some groups remained active probably was because of strong local leadership among farmers. Farmer IPM Trainer and other IPM farmers in Kaligondang Sub-district have brought a motivational force back to their Farmers Groups and provided a boost to reactivate them. This revivification started after the Farmers Planning and Technical Meetings and got a further push from the Areal Planning workshops. The Farmer IPM Trainer saw and could demonstrate to other farmers that there were good reasons for once again holding regular meetings. The first boost to these routine meetings came when Farmer IPM Trainer organized planning meetings at the Farmers Group level (as in the case above of the Rukun Tani Farmers Group). Once the groups had planned activities and begun to implement them there was good reason to continue to meet to learn about the results of those activities.

Hence a primary factor in motivating people to attend routine group meetings is that the content of meeting deals with something of importance and interest to participants. Rather than just getting together for social reasons and holding a lottery, the meetings that Farmer IPM Trainers have been organizing for the groups have focused on the analysis of field problems, reporting data from field agroecosystem observations, reporting on the implementation and results of field studies, and planning and conducting group activities such as rat eradication. The following presents an example of one of the routine meetings of Sri Rejeki Farmers Group in Sempor Lor Village. The group meets regularly every 35 days.

Box I: A Routine Meeting of Sri Rejeki Farmers Group

The idea for this kind of meeting arose as farmers were looking for a way to follow-up the meetings of the IPM Field School which meets once a week. They wanted to strengthen their Farmers Group and continue group activities. A meeting of the Sri Rejeki Group was held and they agreed to begin meeting again, once every 35 days. The group decided that it would hold an arisan as part of its meetings the winner of which would be the host for the next meeting.

The full membership of the group was present for the meeting, 60 farmers, which included both IPM trained and non-trained farmers. The meeting was also attended (as is usually the case) by the Village Head, Ms. Atidayati, and other village officials. Often the PHP, PPL, or KCD also attends the meeting if they have information to report. The meeting usually begins at 8:00 PM and goes until the agenda has been covered. On this night the agenda included:

- Village Developments - Ms. Atidayati
- Agricultural Problems - Atmo
- Field Observation Report - The Observation Team

Village Report. According to Ms. Atidayati, during the last planting season there had been an outbreak of Tungro in the village. She reminded farmers of the importance of rotating rice varieties to help guard against the virus. Farmers were urged to be active in IPM activities and in the application of IPM principles in the fields. She urged farmers to spread the word about IPM to farmers who have not yet participated in IPM Field Schools.

Agricultural Problems. Atmo presented results from his field studies on planting distances and the use of KCL. He said he had increased his yield by maintaining a distance of 24 x 24 cm between his rice hills. On top of this he found that the use of KCL also increased yields but that 40 Kg/Ha appears to be the optimum application.

Field Observation. The field observation team reported out. They discussed the results of their observations and the actions they took based on those observations. At this point the agroecosystem of the IPM land is in balance, field conditions such as water level were fine. There were no actions that needed to be taken.

The formal meeting was closed and the arisan was held which determined where the next regular meeting would be held.

3.2 Field Studies by Farmers

One of the primary directions of IPM farmer activities in Kaligondang Sub-district has been the implementation of field studies. The results of every planning session contained field study activities. Studies have been implemented in most of the villages that constitute the rice bowl of Kaligondang Sub-district. These studies have been conducted by individual farmers and by groups of farmers typically made up of a Farmer IPM Trainer and IPM trained farmers. Over 90% of the studies conducted have been funded either by the farmers themselves or by a local source such as a Farmers Group. Funds from outside of the villages, for example t from the National IPM Program, have been used to support only a few studies (see the above thumbnail case about Rukun Tani and the example in chapter two of the Follow-up Field School that resulted). The following partial list provides an idea of the scope of studies that have been or are being conducted by the IPM farmers of Kaligondang Sub-district.

Studies conducted by Farmers Groups:

Broadcast Sowing	Rukun Tani Kaligondang Village
Stemborer Damage	Rukun Tani Kaligondang Village
KCL-Balanced Fertilizer	Sri Rejeki, Sempor Lor Village
Planting Distance	Sri Rejeki, Sempor Lor Village

Studies conducted by Individual Farmers:

Broadcast Sowing	Sisworo dan Kamiharjo, Village Penolih
Rice Seed Bug Control	Sudiarto, Sempor Lor Village
Planting Distance	Sudiarto, Sempor Lor Village
	Hadi Suwito, Tejasari Village
	Muntako Village Cilapar
Comparison of Planting Times	Hadi Suwito, Tejasari Village
Land Use	Hadi Suwito, Tejasari Village
Varietal Study	Suhardi, Kaligondang Village
Golden Snail Life Cycle Study	Hadi Suwito, Tejasari Village
Balanced Fertilization	Ms. Srimulat, Village Brecek

Some of the reasons farmers give for conducting studies include:

> *"Soil conditions vary from place to place. Many farmers are not aware of the importance of planting in straight rows at a consistent optimal distance. We hope the planting distance study can help to straighten out the perceptions of farmers here so that they realize conditions vary and that they need to take advantage of straight rows and a planting distance that is optimal under their own conditions."*
>
> Atmo, Sri Rejeki Group

> *"I thought that Tejasari was not keeping up with other villages, I wanted to help. I also wanted to show that after participation in an Field School farmers can change their way of thinking."*
>
> Hadi Suwito, Tejasari Village

> *"Farmers usually just use urea, some will also use TSP, few use KCL. Thus the study is meant to determine whether there is a benefit in using KCL."*
>
> Ms. Srimulat, Village Brecek

Farmers involved in conducting studies give a variety of reasons for conducting these studies. Typically there comments focus on the needs of all farmers to learn better farming practices. Hence from the beginning the concern of these 'farmer researchers' is to help others. Research is not for the sake of research, but for the betterment of everyone.

