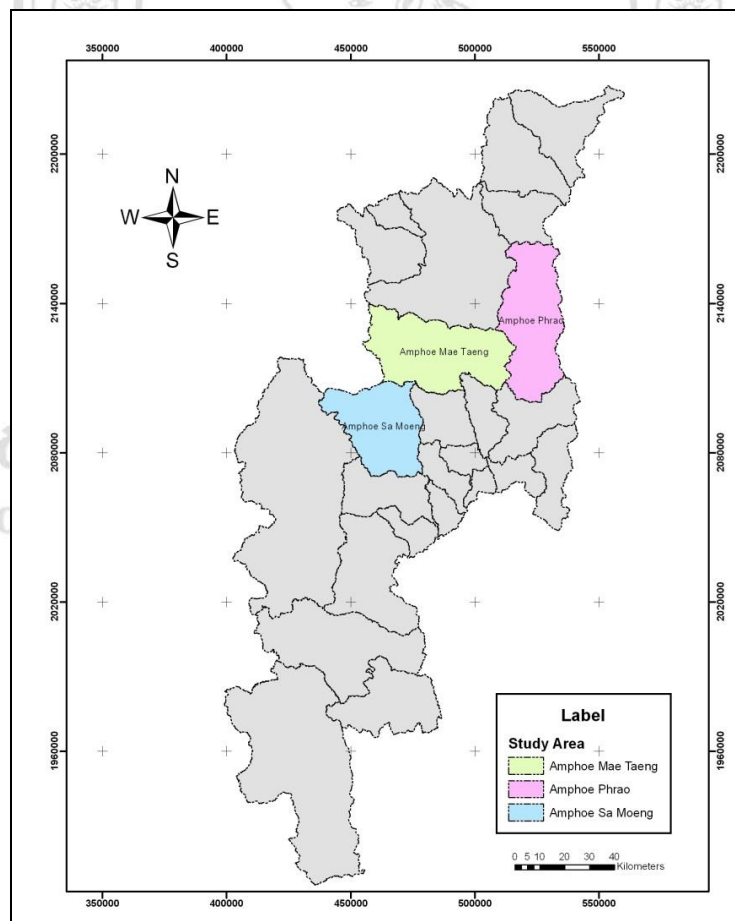


## CHAPTER 3

### RESEARCH METHODOLOGY

#### 3.1 Scope of the area

This research has the study area in Chiang Mai province. Phrao, Mae Taeng and Samoeng district are selected because they are the area has grown organic vegetables and they are the member of the organic vegetable farmers of Chiang Mai Organic Agriculture Cooperative. However, the member of the group has been involved in organic farming and in differences of time.



**Figure 5** Location of the study area

Chiang Mai Organic Agriculture Cooperative has been established since year 2003 according to farmers faced the problem from chemical residue impact and no market. Conventional agriculture favors growing large mono cropping of single food varieties, dramatically reducing the biodiversity, water pollution, soil degradation and farmers' health.

So the farmers were established "Vegetable production club for health and environment" on 7<sup>th</sup> July 1994 from Phrao, Mae Taeng, Sankamphang, Doi Saket, Mae On and Samoeng district for problems solution and changed in a production system from chemical farming to an organic production.

At present "Vegetable production club for health and environment" has been changed from club to cooperative called "Chiang Mai Organic Agriculture Cooperative" on 6<sup>th</sup> November 2003. The members of group are in Phrao, Mae-Taeng, Sankamphang, DoiSaket and Samoeng district divided into 14 groups. The major activities of cooperative are not only source for markets, but also to gain bargaining power and act as mediator in market process. A group of farmers may decide to look for allies with management or marketing experience. There are markets at Jing Jai (JJ) market on Saturday and Wednesday mornings from 5- 9:30 a.m. Only the member of Chiang Mai Organic Agriculture Cooperative can sell the products in this market and all products are organic such as rice, vegetables, soybean etc. The products are certified by Northern Organic Standards Organization (NOSO).

The objectives of the cooperative are to transfer knowledge of organic farming to the cooperative members and groups of farmers, promote fewer demands of chemical substances, convert the chemical farming system into the organic farming one, raise the farmers' standard of living, marketing support and strengthen farmers and agricultural organizations.

### **Scope of the study**

This research was to explore farmers' perception of organic vegetable farming, adaptation made by farmers and constraint to adaptation in Chiang Mai province. To set this study in context, it is part of a larger study which aims to explain the factors affecting to adopt organic vegetable farming follow livelihood assets. This study was focusing on the farmers whose member of Chiang Mai Organic Agriculture

Cooperative. The organic vegetable based on organic under the North Organic Standard Association (NOSA).

### **3.2 Research method**

Both qualitative and quantitative methods would be used to collect data, which ensured maximum participation of the key stakeholders. The methodology adopted for achieving the stated objective was solely field based collection and collation of data. The methodology would be designed as per standard of qualitative and quantitative research that included the formulation of a structured questionnaire and interviewing the subjects by visiting the identified sites and also group participant discussion which the most key informants were questioned in the open participatory discussion. The research focuses on adaptation of organic vegetable farming by farmers and barriers to adaptation. Questions about adaptation and the constraints to adaptation were also posed. The data collection will be applied. Survey technique with semi-structured interview will be used to collect the data from the farmers.

