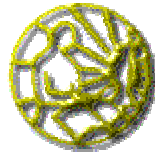


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**The IPM Training Program**  
**Under the Department of the Non-Formal Education,**  
**The Ministry of Education**



December 2000, Thai Education Foundation

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### Summary

This report summarizes the development of the Rice IPM program by the Department of Non-Formal Education (DNFE) from 1998 to 2000. Technical and managerial support has been provided by Thai Education Foundation (TEF), with financial support is from the FAO Inter-Country Program in Community IPM.

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## 1. Policy

Since 1998, The Department of the Non-Formal Education (DNFE), with support from the Thai Education Foundation (TEF) and the Food and Agriculture Organization (FAO), has initiated the development of an IPM program in Thailand. With a strong interest in the learning processes of IPM that corresponds with the DNFE educational principal of “Khit-pen” and a content that is responsive to a majority of DNFE adult students and farmers, DNFE has been providing continuing commitment and effort at all levels to institutionalize the IPM program.

Beginning in 1998, DNFE conducted the first full season-long Training of Trainers in Thailand at Wat Nong Moo, Nakornsawan Province, with technical support from TEF and FAO trainers. In addition, to facilitate program implementation and expansion within the DNFE system and regulatory framework, the DNFE issued a national policy and plan, and communicated this to all involved DNFE offices in 1999.



The policy statement included the national recognition of the importance of the IPM program as follows:

- The DNFE has strong interests to develop IPM as part of the vocational course for adult farmers and young adult students. The IPM course is one of the clearest examples of the overall DNFE program that is responsive to both DNFE policy and the Royal appeal for a self-sufficient economy which all government agencies have been urged to support;
- The DNFE will provide support to participating provinces for the training of trainers, and initial funding for conducting FFSs;
- The DNFE has approved the Rice IPM Curriculum as a vocational course;
- DNFE Provincial Offices are authorized to include IPM courses in their annual plan and budget.

In June 2000, the DNFE communicated another policy to support the IPM work of NFE teachers. The policy instructed District and Provincial Office to allow the IPM course as a mainstream job for teachers, which can be used for evaluation of their performance. This policy was developed in response to problems of District and Provincial Offices assigning other work in addition to the IPM courses for the NFE teachers, who then did not have sufficient time to prepare and conduct the IPM courses. Currently, the IPM teachers are using their work with farmers as part of their portfolio to be submitted for their performance evaluation.

The DNFE 2001 fiscal year plan also placed emphasis on the monitoring and follow-up of FFSs, and will involve four Regional NFE Offices to conduct an impact study of the IPM courses. More details on this are included in the following section.

## 2. Plans

The DNFE has been very consistent in its commitment to the development of the IPM program. After field trials of the IPM course with farmers in Supanburi Province, the DNFE allocated 1.9 million Baht to support the Training of Trainers (TOT) and FFSs in 1999, and 3.9 million Baht for the year 2000. However, during the first quarter of the fiscal year budget, all government agencies underwent budget revisions as a result of a new budgeting



systems. Hence, delays in the transfer of fund to field offices had tremendous impact on the implementation of the planned training and FFS activities.

While the TOT could be completed with some financial support from TEF, many planned FFSs were not initiated during the dry season.

IPM Budget	1998	1999	2000	2001	Total	
DNFE		2	3.9	2	7.9	Million Baht
FAO *	0.2	0.8	0	0	1.0	Million Baht
* FAO figure excluded in-kind contributions & TEF supports						

Major activities in the plan include:

- **Evaluation and Planning Meetings:** These meetings were usually organized at the end of the training season, with all concerned personnel from the national, regional and provincial levels participating in reviewing the progress to date and setting plans for the upcoming season. The DNFE has been using the information obtained during these meetings to formulate national policies in response to various problems faced during the implementation of the program.
- **Training of Trainers (TOT):** The DNFE provide support to participating provinces under the condition that Provincial Offices would include the IPM course in their plans and allocate their own funds to support future FFSs. Provincial Office sent teachers to attend the TOTs, along with the required province-level government official. Timing and location of the TOTs are based upon farming calendars. Two rice TOTs were implemented during the 2000 fiscal year, with a dry season training implemented from February through June, and a wet season training held from July to November. In fiscal year 2001, all TOTs will be postponed in order to facilitate emphasis of the development of a monitoring system and the conducting of impact studies.