Thus farmers conducting studies are also concerned about how they can share what they have learned with others in their Farmers Groups and villages. There have been a variety of approaches employed to this end. The farmers from Sempor Lor (see the earlier thumbnail case for their meeting with village officials) presented the Village Head and other village officials with a four point approach to the dissemination of study results.

Different farmers have used different approaches to the dissemination of study results. Many use the various 'traditional' forums available to them such as arisan or perhaps neighborhood meetings. Hadi Suwito has used several venues (see the profile of Hadi Suwito in the IPM Field Notes in this case). In general, the sharing of information regarding the results of studies conducted by IPM farmer researchers has been set in motion. According to one farmer the proof of this is the number of studies that are being conducted concerning planting distances. He uses himself as an example.

> *"I heard about the results of the planting distance study. One group of farmers had found that a certain distance was well suited to their conditions. Immediately I wanted to try out the same study."*
>
> Sudiarto

BoxJ: A KCL Field Study
Sri Rejeki Farmers Group, Sempor Lor Village

This study was conducted during the rainy season of 1996-1997, between December and March. The farmers of this village were unsure of the benefits of KCL (Potassium Chloride) and many felt that it was enough to use urea and TSP. The Sri Rejeki decided that it wanted to know more about the influence of KCL on yields.

"In general farmers don't understand the influence of balanced fertilization using KCL. They say 'Hey you get the same yields whether you use this fertilizer or not'. Because of this we thought we should try to prove whether this commonly held perception is true or not."

Sudiarto, Sri Rejeki Group

"This study came out of our concern whether KCL really did have an influence towards yield. We asked other farmers and the PPL and they said, 'there is a positive influence, if you don't believe, try it.' So we did the study."

Atmo, Sri Rejeki Group

"We wanted to prove whether what the PPL said about KCL was true or not (even more why increase our costs if there isn't an influence?)."

Sutar, Sri Rejeki Group

Design

The PHP and PPL helped in designing the study which was implemented during the rainy season of 1996-1997 (planting took place in December). Five plots 50 meters on a side were set out. There were five treatments with four repetitions of each treatment.

T1 = 0 Kg/Ha KCL,
T2 = 100 Kg/Ha KCL
T3 = 80 Kg/Ha KCL
T4 = 60 Kg/Ha KCL
T5 = 40 Kg/Ha KCL

Implementation

The study was conducted on land owned by Sudiarto with all members of the group as participants. Weekly observations of the plots were conducted. Data that was noted and collected:

Field conditions including pests, natural enemies. and disease.
The number of tillers per hill.
The number of rice hulls per tiller.
The number of rice hulls that were filled per tiller.
The weight of 1000 grains and the yield per Ha per treatment.

Results

T	Panicles/ Hill	Length of Panicles	Grains/ Hill	Filled Grains(%)	Weight of 1000 grains	Yield/Ha (ton)	Cost of Production	Yield (Rp)
1	16.2	24.78	488.5	94	33.75	8.25	518,750	2,781,250
2	14.5	23.78	394	86	34.9	8.115	563,759	2,682,250
3	15	25.85	467.5	83.3	43.25	8.175	554,750	2,715,250
4	16	25.65	594	79	34.5	8.055	545,750	2,676,250
5	16	25	490	86	34.15	8.79	536,750	2,979,250

Price of dried rice, Rp 400,000 per Ton
Yield = yield/Ha x 400,000 - cost of production

Summary
The largest profit margin was obtained with Treatment Five.
Treatments Two through Four had lower yields than the first which used no KCL.
Applications of KCL that are higher that 40 Kg/Ha do not necessarily raise yield or profits.

Dissemination of Results
The participating farmers, besides talking to their neighbors about the study, have reported out on the process and results to the routine meeting of its Farmers Group and they made a presentation at the Village Hall before the ensuing planting season began in April of 1997.

The above is an example of the kind of detail with which IPM farmers in Kaligondang Sub-district are approaching their studies. Their study was carefully designed including four replications per treatment. The results were carefully analyzed and because of the analysis they were clear about the results and could talk confidently about their results to other farmers and officials. Their word regarding the use of KCL carries weight among their neighbors.

Not all studies have been successfully completed. The study about broadcast sowing of rice failed because of the lack of water.

"We implemented the study during the dry season, a season in which there is normally enough water. This year, the hamparan irrigation system ran dry. There hasn't been any water available. We will try this again in the upcoming rainy season."

Suhardi, Kaligondang Village

3.3 Farmers Group Field Activities: More Organizing

There has been lots of organizing on the part of Farmer IPM Trainers in Kaligondang Sub-district. Field activities other than studies have been organized as have “farmer movements”.

Field Activities. In Sempor Lor and Tejasari, Farmer IPM Trainers and IPM farmers have organized a field activity with the goal of deepening the understanding of IPM farmers about field ecology and teaching non-IPM trained farmers about the basic principles of IPM. With the advent of the first Field Schools in these villages in 1995, participants, with the leadership of the Farmer IPM Trainer, began saving snack funds, incentive money, and even charging themselves dues in order to be able to rent village land to conduct IPM studies, demonstrate IPM practices to other farmers, and to provide a continuation of their IPM ‘group’. Each group started small and now the area of the land rented by each group is approaching half a hectare. The yield from this land is sold and the money put into savings and used for renting land for the following season. Each group has a healthy capital fund because of this and they are now about to set up facilities to provide production inputs to the farmers in their Farmers Groups. These ‘stores’ will be run by the Farmers Groups.

