CHAPTER 3

METHODOLOGY

The study focused on vegetable farmers in the peri-urban interface of Chiang Mai city, having the travel distance of less than one hour. The site was Mu 8, Ban Ping Noi, Sansai Sub-district, Saraphi District, Chiang Mai Province. The farmer had gone through many phases of land use and production practices for the last four decades, but always had vegetables as cash cropping system. The farmers had experienced FFS approach for one season of cabbage production when the Department of Agriculture Extension (DOAE) had selected the site to launch FFS on IPM from 28 March to 28 June 2001.

This study is an analysis of the process occurring during the conversion of vegetable production to pesticide-free production system through FFS approach. The vegetable farmers, who were willing to convert to pesticide-free vegetable production, were selected to initiate the FFS program.

3.1 Characterization of the peri-urban farming systems

An agro-ecosystem analysis of the study area was conducted based on secondary and primary data, semi-structured farmer interview, stakeholder analysis, and farmer workshop. The analytical process emphasized on participatory and interactive learning approach, rather than one-way extractive process.

The supporting information consisted of the following:

3.1.1 Bio-physical variables

- Topography
- Climatic conditions
- Soil characteristics

- River and irrigation systems

3.1.2 Socio-economic variables

- Demography
- Occupational structure
- Household income
- Land tenure systems
- Credit systems
- Source of technical information

3.1.3 Production systems

- Land use change
- Cropping systems and technological changes
- Incidence of pests and diseases
- Organic agriculture movement
- Farmer organization

3.2 Farmer field school for pesticide-free vegetable production

In this research, the FFS was used to facilitate the process of conversion to pesticide-free vegetable production systems in conjunction with a learning approach to community agro-ecosystem management as developed by the International Support Group (ISG), which allowed farmers-researcher-extension agent to go through five distinct phase of learning process as shown in Figure 3.1: visioning agro-ecosystem management strategies, planning on matching farmer demands with services provided, negotiating new partnerships, action on projects, and reflection on actions taken and performance (Lightfoot *et al.*, 2001).

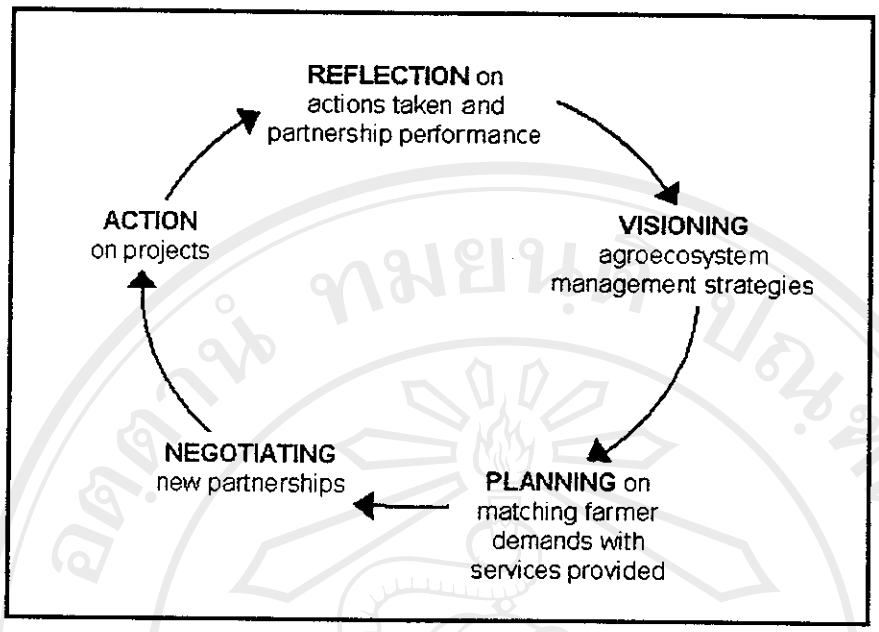

Figure 3.1 Phases in a process of learning

To facilitate the learning process, the learning instruments as suggested by Lightfoot *et al.* (2001) were adapted to help the farmers answer specific set of key questions:

Phase 1:

- What is the current status of agro-ecosystem in comparison with the past?
- What would farmers like to see their agro-ecosystem look like in the future?
- With whom do the farmers need to partner to realize their vision?

Phase 2:

- What opportunities do the farmers have to gain access?
- What new opportunities need to be created?

Phase 3:

- What conditions facilitate the negotiation of effective partnerships?

Phase 4:

- Partners (farmers, research, extension agent) design strategies of action around areas of mutual interest and implement their plan.

Phase 5:

- What indicators will allow us to learn whether the pesticide-free vegetable management practices and newly negotiated partnerships are performing well or not?

The FFS in this study was not a full-option as developed by the FAO. So the documentation in each stage of FFS was necessary. Community meeting was started to disseminate the objectives of FFS to the farmers and allowed them to discuss their problems and vision. Developing curriculum for the FFS meeting was the next step. And then weekly half-day session including field observation, ecosystem analysis, presentation of the result, special topic, and reviewing and planning for the next meeting was carried out during the growing season. Finally, participatory monitoring and evaluation between stakeholders was conducted to assess the progress and identify successes. At the end of the production cycle, farmers was classified and grouped based on their responsive action to, and performance of pesticide-free vegetable production (Figure 3.2).

Two cycles of vegetable production had been conducted through FFS approach. This would provide a better assessment of farmer ability to manage pesticide-free vegetable production system. The reasons of each group were described by cause and effect analysis.