DNFE TOT Rice IPM		Budget			Participants				Participating Provinces		
Host Province	Year	DNFE	FAO	Total	DNFE	DOAE	Others	Total	Previous	New	Total
Nakornsawan	1998	0	392,500	392,500	20	0	3	23	0	5	5
Supanburi	1999	210,700	331,347	542,047	25	0	0	25	2	7	9
Ayuttaya	2000	784,500	0	784,500	27	6	0	33	4	12	16
Uthaitanee	2000	784,500	0	784,500	22	0	1	23	1	6	7
		1,779,700	831,347	2,611,047	94	6	4	104	7	30	37

- **Training of Farmers/Facilitators (TOF):** The DNFE is preparing for the expansion of Farmer Trainers, and has allocated funding to pilot training designs in the 2001 fiscal year. The training design will be develop in Uthaitanee and Nakornsawan Provinces, where there are adequate numbers of farmers who have attended FFSs, and sufficient numbers of IPM trained NFE teachers.
- **Refresher Trainings:** On-going refresher trainings and workshops have been scheduled from once to three times per season, depending on needs of the TOT graduates and the availability of funds. New TOT graduates usually meet two to three times during their first season, and then once per season thereafter. The goals of these refresher trainings are to solicit information from field trainers or teachers, and to provide additional technical supports in response to problems they are experiencing in the field. In the 2001 fiscal year, refresher trainings also include an orientation workshop for



governmental officials from those participating provinces that did not have a provincial officer trained in the TOT. These officers are needed for supporting, monitoring and planning of the provincial program. The DNFE conducted all refresher trainings in 1999, but due to the relative lack of IPM expertise in the DNFE, technical support was provided mainly by TEF and occasionally by staff from the DOAE. With the delay of funds in early fiscal year 2000, the DNFE trainers organized the rice refresher trainings later, in September, 2000. In total, there were 70 officials and teachers from 25 provinces who participated to report progress, exchange issues and concerns, provide recommendations, and coordinate plans. Supplementary training for specific IPM issues was postponed due to a lack of baseline information from monitoring visits needed for designing such training inputs.

- **Monitoring and Follow-up Visits:** The monitoring visits from central level officials have been more than expected, especially from the Director General, Deputy Director Generals, and program supervisors from the ministry level. All TOTs were visited more than once by the DG or a Deputy DG. The role of these national monitoring visits is to provide policy guidance, support and encouragement to program staff, as well as to participate in meetings and planning at the provincial and regional levels. However, technical level monitoring and support visits to the field schools was much less than expected due to the small number of qualified government officials in the participating provincial and regional centers, and inadequate budget to support these activities. Due to feedback and recommendations from evaluation and planning workshops, DNFE has placed the monitoring systems as a central focus for program activity in the 2001 fiscal year plan. A budget has been allocated for four regional centers to conduct the monitoring and support systems. In addition, videotaped case studies by four regional centers are planned for compilation, and will be edited at the end of the season.
- **Research and Development:** The 2001 fiscal year plan also includes impact studies to be conducted by four regional centers. The goals of these studies will be to assess the impact on farmers and teachers. Participatory action research will be used as the process. Technical support to establish the studies' framework and plan has been identified.
- **Public Relations:** In 2000, the DNFE aired a series of IPM programs in their distance education television programs to provide orientation information about the policy and implementation of IPM programs to the public and field agencies. In addition, some participating provinces such as Uthaitanee and Ubonratchatane have aired IPM programs through local radio programs to give public information about IPM, such as IPM concepts, rice physiology, insects and fertilizers, as well as to provide opportunities for field school graduates to give their own perceptions after they have adopted the IPM process. These programs received overwhelmingly positive response from farmers through telephone call in shows as well as correspondence. The program will be continued in 2001.
- **Materials:** Printed materials produced include:
  1. Rice IPM FFS Curriculum (Thai Language)
  2. Rice IPM TOT Manual (Thai Language)
  3. IPM Orientation Video (Thai Language)