In both villages the Farmer IPM Trainer have organized **field observation teams**. Teams of IPM trained and non-IPM trained farmers, one from each farmers group in the village (four in Tejasari and six in Sempor Lor), rotate making field observations of the agroecosystems of the land rented by IPM farmers. Each week a different team makes an observation. As part of its observation, a team analyzes the data that they have collected and take actions based on that data (much like in a Field School) The data is reported each week to the head of each Farmers group. At the regular meeting of the Farmers Groups (every 35 days) the team from that Farmers Group reports on the data that has been collected since the last meeting. The presentation covers the status of the agroecosystem of the rented land and action decisions that have been taken by the groups because of the observations that they have made. This activity has resulted in the spread of knowledge related to IPM among non-trained farmers and, interestingly, farmers report using less pesticides because of the influences of reports made by the observation teams.

3.4 Farmers Movement

Another example of field activities has been the general ‘Farmers Movement’ that has begun in Kaligondang Sub-district. IPM Farmer IPM Trainer have been able to generate this by guaranteeing the implementation of plans for creating IPM Villages through their organizing efforts. The Farmers Movement is not something that has been forced upon the farmers of the sub-district, but they have risen to the organizing efforts of the Farmer IPM Trainer and are planning and conducting a wide variety of activities in support of agriculture in the sub-district.

"There have always been 'farmer movements', but before these were at the initiative of government officials. This movement has its basis in the initiative of the farmers themselves"

Ms. Titik, PPL Kaligondang Sub-district

"After completing their IPM Field Schools these farmers no longer wait for instructions from officials. They are responding to their own needs. They are carrying out a farmers movement together and for themselves. What they are doing is applying IPM principles."

Eko Sugiyanto, PHP

"After farmers have completed their Field School farmers become aware of the importance of conducting activities that are based on their own collective needs."

Hadi Suwito, Tejasari Village

In Tejasari Village the breadth of the Farmers Movement has been limited only by the short time in which farmers have had to take things over. There is a general consensus that there have always been farmer movements, but those have always been for specific purposes, limited, and at the instigation of local or outside officials. In some cases the activities involved in the 'Farmers Movement' today in Kaligondang Sub-district are not much different than those earlier movements except for the fact that this has been a sustained and farmer generated series of activities lasting almost two years. The following are activities that farmers in Tejasari are calling their Farmers Movement. The organizing strength has come from the eight Farmer IPM Trainers of the village.

Box K: A Farmers Movement in Tejasari Village

The following activities were planned and implemented by Farmer IPM Trainer and other farmers. They have put what they have learned in IPM Field School to use in the fields of their village. For example, what they learned about rat biology they have applied in all of the village fields not just their own.

Activities

Collective Rat Control. This activity is conducted after harvest each season or just before planting. The goal of the activity is to catch rat populations before they build up (rat ecology and rat control are among special topics of all Field Schools). The eradication campaign is organized by Farmers Group. There are four groups, each with 40 to 60 members and responsible for about 40 hectares. A meeting is held at the Village Hall to determine when the activity will take place and which group will be placed where. Then beginning with the fields at the eastern edge of the village farmers, carrying clubs, hoes, and other implements that they can use to trap and kill rats, move to the western edge of their area of responsibility where the next group starts up. Rat burrows are turned out and their occupants chased and killed. The group at

the western edge can take advantage of the first group's advance as rats will scurry up to them.

"Our goal is that with this method there will be no rats left in the hamparan, the fields will truly be free from rats."

Abdul Rohman, Farmer IPM Trainer

Fertilizer Supply. With capital from the harvesting of its land, the IPM group is working with the KUD to supply fertilizer credit to farmers. Along with the KUD the group buys fertilizer and provides the fertilizer to farmers at 14% interest. Of this interest rate, 10% is for the KUD and 4% is for the group which uses it to increase its capital fund.

Planting Plans. The Farmer IPM Trainers have organized a planning meeting for determining planting time for nursery beds and transplanting as well as the variety to be planted. Farmers are able to choose among three varieties of rice, Maros, Cisadane, and a local variety. All of these varieties are high-yielding varieties. According to Hadi Suwito, *"If we can establish a common planting time with specific varieties then we can begin to put pressure on pests and diseases because we can rotate varieties."*

Irrigation Repairs and Cleaning. These activities are conducted by each farmers group. Irrigation ditches need regular repair and cleaning to insure the flow of water to all farmers in the system, not just those at the upper end of the system. Typically, in any irrigation system, those farmers near the upper end of the system tend not to care about system maintenance because they will get water, its the opposite for those farmers at the lower end. Thus achieving a common approach to this in Tejasari has been an important organizing success.

Increasing the Understanding of IPM. The field observation teams were discussed above. The data collected by the teams is used as the basis for discussions of field ecology and IPM principles in the context of regular meetings of the Farmers Groups in Tejasari. The eight Farmer IPM Trainer are divided among the groups and facilitate the discussion of data, field ecology, and IPM. According to Farmer IPM Trainer Yatno, *"We started the activity to help everyone increase their understanding of the science of IPM and be able to apply it in their fields, Field School alumni and non-alumni. We have been successful in disseminating IPM by means of this activity."*

3.5 Discussion

There has been a dramatic swing in control over IPM field activities in the past two years in Kaligondang Sub-district. In effect the IPM farmers, primary among them the Farmer IPM Trainers, have taken over the programming of IPM activities. While Farmer IPM Trainers have been important in this, the activity that set this take over in motion was the Farmer Planning Meetings. These meetings, in effect, asked farmers to begin take on the responsibility for planning and implementing IPM activities. Farmer IPM Trainers who had been conducting Field Schools began conducting field studies. Only two studies have been conducted with outside funding support, the broadcast sowing study and the stemborer study connected with the Follow-up Field School, farmers have conducted 27 studies that were funded either by themselves or their Farmers Groups.