#### **3.2.1 Data collection**

In order to gather necessary and relevant information a combination of methods will be applied as follow:-

##### **a. Secondary data**

The data of this part would be reviewed related text books and research studies serves as a fundamental data for the research and a guideline on management practices, population, cropping systems, data records, and other secondary data.

##### **b. Primary data**

The data would be collected mainly through interviews using with the questionnaire in the target area (farmers, key informants). The survey collected data on the demographic information (e.g. age, gender, educational background) and data related to farming practice, ecological and environmental indicators (management of water, soil, weed and pest, training), socio-economic variability (income, labor, credit, market, price, group and network, extension services). The first phase of the questionnaire was drafted in Thai. The issues raised were based on results from the

literature research. These findings were discussed to see whether the questionnaire was relevant for the Thai situation. Before finalizing the questionnaire, the Thai version was translated back into English to ensure that the questionnaire retained its original meaning.

### 3.2.2 Population and sampling technique

The purposive sampling technique would be used to collect data from the organic farmers of Chiang Mai Organic Agriculture Cooperative. A list of farmers for each district was obtained from Chiang Mai Organic Agriculture Cooperative officials at the group level (Table 3.1).

Interviews would last from January to April 2013 in Chiang Mai province. The study surveyed and collected data from 3 groups of organic farmers in target areas as; the selected three sub-districts (Phrao, Mae Taeng and Samoeng) according to three were more number of group members practiced in organic vegetable production.

**Table 3.1** Farmer groups produced organic vegetable farming products

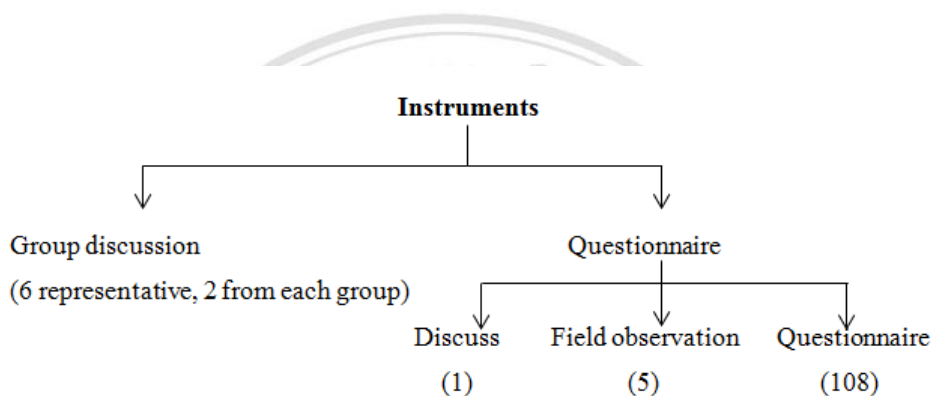
| Areas<br>(Sub-district) | Population | Sample     |
|-------------------------|------------|------------|
| Phrao                   | 27         | 24         |
| Mae Taeng               | 68         | 60         |
| Samoeng                 | 27         | 24         |
| <b>Total</b>            | <b>122</b> | <b>108</b> |

The sample size for organic farmers of Chiang Mai Organic Agriculture Cooperative, 2013 was calculated based on Yamane's formula (Yamane, 1967)

$$n = \frac{N}{1 + Ne^2}$$

Where; n = the sample size  
 N = the size of population  
 e = precision or error limit (5%)

The evaluation instrument was developed through the iterative process of farmers' practice and constraints on organic vegetable farming. Farmers' adaptation and perception of on-farm ecological relationships and pest management practices, suggested questions for assessing perception and awareness change. A one-day group discussion was held prior to collect data from 6 key informants in respective sub-districts. All questionnaires were completed by personal interviews with local languages were instructed to follow the systematic selection process described below.



**Figure 6** Data collection Method

### 3.2.3 Data analysis

1) To achieve the first objective considering farmer's practice and constraints in organic vegetable farming, the data will be gathered from interview with questionnaire and analyzed by using descriptive statistic.

2) To answer the second objective identifying the farmers' perception in organic vegetable farming, the data will be gathered from interview with questionnaire and analyzed by using three point rating scale method to classify level of famers' perception. The farmers' perception level about organic vegetable farming was scored from the number of practiced using questions that being related to organic vegetable farming practice.

3) To assess the third objective, farmers' adaptability in organic vegetable farming in the study areas, the data will be gathered from interview with questionnaire and analyzed by using three point rating scale method to classify level of famers' adaptation. The farmers' adaptation level about organic vegetable farming was scored

from the number of practiced using questions that being related to organic vegetable farming practice.