### 3. Training Of Trainers (TOT)

- Training Design:** With the strong interest to institutionalize the IPM program, the DNFE reviewed various IPM training designs from domestic programs organized by both the DOAE and TEF, as well as from other countries such as Indonesia, the Philippines and Vietnam, and later on visited the IPM program in Indonesia with support from the Community IPM program. A domestic TOT training design--meeting with trainers weekly or bi-weekly--provides less strain on trainers by not leaving their homes and workplaces for a full-season course, while the trainers would be effective after two seasons. Although many within both the DNFE and the DOAE were opposed to the full-season training design, the DNFE adopted the full-season training approach, and reallocated funding to initiate the first full-season TOT in Thailand. The rationale for adopting this full-season training model was to respond to the urgent need for conducting farmer field schools, and this approach needed the least amount of time to produce quality trainers. The first full-season TOT was organized by the DNFE in July, 1998 with support from TEF and the FAO Community IPM Program A Team trainers, and included 24



participants from five provinces. At the end of the first TOT, the DOAE visited the training, and later adopted the same design for the DOAE IPM program.

The DNFE received technical support to build the capacity of DNFE trainers from TEF staff and FAO experts. Initially, TEF conduct the first TOT with technical support from FAO

Community IPM A Team trainers and occasional visits by other FAO experts. In 1999, TEF trainers conducted a rice TOT with co-trainers from the DNFE. And in 2000, DNFE trainers conducted the TOTs by themselves, while TEF trainers only assisted with planning the overall training program, and monitoring the implementation.

DNFE Rice IPM TOT Master Trainers					
Year	TOT Location	DNFE	TEF	FAO	Total
1998	Nakornsawan	0	3	2	5
1999	Supanburi	4	2	0	6
2000	Ayuttaya	6	1	0	7
2000	Uthaitanee	5	1	0	6

- TOT Preparation:** There are numerous tasks involved in organizing an effective IPM TOT. Base on the experiences and problems that occurred during the first few TOTs, guidelines have been developed to improve and increase their effectiveness. These guidelines include:

- ✓ Recruitment of Trainers
- ✓ Selection of Participants
- ✓ Selection of Host Province
- ✓ Selection of Training Site
- ✓ Implementation and Assessment

- TOT Curriculum:** The DNFE rice TOT curriculum has evolved over the years. The contents of the curriculum can be divided into four topic areas:

- ✓ IPM Content
- ✓ Adult Education Content--Principles, Activities, Assessment
- ✓ Group Dynamics
- ✓ Facilitation Skills



Needs assessments--including professional development goals of each participant--also implemented in the TOT. Participants practice conducting FFSs each week throughout the TOT curriculum. A Field Manual compiled and developed by each participant is also art of the TOT's outcome.

#### 4. The DNFE IPM Course

The DNFE has divided their programs into three major areas: 1) General education programs; 2) Vocational education and training programs; and 3) Resource and information centers. The general education programs were designed for students--adults and young adults--to obtain educational equivalency diplomas for primary, lower and upper secondary levels, and high school levels.

The vocational and skill training programs are divided into four categories as follows:

1. *Interest Groups*: These courses are organize according to the needs and interests of learners, with a minimum of 15 students and a maximum course duration of 30 hours. Students pay for the cost of the training, while the DNFE pay for cost of the trainer.

2. *Vocational Short Courses*: These courses are designed for community groups in various disciplines such as agriculture, fishery, poultry, weaving, etc. The duration of these training courses is from 100 to 300 hours. Learners pay a small fee for materials in some cases and some courses are free. Most of these training courses are conducted at the provincial level.

Student Program	1998 DNFE		Total
	Male	Femal	
1 General			
Primary Level	112,11	85,839	197,958
Lower	454,79	394,46	849,252
Upper	421,13	426,86	847,998
Subtotal			1,895,2
2 Vocational Education			
Short Courses	103,66	236,63	340,300
Interest Groups	76,441	155,10	231,543
Basic	22,038	24,074	46,112
Vocational	15,189	13,528	28,717
Subtotal			646,672
Total			2,541,8

3. *Vocational Diploma*: This is a three-year program designed for students who have finished grade six who want to learn about the world of work and acquire skills in various businesses. Students received a vocational diploma, or the equivalent of a lower secondary (grade nine) level.