Table 3. Farmer Implemented and Locally Funded IPM Activities in Kaligondang Sub-district Since 1990

Desa	Rice IPM Field Schools	IPM Field Studies	Villages with rented IPM Field Plots	Villages With Farmer Movement Activities	Villages With Planning & Technical Meetings	Villages with Routine IPM Meetings	Farmer IPM Trainers
Kembaran Wetan		2		1	1	1	4
Arenan				1		1	
Kaligondang	1	5		1	1	1	4
Selanegara		1		1	1	1	
Penolih		2		1		1	2
Cilapar		2		1		1	3
Brecek		2		1	1	1	
Sempor Lor	1	4	1	1	1	1	6
Penaruban		2		1	1		
Tejasari	2	7	1	1	1	1	8
Total	4	27	2	10	7	9	27

Both in terms of numbers of activities and in terms of numbers of farmers reached, farmer organized IPM activities have far outstripped National IPM Program activities in Kaligondang Sub-district. There are 34 Farmers Groups in the sub-district and the average routine meeting of a Farmers Group meets at least ten times a year. These Farmers Groups have membership levels that range between 23 and 60 people. Farmers Movement activities reach all of the farmers in a village. Thus the initial investment made by the National IPM Program has paid off in the form of ten Community IPM Programs funded by farmers and their local governments.

IPM trained farmers are leading the way in putting to an end the dependency relationship that has long existed between farmers and officials (both those officials at the local level and those from outside the villages and the sub-district). These farmers are testing national Agriculture Extension recommendations. They are also initiating actions (for example, irrigation

system maintenance) where once they depended on officials to organize this. They have taken control of these relationships with officials so that they might enhance their conditions.

IPM farmers have achieved access to a variety of policy and governmental forums at the local level. They are negotiating for resources which in the past have not been available. The farmers are creating opportunities for themselves and taking advantage of those opportunities. Their status, both in terms of how they view themselves and how others view them, has also increased.

Part 4: Analysis and Discussion

This chapter will present an analysis and discussion of the information presented in the previous chapters and IPM Field Notes. The analysis will focus on three issues:

- Roles of farmers in the implementation of IPM field activities, an analysis of participation or who controls key decisions in the implementation of IPM field activities;
- Changing relations among farmers and a variety of factors;
- Social gains realized by farmers because of their participation in IPM field activities;

4.1 Roles of Farmers

The analysis of roles of farmers within the context of IPM Field activities concerns the issue of participation and, more specifically, who has controlled key decisions in the implementation of IPM field activities. The analysis will consider the IPM Field activities that were conducted either under the aegis of the National IPM Program or within the context of developing Community IPM programs. A list of these activities can be found in Table 4.

The analysis will examine five types of decisions that are common to all IPM field activities.

- Selection of participants. This decision affects the direction of the flow of benefits, in other words, who benefits because of the implementation of the activity. This is an important management decision and who controls this decision reveals much about the role of farmers in IPM field activities. The more control that farmers have over this decision the more likely that benefits will be directed to other farmers or at the very least, to appropriate potential beneficiaries.

- Allocation of funds. The allocation of funds is another indicator of power within the context of IPM field activities. The amount of control over this decision provides insight into how far farmers have been empowered.

- Determination of activity type. In a sense this is an issue that is closely related to the above question in that it also deals with resource allocation. The more farmers are involved in this decision or in leveraging a decision favorable to them, the greater their empowerment regarding IPM field activities.

- Determination of agenda for the activity. In this case the word agenda is used rather broadly. Rather than referring only to the agenda of a single

meeting, it is also used to describe the goals and objectives of an activity. Applying this broader meaning, the agenda of an activity should meet the needs of those participating in the activity. Thus the more farmers are empowered in this decision the more likely the activity is to meet their needs.

- Facilitation of the activity. This is not a question about the choice of the facilitator. The facilitator is in essence the manager of an activity. He or she sets the rules for and the direction of an activity by means of their facilitation. Thus who this person is, farmer or outsider, reveals how far farmers have been empowered to control IPM field activities.

Participation or Farmer Control of IPM Field Activities. Table 4, presents a matrix which evaluates the roles of farmers in controlling the IPM field activities that have been described in chapters one and two. If a box is open, or white then this was a decision or role controlled by the PHP, Field Leader, or the National IPM Program. If a box is black, then the decision or role was controlled by farmers. A shaded box indicates that there has been some sharing of the role or decision.

Table 4. Participation Matrix: Control of Key Decisions

Activity	Who Participates	Use of funds	Activity Determination	Agenda	Facilitator
Rice IPM Field Schools by PHP					
Rice Field Schools By Farmers					
Non-Rice IPM Field Schools					
Follow-up Field Schools					
Farmers Planning Mtgs					
Farmers Technical Mtgs					
Areal Planning Wrkshps					
Locally Funded IPM Field Schools					
IPM Field Studies					
IPM Field Plot/Field Observations					
Farmer Movement					
Farmer Planning/Tech Mtgs					
Routine Mtgs of Farmers Grps					

National Program or PHP/Field Ldr
Shared by Farmers and PHP
Farmers

Selection of Participants. This decision has been a shared decision in most of the National Program IPM funded activities. The sharing is in the sense that the PHP and District Field Leader have identified villages or sub-districts where activities will be implemented, but the selection of participants for those activities has been done by farmers. The section in Chapter 1 on Field Schools describes the process followed in participant selection for that

activity. Non-rice Field Schools only select from alumni of rice IPM Field School. If there are more than 25 alumni in a village where the non-rice Field School is to be conducted, farmers decide who will attend. For Farmers Planning Meetings, Farmers Technical Meetings, and Areal Planning Workshops, the sub-district where these activities were to be conducted was determined by the PHP and District Field Leader and Farmer IPM Trainers were selected by them to be among the participants. The Farmer IPM Trainers working with their Farmers Groups selected the other IPM alumni that would participate in these activities. IPM farmer planned and conducted IPM activities have relied upon farmers, by means of meeting with Farmer Groups, to make the selection of who will participate. Thus farmers have moved into complete control of the decision regarding who participates in IPM activities in Kaligondang Sub-district. Even in the case of Farmer IPM Trainer conducted Field Schools which are funded by the National IPM Program, it is farmers who are now making the selection of both site and participants. Unless specific new activities are designed and implemented by the National IPM Program which specify who will participate, farmers will continue to control this decision.

