

CHAPTER III

MATERIALS AND METHODS

3.1 Site selection

This research was mainly focused on the study of integrated farming systems around the project sites of the Church World Service (CWS). This is a project run under the collaborative arrangement with the Ministry of Agriculture, Forestry and Fisheries (MAFF), and the Department of Agronomy in Cambodia. The study area was situated in Salavisay commune, Prasat Balang district, Kampong Thom province in the central Cambodia which represents the rainfed lowland rice ecosystems with poor soil fertility. The study area included four villages in the Salavisay commune (Trapangthmar Thmei, Khmac, Salavisay, Trapang Krol) in the project area of CWS in order to improve food security.

3.2. Selection of farmer-respondents

Thirty farmers, 15 representing CWS-farmers and other 15 being non-CWS farmers were selected for survey out of 509 households in the project area randomly from the commune list's household, but separately between these two groups of each type. However, the first and the second pre-test questionnaires were done in order to readjust it, delineated with flexibility situation in the field. Hence, the other extra ten samples were required to achieve the pre-test questionnaire.

The CWS-farmers were selected by the CWS to attend training course on rice and vegetable productions, livestock and poultry productions. Furthermore, the farmer groups were willing to adopt technical issue, which was introduced by CWS.

The integrated farming systems project that operated by CWS organization were mainly focused on improving food security through increasing rice productivity and extending village land area for vegetable growing. All farmer respondents were randomly selected from these village categories and therefore, the procedure of sampling size was indicated as following:

Table 5. Distribution of sample size

Village names	Farmer household respondents	Total number of households	Total percentage of household sample
Trapangthmar Thmei	7	193	3.6
Khmac	6	65	9.2
Salavisey	9	104	8.7
Trapang Krol	8	147	5.4
Total	30	509	6.0

(Source: survey data, 2002)

There were four types of integrated farming systems in the research area: (i). integrated farming systems type I or IFS-I (Crops-livestock-fish aquaculture), (ii). integrated farming systems type II or IFS-II (Crops-livestock), (iii). integrated farming systems type III or IFS-III (Crops-livestock), (iv). integrated farming systems type IV or IFS-IV (Crops-livestock). The 30 households sampled for detailed study were distributed as follows: six for Type I, nine for Type II, six for Type III and nine for Type IV.

3.3. Survey design

A semi-structured interview approach was employed to gain new insights, raise questions, and examine phenomena from different perspectives from key informants. These informal interviews were useful for providing background information for determining the issues to be addressed by the formal survey and as a guide for developing more structured questionnaires.