4. *Vocational Certificate*: This is a three-year program designed for students who have finished grade nine, and desire to study a trade skill for an additional three years to improve their skills. Students received a certificate upon completion that is equivalent to a full high school diploma.

The resource and information service is designed to provide educational resources and information to support the purposes of informal learning and life-long education. The services include 830 community libraries, 34,000 newspaper-reading center in all villages, distance education via radio and television, and science centers that provide orientation to sciences and are expanding to 13 centers nationwide.

The Rice IPM course was approved in 1999 as a short-term vocational course that can be taught for 130 hours or the equivalent of two rice planting seasons. The course can also be taught under the Interest Group program. With this approval, all DNFE district offices can officially offer the course for farmers and students, and are entitled to utilize local funding allocated for vocational programs. In order to conduct

DNFE	199	199	200	200	Tot
FFS	8	9	0	1	al
No. of FFS	3	21	72	45	141
No. of			1,33		1,5



effective group exercises, the number of participating farmers is approximately from 20 to 25, which can accommodate four to five small groups with five to six members each.

- **DNFE Rice FFS Curriculum:** The DNFE FFS curriculum is based on the season-long rice planting calendar. Groups meet once a week for one-half day throughout the season. The content of the curriculum is spread over two seasons to allow for adequate time to learn all the topics and practices of group work and learning skills needed for field management.

Through baseline surveys, farmers are involved in identifying problems and topics to be included in the FFS curriculum. The first season FFS curriculum maintains basic topics of IPM, but problems can be adjusted to meet local conditions. In the second season, there is more flexibility to identify locally-specific learning topics. Some provinces with year round irrigation land can complete the course within one year, while other provinces can only conduct the course in wet season. (See Appendix for more details)

- **Organizing Farmers Groups:** The organization of farmer groups in Thailand is very difficult because farmers tend to work more individually on their fields and other income generating activities. Some communities have had processes to organize groups, while others may never have had any farmer meetings. Hence, adequate time is needed to prepare the farmer groups, conduct baseline surveys, and foster interest in participating in the FFSs.

One of the reasons that baseline surveys including planting calendars are conducted with farmers is in order to determine the timing of the FFS (or TOTs). Community surveys are also helpful in organization effective groups, with information on: 1) How groups organize currently and in the past; 2) Conflicts between groups or members; 3) Social events or activities in the community; 4) Leisure time and work time of groups, group members, and leaders in the community.



Community leaders have impact on the selection of farmers. Leaders that are interested in the IPM activities usually assist in better selection and organization of groups. Strong community leaders who do not have an interest in IPM activities will often order other community members to attend the FFS, because they themselves do not want to participate.

If the training site is in the same province that has school IPM activities, selection of the FFS site nearby the school will increase participation from both the community and the school.

- **Gender issues:** Male and female compositions impacted on the effectiveness of the FFS groups' performance. Based on experiences with rice farmers groups, the following findings were identified:
  - ✓ Groups that have more women usually have better and more enjoyable atmosphere when conducting activities.
  - ✓ All male groups are usually low in motivation. When there are women in the group, the motivation are usually higher than a group with only men.
  - ✓ Women usually look after the fields, while men work at other jobs, and only occasionally work in the fields. Therefore, women usually make decisions for crop



- management, while men follow the decisions.
- ✓ Because men often work in other jobs to raise additional income or attend other meetings, etc., men tend to miss more FFS meetings.
  - ✓ Women usually have an organized women's group, which is often a good basis on which to form an FFS learning group.
  - ✓ Men usually speak more and share more ideas than women at the beginning of the season. However, after about a month of fieldwork, women will tend to speak more than men, because the women usually do more of the fieldwork, and consequently have more data to report than the men. This will often increase the acceptance of women's roles. At times, women will encourage men to do more of the fieldwork in order to have more information to report to the group.

## 5. Lessons Learned and Recommendations

The development of the IPM program with the DNFE under the Ministry of Education has been a commendable experience. The pace of program development has been cautious, yet with consistent progress. With strong interest and support from the central level, and continuous effort to communicate, motivate and build the capacities at all levels, the DNFE has been able to institutionalize the IPM program within two years. In addition, the DNFE will continue to focus on improving the quality of the program by establishing monitoring and support systems as well as initiating a system of farmer trainers in the upcoming fiscal year.