Allocation of Funds. The allocation of funds has been a shared decision in all National IPM Program funded activities. Funds for an activity are usually provided to the PHP. In the case of Farmer IPM Trainer conducted Field Schools, the Farmer IPM Trainers buy materials and control funds for snacks and participant attendance compensation. The decision over how snacks will be obtained, how much will be paid for snacks, and the payment of attendance compensation is a shared decision among Farmer IPM Trainers and the Field School participants. In farmer planned and conducted IPM activities, farmers make all funding allocation decisions. In some cases IPM farmers negotiate with local government for support of activities and the local government selects which activities it will support, but the farmers remain in control of the allocation of those funds.

Determination of Activity Type. Activity selection in terms of National IPM Program activities is a resource allocation decision that is usually decided by non-farmers. The National Program budget allocates activities to provinces then the province allocates activities to the district. At the district level the Field Leader can take into consideration sub-district level needs and farmer generated plans in decisions regarding allocation of activities. In the case of the recent Follow-up Field School conducted in Kaligondang (see “Rukun Tani Farmers Group Planning Meeting”, a thumbnail case in the third chapter) IPM farmers were able to leverage the allocation of one of these activities to their village. Farmer conducted activities are based on their own needs and they decide at a village level what activities will be conducted.

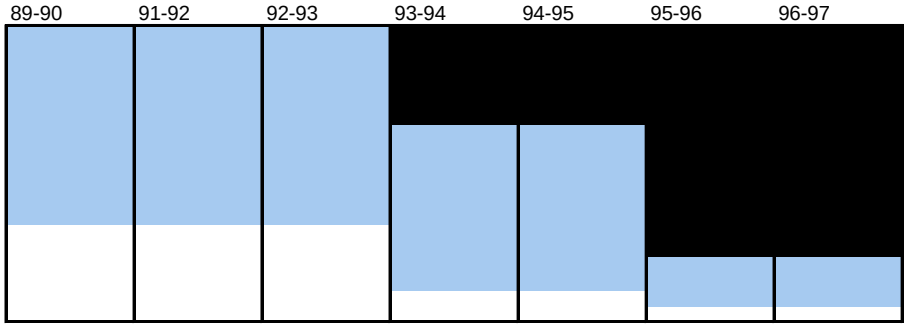
Determination of Agenda for the Activity. The word agenda is used rather broadly to refer to more than the agenda of a single meeting, it is also used to describe the goals and objectives of an activity. This decision has been generally a shared decision in terms of National IPM Program funded activities. For example, a Field School may appear to be a fairly set process, but preparation meetings seek to determine local needs and then the PHP or

Farmer IPM Trainers determine a curriculum that meets those needs. Weekly meetings of a Field School are based on field conditions and participant decisions regarding scheduling. The Areal Planning Workshops used a process that was designed at a national level to implement the national strategy of providing planning skills to farmers and supporting farmers in the development and implementation of Community IPM programs. This process was refined at the local level by Farmer IPM Trainers. In the case of farmer designed and implemented activities, farmers control this decision.

Facilitation of the Activity. The rice IPM Field School, rotation crop Field School, and Follow-up Field School are facilitated by a PHP. All other National Program activities have either Farmer IPM Trainers conducting them or sharing that role with the PHP. All farmer planned and implemented IPM activities are facilitated by farmers.

Trend to Control. Farmers in Kaligondang have moved from some control to total control of IPM field activities in the sub-district. The case of Field School implementation best describes this. Initial Field Schools were conducted by the PHP where there was some sharing of control. Since 1994, except for a Follow-up Field School and a rotation crop Field School, all Field Schools have been conducted by Farmer IPM Trainers who were in control of all but one of the five decision areas that are under analysis. The implementation of these Field Schools (along with TOT training) provided the Farmer IPM Trainers with background and motivation to design and implement their own activities where they and their neighbors were in total control of these decision areas. The following graphic shows the relative change in control held by farmers over the conduct of IPM activities in the sub-district of Kaligondang. While not precise, the graph does provide a fair description of the development of the power of farmers over the IPM program in the sub-district. The role of farmers in the sub-district has clearly changed from that of attending and shared control in a few IPM activities to one in which they control the direction and future of IPM activities in the sub-district.

Table 5: Increase in Relative Control by Farmers Over IPM Activities Since 1990 in Kaligondang Sub-district



	89-90	91-92	92-93	93-94	94-95	95-96	96-97
	4 Field Schools	1 Field School	4 Follow-up Field Schools	6 Farmer-led Field Schools; Farmer-led Studies	8 Farmer-led Field Schools; Farmer Plng & Tech Mtgs; Farmer led Studies	8 Farmer-led Field Schools; Farmer Plng & Tech Mtgs; Farmer led meetings; Farmer-led Studies; Farmer Mvmt	10 Farmer-led Field Schools; 1Follow-up & 1 Soybean Field School; Areal Planning; Farmer led meetings; Farmer led Studies; Farmer Mvmt
No Farmer Control							
Shared Control							
Farmers in Control							

4.2 The Relationships of Farmers with Their World

Because of the implementation of IPM field activities by the National IPM Program and by farmers, the relationships of farmers with important actors or factors in their world should have changed. One reason for this is that IPM Field Schools touch upon important issues relevant to these relationships including ecological understanding, agronomic practices, policy (for example, pesticide use reflects government policy and agronomic practices often reflect Agriculture Extension policy), and critical thinking. Farmers who have become IPM experts should be able to understand and take more control over the relationships in which they are involved. The analysis will examine the following relationships.