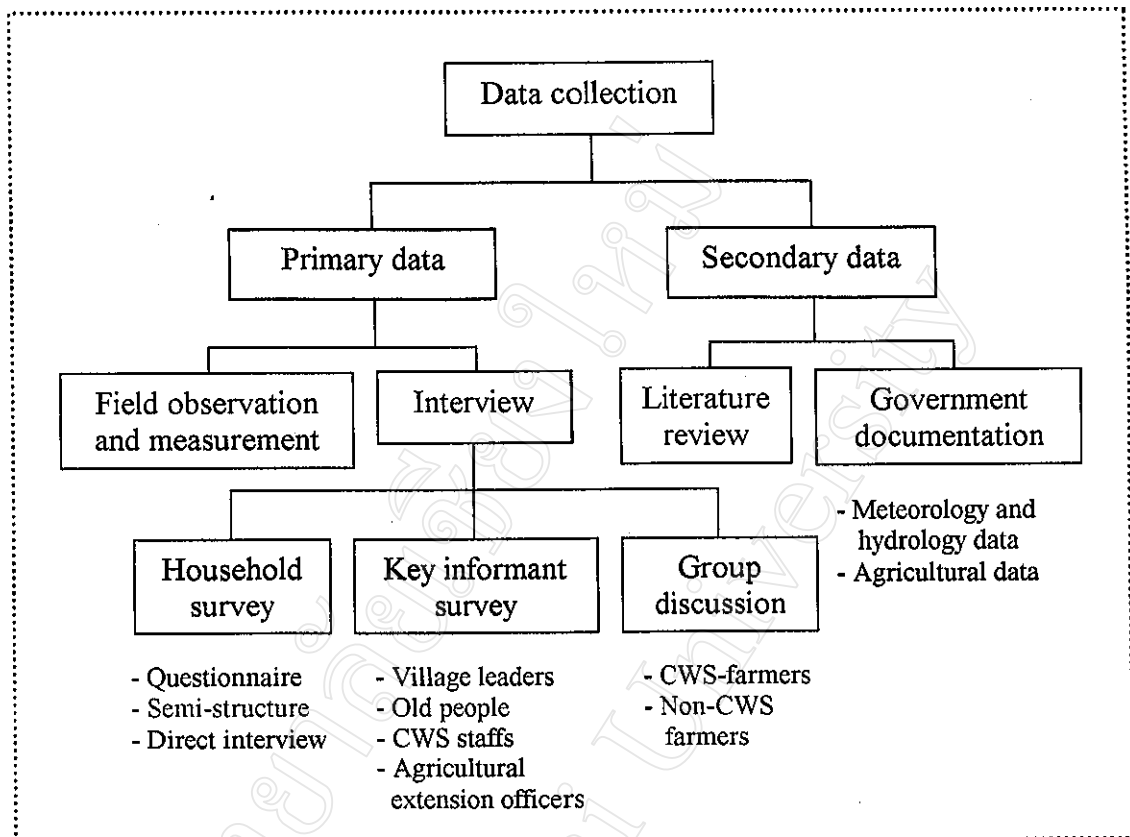


Figure 3. Diagram of data collection method

3.3.1 Primary data collection

The primary data was divided into two parts. The first part includes the general information about the socio-economic structures of the commune, which was based on the information by interviewed with the knowledgeable people in the area. During the second phase, structure questionnaires were prepared which were pre-test, and finally administered to gather the primary data from sample households about the changes in farming practices and input management as well as productivity of the factor used by the farmers.

Household survey

Household surveys were conducted into two stages. Semi-structured questions and direct interviews were used to learn more about farming practices at the commune.

Key informants interview

In order to gain maximum information about integrated farming system activities at each study site, commune chairpersons, village leaders, CWS staffs, commune agricultural agents, and agricultural extension agents were interviewed.

Group participant discussion

Most key informants and IFS farmers were invited to participate in the open participatory discussions on cropping calendar, input management, farming practices, and the problems on their farms. And also discussed about market, drought occurs in wet season and exchange of the new farm practical experiences that they found.

3.3.2 Secondary data collection

The information was collected using Participatory Rural Appraisal (PRA) data obtained from CWS regarding the project activities and the farming practices of each farming household in the study area. References will be collected through of the project documents. The PRA also provides the general information about the initial state of the production and indigenous practices in the area. In addition, public sources including books, articles, and official and semi-official documents will also be used for this study.

3.4 Household survey data analysis

Result of data collected from the household heads were coded, tabulated and later analyzed by using Statistical Package for Social Science (SPSS) version 10. The descriptive statistic such as percentage, mean, frequency distribution, standard deviation and coefficient of variation were used to measure the objectives.

3.4.1 Evaluation criteria of farm systems

There were at least eight criteria by which the performance of farm systems and the individual activities that make up each system were evaluated to help sound production plans for each farm (describe in chapter II). The evaluation criteria were applied either to individual production activities or to whole-farm systems constructed from these activities:

Productivity: Output or yield per unit of land, animal, or other production unit.

Profitability: The net income of farm households measure by gross margin of each enterprise,

Income stability: coefficient of variation (CV) was used to measure the stability income of farmers in each type of each enterprise of every month in year 2001,

Diversity: Simpson's diversity index (DI) was used to assess the diversity of activities, products and income sources

Sustainability: The sustainability assessment methodology widely varies within and between the levels at which assessment is done

Scoring and weighting sustainability of farming practices for each farm type

The impact of these farming practices on farm sustainability was assessed by identifying from the literature criteria commonly adopted for agricultural sustainability (in Chapter II), and then allocating simple score to each farming practice according to whether a particular practice was considered to improve or diminish a farm's performance according to a given criterion.

Sustainability indicators are established based on information from various sources/means (secondary data, participatory approaches). Rigby, *et al.*, (2001) used method of scoring of the indicators based on the perception of the farming. Simple scores (0 to 3) and (+ and -) were used. The scores used represented: 0 indicates no significant impact, 0.5 indicates marginal impact, 1 indicates significant

impact, and 3 indicates strong significant impact. And negative (-) was the minimizing (negative impact), positive (+) was maximizing (positive impact).

3.4.2 Household income analysis

Cash and non-cash incomes of the farm-households were analyzed. Using gross margin analysis to test the profitability of the farming business. Gross margin analysis helped to compare the profitability of introduced new technology and also to identify the most profitable enterprise among different farm enterprises besides return to family labor.

3.4.3 Food security analysis

The food security was analyzed by using the total farm productions and off-farm income of households in present and future estimation.