The DNFE's efforts in developing an IPM program have already been a model for other agencies involving in IPM in Thailand. Although the program has achieved considerable success to date, there remain issues before the DNFE in regard to the quality and sustainability of the program in coming years:

1. **FFS Quality:** With over 100 FFSs conducted in 1999 and 2000, the quality of the FFSs conducted varies depending on the ability of teachers. Continuing technical support to these teachers is greatly needed after the graduate from the TOT in order to promote good practice and decrease the variance in quality among the DNFE FFSs.
2. **Monitoring and Support Systems:** The establishment of monitoring and support mechanisms for FFS for quality improvement has been delayed to the limited number of qualified staff. In early 2000, a recommendation was made to form a monitoring team composed of master trainers, national and provincial officers, and TEF staff to conduct regular visits to selected FFS sites. The purposes of these visits were to assist teachers in planning and conducting FFSs, and gather information on farmers and teachers, IPM issues, and administrative matters. The information is needed for designing responsive refresher trainings by master trainers. Unfortunately, all qualified staff were assigned to conduct TOTs, and unable to perform the monitoring functions. Given the involvement of the regional centers to the perform the monitoring and support function along with the master trainers and provincial officers, there is a need to strengthen regional staff and the monitoring team in fiscal year 2001.
3. **Strengthen the IPM Expertise within the DNFE:** Currently, the DNFE has approximately ten effective master trainers from various provinces. These master trainers are mobilized to work as a team to conduct TOTs and refresher trainings, as well as to participate in monitoring and follow-up visits. In order to meet the need for technical support to FFSs in participating provinces, this number is far less than adequate. Although, there are a number of teachers with the potential to become master trainers through conducting TOTs, there will not be a TOT conducted in 2001 fiscal year. On-going refresher trainings for those with the potential to become master trainers will be needed for building more trainers capacity.





- 4. The Decentralization Law:** Responding to the Educational Decentralization Law, the DNFE will have to decentralize decision-making, planning, resources, and implementation of programs to local levels. The departmental level will be responsible for policy development and performance monitoring through the quality assurance program, which places emphasis on participatory planning and implementation. Currently, the IPM plan was based on those geographical areas where trained staff are located, which limits the ability to map out the needs of farmers and the development of long-term plan for a province. With the structural changes and reduction in the number of officials, the re-deployment of staff is inevitable. Thus, trained IPM staff may be re-locate to a certain degree, and jeopardize the continuity of the IPM program at those local levels.

Hence, there is a need to explore models for systematic change. Building capacity of local officials to effectively conduct baseline surveys and develop a responsive participatory planning process with all concerned agencies will be needed to prepare for a smooth transition.

## 6. Future Plans

Technical support to the DNFE has been identified in the following areas:

1. To establish monitoring and support systems
2. To assist the regional centers in conducting refresher trainings
3. To establish a framework for impact studies of farmers and teachers
4. To develop training, implementation and evaluation designs for farmer trainers



<b>DNFE 2001 National Plan for IPM Program</b>				
	<b>Activities</b>	<b>Responsible Agencies</b>	<b>Budget</b>	<b>Tentative Date</b>
1	Supplemental Vegetable TOT (red onion). Budget for 30 pers. X 20 days	Lampang Regional Center	200,000	May
2	Orientation workshop for governmental officials from participating provinces. Budget for 25 pers. X 4 days	Srakaew Vocational Center	70,000	Dec. 20 – 25, 2000
3	Training of farmers and teachers. Pilot design of farmer trainers in Nakornsawan and Uthaitanee for rice curriculum. Budget for 2 provinces at 200,000 each.	Nakornsawan Uthaitanee	400,000	February, 2001
4	Refresher trainings for rice and vegetables. Budget for 5 regional centers.	Five regional centers	330,000	On-going
5	Planning meeting for monitoring systems and impact studies. Budget for national and five regional centers.	Five regional centers	550,000	January 8, 2001
6	Series of 10 videos, printed and non-printed materials	National and five regional centers	380,000	Full season
	<b>Total</b>		<b>1,930,000</b>	