- Farmers to the agroecosystem.
- Farmers and farming
- Farmers and money
- Farmers and policy
- Farmers and other people

The analysis will examine how these relationships have changed at both the individual and collective level in terms of control, understanding, and the

benefits that have accrued to farmers because of the changes in these relationships.

Farmers to the Agroecosystem. There are many elements in the relationships farmers have with the agroecosystem within which they work. Clearly farmers have achieved a greater understanding of their agroecosystem because of their participation in IPM Field Schools and implementation of field studies. This increase of understanding is evidenced by how farmers talk about the different elements of their agroecosystems.

> *"Now I know what are pests and natural enemies."*
>
> Romini, IPM alumni
> Sempor Lor Village

> *"Our analysis was that a plant could lose up to 30% of its tillers during the vegetative stage without yield loss."*
>
> Suhardi, study participant
> Kaligondang Village

> *"If you spray rice, besides killing pests, you also kill natural enemies. Thus if pests come there are no natural enemies to prey on them and you can end up with lots of pests."*
>
> Ms. Suyati, IPM alumni
> Brecek Village

> *"If we can establish a common planting time with specific varieties then we can begin to put pressure on pests and diseases because we can rotate varieties."*
>
> Hadi Suwito, Farmer IPM Trainer
> Tejasari Village

The above statements indicate that farmers, because of their involvement in IPM activities, have increased not only their understanding of their relationship with their agroecosystem, but they have also gained some control over the agroecosystem. This has occurred both at the individual and the group level. Hadi Suwito's statement was in the context of discussing his group's effort to create and sustain a farmers movement at the village level. That there are farmers movements in all of the ten rice bowl villages indicates that farmers collectively are now in a new relationship with their agroecosystem.

The example of activities to control rats provides one of the best examples of farmers accepting as inevitable one of the factors in their agroecosystem. Farmers felt rats to be something that was out of their control. Village officials had to force them into taking control measures. As IPM farmers learn about the biology of rats and their habits, they also learn how they can control rats. This understanding has led the IPM trained farmers to share their knowledge

about rats and organize control measures. One major benefit of the change in this relationship of farmers with the agroecosystem is that more rice is harvested because of less damage due to rats. A second benefit is that there is less poison being applied in the form of pesticides and this has immediate health benefits.

Farmers and Farming. Farmers had almost been educated out of an understanding of cause and effect related to different farm management practices because of the approach taken by "green revolution" extension methods. Farmers were told to apply fertilizers and pesticides by counting days after transplanting. Farmers were not aware of how these practices were connected to either the growth of the plant or the agroecosystem in which the plant grows. Farmers were told to plant specific varieties, but not why or how high yielding varieties required more urea to optimize yields. IPM training stresses agronomic management issues and their connection with the growth of the plant. IPM trained farmers can optimize the differing factors related to agriculture technologies because of their increased understanding of plant growth and the requirements of plants related to water and nutrition.

> *"Many farmers are not aware of the importance of planting in straight rows at a consistent optimal distance . . . the planting distance study can help to straighten out the perceptions of farmers . . ."*
>
> Atmo, IPM alumni, Sempor Lor Village

> *"Before the Field School we thought, 'just as long as we get the plants in the ground'. The we learned that it was important to grow a healthy plant. To do so we had to work the soil well, use appropriate fertilization, and do good weeding . . ."*
>
> Sutiyem, IPM alumna, Brecek Village

With increased understanding of the technologies at hand, IPM trained farmers have learned to master those technologies, take decisions based on their analyses of the technologies, and apply them appropriately. They are no longer dependent on recommendations and outside technologists. IPM trained farmers control their relationship with farming. They are helping others to learn about these issues as evidenced by the field studies and regular meetings at which they discuss their study results. IPM farmers are helping to put their neighbors in control of their relationship with farming.

A second element of the changed relationship of farmers to farming is that farmers are working to obtain greater access to inputs at more favorable costs. In Tejasari and Sempor Lor IPM farmers have rented land as study plots and have been saving income from those plots in group capital funds. They are now working with their Village Agricultural Cooperatives to make inputs available at lower costs and lowered rates of credit.

Thus benefits have been derived because of this changed relationship at both individual and collective levels. IPM farmer field studies indicate that increased yields can be achieved due to better agronomic practices and IPM and non-IPM farmers are applying these results (see “Hadi Suwito” in the IPM Field Notes). Another benefit is reduced costs both in terms of more effective use of inputs (see the “KCL Field Study” thumb nail case in Chapter Three), but also in terms of the lowered input costs being made available by IPM groups.

Farmers and Money. IPM farmers are becoming involved in creating capital and using that capital for their own and others benefits. As referred to above, IPM farmers have taken on offering credit at lower terms. Rather than simply accepting the rates available to them, they are changing the rates. Another facet of this relationship is the ability to leverage money to support such things as Field Schools (for one example see the thumbnail case “Farmers Meeting with Desa Officials” in Chapter Three) and field studies. Because IPM farmers have been able to demonstrate their ability to conduct activities that benefit not only themselves they have also been able to charge dues to all members of their Farmers Group to help support IPM activities.