3.3 Conditions, limitation and constraints in conversion to pesticide-free vegetable production

Based on farmer production performance, a farmer reflection workshop was organized to review the converted vegetable performance in comparison to conventional production system. Possible conditions were examined together with farmers' suggestions. These also included production stability, pest incidence and methods of pest avoidance, availability of alternative pest control methods such as

bio-pesticides, price competition with conventional vegetables, consumer preference, etc.

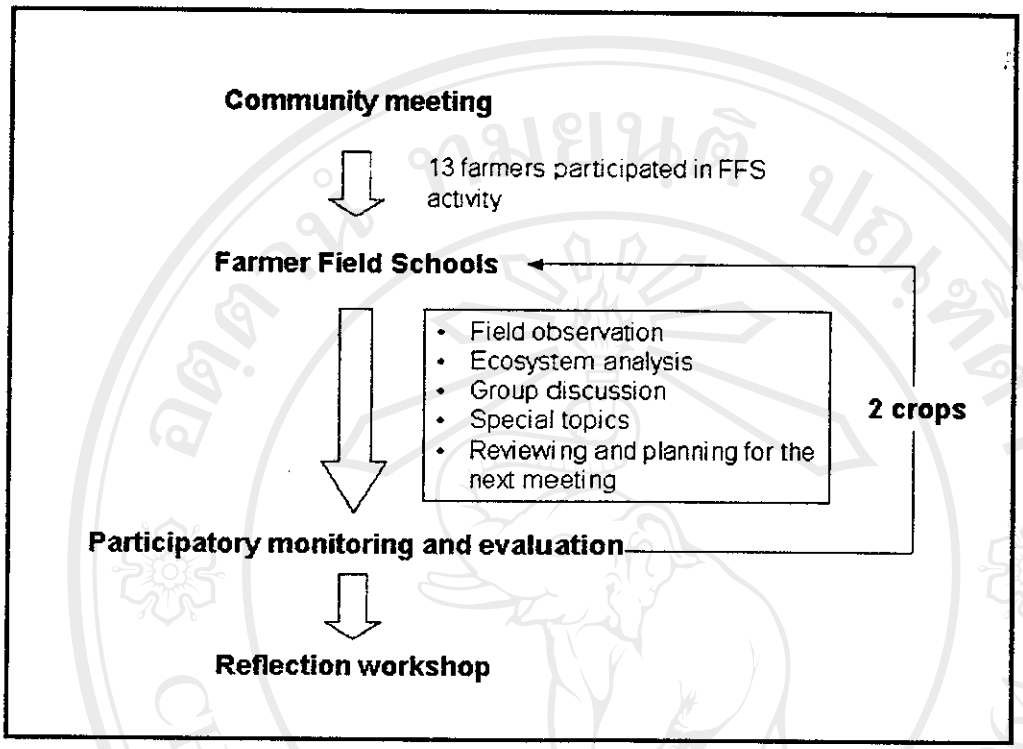

Figure 3.2 The process in organizing FFS for pesticide-free vegetable production

3.4 Data analysis

3.4.1 Descriptive analysis

Descriptive analysis was used to explain all the processes occurring along the conversion from conventional to pesticide-free production; characterization of the peri-urban system, farmer field school for pesticide-free vegetable production and conditions favoring and discouraging the conversion.

3.4.2 Farmer typology

The method in classifying farmer typology was modified from Naruthum *et al.* (1994). The principle was the differentiation of farmers in biophysical, socio-economics, farmer characters and their objectives in cultivation had an effect on farmers' decision. The farmers were classified according to their similarity and differentiation. The processes consisted of 6 steps: site selection, analyzing agricultural production system, production system sampling, analyzing agricultural

production system functioning, synthesizing the relationship in production system, and grouping farmers.

1. Site selection

The area of study site, biophysical, and socioeconomic aspects were considered.

2. Analyzing agricultural production system

Secondary information and simplistic questionnaire included farm size, land tenure, household and hired labour, machineries in farm, husbandry and cattle, indebtedness, etc. was used to explain agricultural production system in the study area. Information from this stage helped the researcher understand the production system and also used for counting the frequency of each farmers group after farmer classification.

3. Production system sampling

3.1 Number of sampling. Number of sampling depended on the similarity and differentiation of farmer and production system in the study area. Less number of samplings could be effective in case of the differentiation was not distinctly. In the study, thirteen farmers had been interview to represent the whole system of vegetable production.

3.2 Production system. The samplings comprised both of monoculture and diversity for analyzed factors, relationship and its impact on each production system.

3.3 Farmer limitations. The samplings covered all of differentiation on each level, for instance indebtedness, the samplings included with no debt case, less of debt until to highly indebtedness.

4. Analyzing agricultural production system functioning

Semi-structure questionnaire was the important tool for analysing production system functioning. The questionnaire consisted of five parts: production systems, household and purposes of the family, socioeconomic aspects, historical on production (production transformation), and their alternatives.

5. Synthesis of the relationship of each functioning in the production system

6. Grouping farmers

The result from analyzing agricultural production system relationship and functioning was applied in the last stage, "farmer typology". The processes in classifying farmers started from accumulated and compared the characteristic of each farmer in table. Grouping farmers by their purposes, concluded strategies and alternatives farmers selected to apply, identified characteristics of farmers in each type, ranking the importance of problems in each production system were the next step respectively.