## Appendix 1: TOT Preparation

There are numerous tasks involved in organizing an effective IPM TOT. Base on experiences and problems encountered during the first few TOTs, guidelines have been developed to improve and increase effectiveness:

- 1. Recruitment of Trainers:** The selection of the TOT trainers should be based on several criteria, including: a) They must have graduate from full-season TOT; and b) They must have experience in conducting at least one season of an FFS. Five trainers are required for a TOT of 24 to 30 participants, with one being a senior government official to take the role of the Team Leader. Members of training team should be identified and informed at least two months prior to the beginning of the TOT to allow for ample time for job transition and preparation. Trainers should report to the training site at least two weeks prior to starting the TOT to prepare themselves and organize the facilities. Preparation activities during these 2 weeks include:
  - ✓ Curriculum review and set weekly schedule
  - ✓ Roles and assignments of each trainer according to individual expertise and interest
  - ✓ Set individual professional development plans and team work exercises. The training team should meet every evening during the first two weeks to reflect on the day's work and to plan activities for next day. In some case experienced trainers are paired up to help newer trainers or each other in planning and conducting activities. Weekly observation and feedback was also practiced to give constructive feedback to each other, or the frequency of feedback also depends on the needs and situation
  - ✓ Prepare accommodations and orientation for trainees
  - ✓ Practice sessions and activities
- 2. Selection of Participants:** Participants should be selected according to criteria that: a) They have some experience and/or a strong interest in agricultural training; b) They will be able to conduct FFSs after completion of the TOT, and; c) Participating provinces must send one provincial official to attend the TOT to prepare for future monitoring and support systems at the provincial level.
- 3. Selection of Host Province:** Criteria for choosing the host province include:
  - ✓ Appropriate cropping conditions during the TOT, and with an adequate number of farmers available for attending the weekly FFSs
  - ✓ The host province will assign an official to work with training team throughout the TOT to assist with administration and bookkeeping tasks. Ideally, the person should be a TOT graduate.
  - ✓ The host province will conduct the baseline survey along with the training team to select locations for the TOT.
  - ✓ The host province has a larger quota of TOT participants than other participating provinces.
  - ✓ The host province will manage funds for the TOT, and will involve participants to manage funds associated with accommodation and per diem. The host province can use the remaining of funds.
  - ✓ The host province will have experience in organizing long-term training programs that may be adapted for other future training.
- 4. TOT Site selection:** Guidelines for training site selection were developed to assisted TOT planners and trainers in a making constructive decisions. A training site must be within walking distance of accommodations which have ample space for group work and sleeping compounds for both women and men. The site should have adequate paddy fields, with no less than six rai for field trials. If the field is rented, the owner must allow groups to manage the water and soil. In some cases, the owner may pay for field inputs, and take the harvested yield in return.



A baseline survey should be conducted to identify participants for the FFSs included in the TOT. Approximately 100 farmers would be ideal for field schools for each of the four or five groups in the TOT. The baseline survey should include the development of planting calendars with farmers to identify an appropriate starting date for the TOT. An ideal starting date for the TOT should be two to three weeks before farmer usually start planting to enable trainees to learn and practice skills before conducting the activities with farmer groups.

- 5. Organizing Farmers Groups:** The organization of farmer groups in Thailand is very difficult because farmers tend to work more individually on their fields and other income generating activities. Some communities have had processes to organize groups, while others may never have had any farmer meetings. Hence, adequate time is needed to prepare the farmer groups, conduct baseline surveys, and foster interest in participating in the FFSs.

One of the reasons that baseline surveys including planting calendars are conducted with farmers is in order to determine the timing of the FFS (or TOTs). Community surveys are also helpful in organization effective groups, with information on: 1) How groups organize currently and in the past; 2) Conflicts between groups or members; 3) Social events or activities in the community; 4) Leisure time and work time of groups, group members, and leaders in the community.

Community leaders have impact on the selection of farmers. Leaders that are interested in the IPM activities usually assist in better selection and organization of groups. Strong community leaders who do not have an interest in IPM activities will often order other community members to attend the FFS, because they themselves do not want to participate.