> *“Funds for our study will come from our farmers group. Each member will contribute Rp. 1000”*
>
> Atmo, Farmer IPM Trainer
> Sempor Lor

Benefits to IPM trained farmers and to Farmers groups are not only lowered costs of credit, but increased access to further learning opportunities being offered through local support of farmer conducted IPM activities. Learning activities such as Field Schools, field studies, and discussion and solution of farming related problems at routine farmer meetings has resulted in a deeper understanding of ecological principles shared by a wider community of farmers in the sub-district.

Farmers and Policy. Farmers in the sub-district have always been on the receiving end of policy. This has changed because of the confidence of IPM trained farmers in themselves, their ability to exercise critical thinking skills, and their commitment to IPM and its benefits for all farmers in their communities.

Within the Kaligondang Sub-district, IPM farmers have had one immediate effect on local policy. The Sub-district Head has instructed villages to broaden their development activities. Village development projects should include human resource development in the form of funding support for farmer planned IPM activities. Thus IPM activities are becoming part of not only sub-district policy but of village policy.

The strength of IPM farmers has forced Agriculture Extension workers and Village Agricultural Cooperatives to comply with national policies. Agriculture Extension workers no longer recommend pesticides outlawed by presidential decree, nor do they readily recommend use of any pesticide. Local Village Agriculture Cooperatives are also in compliance with national policies by no longer requiring that farmers accept pesticides as part of the Cooperatives' Farmer Credit Package.

The benefits from this changed relationship accrue to the collectively to farmers in the sub-district. Once again it means that there are more educational opportunities available to them. Farmers are not being pressured to use broad spectrum pesticides, and credit packages do not require farmers to use pesticides. Thus there is a healthier agroecosystem and less danger of poisoning to farmers and their families from pesticides.

Farmers and Other People. The locus of control in the relationships that IPM farmers have with others has changed. Extension agents can no longer instruct them to follow recommendations, rather IPM farmers test those recommendations. The Sub-district Head and Village Heads no longer control farmers activities by instructing that certain actions take place. Farmers are initiating those actions. The Sub-district Head has instructed others to support farmers rather than the other way around. IPM farmers are now controlling their relationships with the officers of their Farmers Groups by skillfully introducing action plans that educate and empower all members of the Farmers Groups (see the "Rukun Tani Farmers Group Planning Meeting" in Chapter Three). Agriculture Extension workers are dependent on farmers to test their recommendations and, if the recommendations pass the test, to spread the word about the recommendations. Other farmers listen to what IPM farmers have to say and apply those ideas in their fields.

> *"Farmer led IPM activities have modernized the thinking of farmers in the Village"*
>
> Ms Latifah, Village Head
> Kaligondang Village

The above quote indicates not only how one Village Head has come to think of IPM farmers, but how other farmers have been willing to listen and learn from IPM farmers. The resulting benefits because of this change in locus of control has accrued to farmers both individually and collectively. IPM farmers are gaining in power in their villages and Farmers Groups both through enhanced informal recognition of leadership ability and the formal positions of leadership in local government to which they have been nominated. Farmers in general have benefited from this leadership in terms of more educational opportunities, greater control over their livelihood, and a healthier approach to farming.

The relationships that IPM farmers have with important factors in their world have changed. The analysis of the five categories of relationships above shows that farmers have increased their control over those relationships. This

increased control has not been limited to IPM Field School alumni and has resulted in positive benefits for all farmers. The benefits are broad and not limited to economic benefits alone. Thus IPM activities as they move from Field Schools to Community IPM serve to strengthen all farmers.

4.3 Social Gains

In analyzing social gains we are interested in determining how specific conditions have changed. An explicit goal of IPM training for farmers is for farmers to become IPM experts. As experts IPM farmers are aware of the conditions in which they live and can act to improve those conditions. As those conditions improve farmers will be able to realize their full potential both as IPM experts and as people. These conditions, which we have labeled as social gains, are:

- Access
- Leverage
- Choices
- Status
- Critical Reflection Capacity

Access. In the case of IPM farmers 'access' refers not only to access to inputs for farming, but access to resources to support IPM activities at the village level and, hence, access to those controlling those resources. Access is gained when the ability of IPM farmers' to obtain access is either newly establish or enhanced because of IPM activities and the activities of IPM farmers.

Access to Inputs. The material in this case suggests that the major input problem is water. The Sub-district Head noted this and his efforts to try to improve the irrigation systems in the sub-district. One study, broadcast sowing, failed because of lack of water. IPM farmers have taken two actions to improve this. They have organized irrigation system maintenance activities to insure that the water entering the systems gets to where it is needed. They have put pressure on the Sub-district Head to do something about it as evidenced by the concern he expressed in the interview with him in the "IPM Field Notes". Thus IPM farmers have achieved access to officials and have expanded their capacity to access water as it enters the systems in which their fields are located.

IPM farmers in several cases have organized to obtain both credit at better terms, by working with a local Village Agricultural Cooperative, and other farming supplies, by creating their own supply outlet. This access is not being limited to IPM farmers but is being made available to all farmers.

IPM farmers are providing access for other farmers to another input which is more basic and more important than simply “farming inputs”. They are providing access to knowledge for themselves and other farmers by conducting field studies, Field Schools, and “seminars” at the routine meetings of Farmers Groups. This knowledge will help all farmers to make better use of “farming inputs” such as seeds, fertilizers, and water. IPM farmers are helping to increase the management capacities of all farmers in their villages.

Access to Those Holding Resources. By means of meetings, lobbying, and organizing, IPM farmers have been able to put their concerns before local officials at the village and sub-district levels. These concerns have been expressed in the shape of plans which encompass a vision, strategy, analysis of resources and resource needs, and action plans. The Head of the Sub-district, Village Heads, members of Village Development Boards, and Village Councils have made themselves available to IPM farmers and their plans because the plans are complete and provide a direction for development efforts. Also IPM farmers have been able to demonstrate that their interests runs broader than themselves by coordinating activities such as “Farmers Movements” and increased educational opportunities for all farmers. The concern for the development and well being of their villages has increased the respect of local officials for IPM farmers and they have made themselves approachable as evidenced by the comments of officials in the materials of this case.