If the training site is in the same province that has school IPM activities, selection of the FFS site nearby the school will increase participation from both the community and the school.



## Appendix 2: TOT Curriculum Contents

### 1. Rice growing & Agro-ecosystem Analysis

- Plant Morphology and Physiology
- Seed Selection and Preparation
- Soils and Soil Management
- Plant Nutrients and Fertilizers
- Water and Water Management
- Weeds
- Insects
- Diseases
- Animals
- Chemicals and Pests
- Basic Ecosystem

### 2. Contents for Education

- Principles, Approaches and Methodologies of Learner-Centered Education
- Curriculum Development and Integration
- Responsive Learning Environment
- Techniques / Methods
- Basic Learning Skill
- Observation
- Information Seeking
- Summarizing
- Decision-making
- Reporting
- Experimentation
- Creativity
- Learning Assessment

### 3. Facilitation Skills

- Questioning
- Listening
- Summarizing
- Problem-Solving
- Decision-making

### 4. Group Dynamic Skills

- Concept & Needs
- Group Development Methodologies
- Group Dynamic Activities

### 5. Farmer Field School

- FFS Curriculum Development
- Learning Activities Development
- Planning and Conducting FFS



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### Appendix 3: Farmer Field School Curriculum Content

- Plant Morphology and Physiology
- Seed Selection and Preparation
- Soils and Soil Management
- Plant Nutrients and Fertilizers
- Water and Water Management
- Weeds
- Insects
- Diseases
- Animals
- Chemicals and Pests
- Basic Ecosystem



## Appendix 4: FFS Curriculum Guidelines

Topic	Objective	Content	FFS <sub>1</sub>	FFS <sub>2</sub>
<b>Rice Morphology &amp; Physiology</b>	<ul style="list-style-type: none"> <li>-To understand the rice plant morphology throughout the rice plant's life cycle</li> <li>-To Identify elements of the rice plant's physiology</li> <li>-To understand the relationship of the rice plant's physiology and the other components in the rice field ecology</li> </ul>	<ul style="list-style-type: none"> <li>-Rice plant physiology</li> <li>-Elements of rice plant's physiology</li> <li>-Relationships of rice plant's physiology and the other components in the rice field ecology</li> </ul>	<ul style="list-style-type: none"> <li>-Study rice plant morphology</li> <li>-Study relationship among components of rice field ecology</li> </ul>	<ul style="list-style-type: none"> <li>-Study rice plant morphology</li> <li>-Study relationship among components of rice field ecology</li> </ul>
<b>Soil &amp; Soil management</b>	<ul style="list-style-type: none"> <li>-To understand attributes of soil quality</li> <li>-To understand the role &amp; function of soil in the rice field</li> <li>-To understand the meaning &amp; function of living soil</li> <li>-To be able to improve soil quality to more appropriate to grow rice</li> </ul>	<ul style="list-style-type: none"> <li>-Soil quality</li> <li>-Role &amp; function of soil in the rice field</li> <li>-Living soil</li> <li>-Soil nutrients</li> <li>-Soil management</li> </ul>	<ul style="list-style-type: none"> <li>-Study role and function of soil in the rice field</li> <li>-Study living soil</li> <li>-Study function &amp; soil for rice plant morphology</li> </ul>	<ul style="list-style-type: none"> <li>-Experimentation for soil improvement</li> <li>-Study soil nutrient</li> </ul>
<b>Water &amp; Water Management</b>	<ul style="list-style-type: none"> <li>-To understand role &amp; function of water in the rice field</li> <li>-To manage water levels appropriately in the rice field</li> </ul>	<ul style="list-style-type: none"> <li>-Role &amp; function of water in the rice field</li> <li>-Water management</li> </ul>	<ul style="list-style-type: none"> <li>-Study role and function of water in the rice field</li> </ul>	<ul style="list-style-type: none"> <li>-Experimentation with water management in the rice field</li> </ul>
<b>Plant Nutrients &amp; Fertilizer</b>	<ul style="list-style-type: none"> <li>-To understand the importance of plant nutrients</li> <li>-To understand the</li> </ul>	<ul style="list-style-type: none"> <li>-Plant nutrients</li> <li>-Role &amp; function of plant nutrients</li> <li>-Kind amount of fertilizer</li> </ul>	<ul style="list-style-type: none"> <li>-Study the importance of plant nutrients</li> <li>-Study the role and function of plant nutrients</li> </ul>	<ul style="list-style-type: none"> <li>-Study the importance of plant nutrients</li> <li>-Study the role and function of plant nutrients</li> </ul>



Topic	Objective	Content	FFS <sub>1</sub>	FFS <sub>2</sub>
	<p>different types of fertilizer containing different nutrient elements that have different effects on plant growth &amp; soil structure</p> <ul style="list-style-type: none"> <li>-To understand the role and function of nutrients for the rice plant and rice field ecology</li> <li>-To be able to know and apply the right kind and amount of fertilizer needed by the rice plant</li> </ul>	<p>needed by rice plant</p> <ul style="list-style-type: none"> <li>-Fertilizer application</li> </ul>	<ul style="list-style-type: none"> <li>-Study the kind and amount of fertilizer needed by the rice plant</li> </ul>	<ul style="list-style-type: none"> <li>-Study the kind and amount of fertilizer needed by rice plant</li> </ul>
<b>Insects</b>	<ul style="list-style-type: none"> <li>-To identify the type and kind of insects in the rice field</li> <li>-To improve understanding of the function of insects in the rice field</li> <li>-To understand the conditions of the insect's life in the rice field</li> <li>-To understand how to manage the insect in the rice field</li> </ul>	<ul style="list-style-type: none"> <li>-Insect type</li> <li>-Insect life cycles</li> <li>-Insect behavior</li> <li>-Relationship with other components</li> <li>-Role and function of insects in the rice field</li> </ul>	<ul style="list-style-type: none"> <li>-Insect identification</li> <li>-Insect zoos</li> <li>-Compensation studies</li> <li>-Study on conditions or factors of insect outbreaks</li> </ul>	<ul style="list-style-type: none"> <li>-Insect management in the rice field</li> </ul>
<b>Disease</b>	<ul style="list-style-type: none"> <li>-To identify symptoms, causes, conditions &amp; management of disease in the rice field</li> </ul>	<ul style="list-style-type: none"> <li>-Disease symptoms</li> <li>-Causes of rice plant's diseases</li> <li>-Conditions of rice plant's diseases</li> <li>-Management of rice plant's diseases</li> </ul>	<ul style="list-style-type: none"> <li>Identify rice field diseases</li> <li>-Study causes &amp; conditions of disease outbreaks</li> </ul>	<ul style="list-style-type: none"> <li>-Study disease management</li> </ul>
<b>Animal Pests</b>	<ul style="list-style-type: none"> <li>-To identify the destructive behavior of animal pests</li> </ul>	<ul style="list-style-type: none"> <li>-Destructive behavior management</li> </ul>	<ul style="list-style-type: none"> <li>-Study destructive behavior</li> </ul>	<ul style="list-style-type: none"> <li>-Study destructive behavior</li> </ul>





Topic	Objective	Content	FFS <sub>1</sub>	FFS <sub>2</sub>
	-To manage animal pests		-Study management of animal pests	-Study management of animal pests
<b>Weed Management</b>	-To classify weeds according to their economic significance -To identify factors that contribute to severe occurrence of weeds in the rice field -To develop management strategies for weed control	-Type and kind of weeds -Relationships of weeds in the rice field -Weed management	-Classify weeds -Identify factors causing severe occurrence of weeds in the rice field	-Study weed management -Strategies for weeds management
<b>Agro-Chemicals</b>	-To understand the effect of pesticides on health, ecology and the environment	-Type -Hazards of pesticide use -Effects of pesticide use on health, ecology and the environment	-Baseline survey on pesticide use -Study effects of pesticide use on health, ecology and the environment -Study hazards of pesticide use	-Study effects of pesticide use on health, ecology and the environment -Study hazards of pesticide use
<b>Basic Ecosystem</b>	-To develop understanding of basic ecosystem such as the role of components, their relationships, and the food chain balance	-Meanings -Components -Relationships -Food chain balance	-Study components & relationships -Study food chain	