Access to Resources to Support IPM Activities. This access has been gained as evidenced by villages providing funds to support studies and Field Schools. Also IPM farmers have found other means to access funding resources either by generating their own funds from IPM study fields or by using their increased stature within their Farmers Groups to access funds generated by means of the levying of dues and contributions. Farmers have supported several Field Schools in Kaligondang Sub-district by means of contributions.

Leverage. Leverage refers to farmers bargaining strength to obtain the resources they need. When farmers can organize themselves to claim these resources, leverage can be said to be achieved. As mentioned above and as demonstrated in the case materials, IPM farmers have, by organizing and collaborating with others, been able to leverage resources from local officials, boards, and Farmers Groups. Organizing has taken two forms, achieving consensus within Farmers Groups to implement IPM activity plans and presenting those plans to local government, and organizing “farmers movements”. In each case a solidarity has been achieved among all farmers and this common front has resulted in the ability to leverage funds not only from local government, but also from Farmers Groups, and farmers themselves.

A second type of leverage has also been achieved. Leverage over policy and the implementation of existing policy. The Sub-district Head has urged a new policy of villages supporting human resource development upon Village Heads. Farmers have organized to help Villages Heads to realize this policy

and have been able to leverage funds at the village level to support IPM activities.

Choices. This includes increased options as well as the ability to take reasoned decisions among those options. Within the context of farming IPM farmers have increased their understanding of the ricefield agroecology and can analyze the options within that context. For example the rice stemborer study demonstrated that farmers do not have to apply pesticides to avoid loss of yield. If damage occurs at specific times or within certain levels, 30 % of productive tillers lost during the vegetative stage or 15 % of productive tillers lost during the generative stage, there will not be an accompanying loss in yield because of the ways in which a plant can compensate. The use of baits to trap pests and organized rat control activities also demonstrate that farmers are increasing their options in the context of pest management.

IPM farmer organizers have demonstrated that they can analyze problems and take reasoned decisions among options in their role as planners. The plan developed in Kaligondang village reveals a collective analytical and planning ability that will enable them to take advantage of their options.

Status. An enhanced status includes such qualities as an improved self-image, increased self-confidence, and a positive sense of identity. In achieving this, these qualities will be recognized not only by the farmers themselves, but by others as well. This enhanced status begins in farmers learning and creating their own knowledge by means of field studies. In Field Schools the learn the technical language of ecology and agriculture. They teach others this language, talk to officials from the Agriculture Extension System in this language, and talk to academics in this language. Learning breeds the above qualities related to status and farmer IPM experts exemplify them. The statements below exude a positive self-image, self-confidence, and a positive sense of identity.

> *"Our group came up with the idea to study the use of urea tablets and SP 36 because we wanted to see if there was any proof for what had been promoted by the PPL."*
>
> Hadi Suwito, Farmer IPM Trainer

> *"We wanted to prove if there was any benefit in using KCL."*
>
> Ms. Srimulat, IPM Farmer

The activities of IPM farmers demonstrate the qualities associated with status over and over again. Farmers without these qualities do not approach officials and lobby for resources, organize farmer movements, and "take over" Farmers Groups by leaving the existing officers in place while taking over the leadership of the membership (see the "Rukun Tani Farmers Group Planning Meeting" thumbnail sketch in Chapter Three). Furthermore these qualities

and the enhance status of IPM farmers is recognized by officials and other farmers as well.

> *"Now you find that we have a farmers movement. Without waiting to be told to do so, farmers are organizing . . . Now we village officials just follow along."*
>
> Soepono, Village Head,
> Cilapar Village

> *"After completing their IPM Field Schools these farmers no longer wait for instructions from officials."*
>
> Eko Sugiyanto, PHP

> *"They take action to solve their problems. I just follow them."*
>
> Ms. Latifah, Village Head,
> Kaligondang Village

Leadership is inspired by self-confidence, good self-esteem, and positive self-image. IPM farmers, that is farmers who have become IPM experts, are not just taking on important leadership roles in their village and they are having those roles conferred upon them by others.

Critical Thinking Capacity. Critical thinking refers to the capacity to assess competing options or recommendations with reference to knowledge or experience or by testing those options by means of a well designed study or within the context of communicative action. Critical thinking implies that farmers are no longer dependent upon others for solving their problems. This capacity for critical thinking is encouraged in the Field School by the group discussions where analyses and decisions are tested by probing questions initially directed by the PHP to presenters, but later farmers learn how to probe. The "what is this?" dialogue forces the learner to examine his knowledge and learn from what data he can collect, it breaks the farmers from dependency on the facilitator through the probing question that the facilitator asks. Experiments and small studies in the Field School prove to farmers that they can learn and create their own knowledge. Their self-confidence is enhanced and they know how to learn. Thus they become able to test received knowledge and critically examine the conditions that they live in.

Critical thinking skills were demonstrated time and again in the case. Whether in the context of problem analysis and solving, developing action plans for the creation of IPM villages and an IPM sub-district, conducting studies, or organizing, IPM farmers are applying their critical thinking skills. This has allowed them to assess their conditions and take actions to improve the situation of agriculture in their villages by means of farmer movements, field studies, and Field Schools.

IPM field activities, more so as they have developed into Community IPM, have helped farmers to realize the five categories of social gains analyzed above. The achievement of these social gains indicates that farmers in Kaligondang Sub-district are in a better position to realize their potential not only as farmers but as members of their communities. For IPM to be sustainable these social gains need to and have been achieved.