4) To accomplish the fourth objective, factors influencing farmers' perception and adaptation in organic vegetable farming in the study areas will be analyzed by Multiple Regression Analysis. However farmers' adaptation will develop from farmers' practice started from beginning to harvesting stage. The indicator for farmers' adaptation will develop from literature review as well as from farmers' practice and focus group discussion.

The level of farmers' **perception** in organic vegetable farming were computed as dependent variable and the hypothesis testing was done to find out the relationship between natural capital, physical capital, human, financial capital and social capital of organic vegetable farmers.

It was assumed that dependent variable was a linear function of independent variables in this study. Therefore, through regression analysis, it was possible to estimate how much variation in the dependent variable (farmers' perception level on organic vegetable farming) was caused by the independent variable was determined by the use multiple regression. The model was following;

$$Y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_n x_n + e \dots \dots \dots (1)$$

Where:

Y = farmers' adaptation on organic vegetable farming

$\beta_0$  = the constant or intercept

$\beta_1, \beta_2, \beta_n$  = the coefficient of estimation

e = random error term

X<sub>1</sub> = Age of household head

X<sub>2</sub> = Gender

X<sub>3</sub> = Household head educational level

X<sub>4</sub> = Number of labor

X<sub>5</sub> = Experience

X<sub>6</sub> = Farm income

X<sub>7</sub> = Farmer debt

- X<sub>8</sub> = Land size
- X<sub>9</sub> = Frequency of extension visit
- X<sub>10</sub> = Farmers' networks or membership in organic vegetable production
- X<sub>11</sub> = Farmers training in organic activities
- X<sub>12</sub> = Sources of knowledge

The level of farmers' **adaptation** in organic vegetable farming were computed as dependent variable and the hypothesis testing was done to find out the relationship between natural, physical, human, financial and social asset of organic vegetable farmers.

It was assumed that dependent variable was a linear function of independent variables in this study. Therefore, through regression analysis, it was possible to estimate how much variation in the dependent variable (farmers' adaptation level on organic vegetable farming) was caused by the independent variable was determined by the use multiple regression. The model was following;

$$Y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 \dots \dots \beta_n x_n + e \dots \dots \dots (1)$$

Where:

- Y = farmers' adaptation on organic vegetable farming
- $\beta_0$  = the constant or intercept
- $\beta_1, \beta_2, \beta_n$  = the coefficient of estimation
- e = random error term
- X<sub>1</sub> = Age of household head
- X<sub>2</sub> = Gender
- X<sub>3</sub> = Household head educational level
- X<sub>4</sub> = Number of labor
- X<sub>5</sub> = Experience
- X<sub>6</sub> = Soil fertility
- X<sub>7</sub> = Sources of water
- X<sub>8</sub> = Farm income

- X<sub>9</sub>= Farmer debt
- X<sub>10</sub>= Land size
- X<sub>11</sub>= Frequency of extension visit
- X<sub>12</sub>= Farmers' networks or membership in organic vegetable production
- X<sub>13</sub>= Farmers training in organic activities
- X<sub>14</sub>= Sources of knowledge

5) To find out the fifth objective, sustainable development in farmers' livelihood will be analyzed by using descriptive statistic based on livelihood assets.

### **3.2.4 Definition of independent variables in predicting adaptation on organic vegetable farming in the study area**

#### **(1) Age of household head (Years)**

Age can be a factor determining individuals' differences because age relates to past experiences, which make them have wider maturity and thought. A person in different ages would have different perception and a person with different ages usually had different capabilities and experience due to different periods of learning to make him/her learn and understand events differently.

#### **(2) Gender (Male, female)**

The head of household is the implicit key decision-maker for his or her household. Empirical evidence shows that male-headed households in the developing countries have more high adaptation and a higher access to resources and information that give them. Mostly the head of the households are men and they are the decision makers for the agribusiness too. However the percent of women's involvement in the agricultural industry are quite a bit amount and some women are the decision makers in their families. So the research also aims to explore the perception and sex relationship.



### **(3) Household head education (Level)**

Education is a basic factor leading the individual's different adaptation. Education helps people to increase their adaptation and understanding about organic vegetable farming. It is often believed that higher education gives farmers the ability to perceive, interpret and respond to new information much faster than their counterparts with lower education. Therefore, education is assumed as one of the most important factors which might be significantly correlated with adaptation level.

### **(4) Number of labor (Number of labor)**

Labor is the important variable to the prediction of the dependent variable. More labor can help farmer to adapt into organic vegetable farming so labors are required in organic vegetable farming.

### **(5) Experience (Years)**

Experience is another factor directly affecting adaptation. Events in the social environment make people perceive and evaluate them to be their perception, emotions, and thought. This helps improve their perception about farm management. Farming experience also shows positive effect on farmers' adaptation. This significant positive effect can be comprehended in such a way that farmers who run their farms for a long time develop perception and skills.

### **(6) Soil fertility (Level)**

Soil variable was constructed and it was hypothesized that soil fertility would be positively associated with different adaptation levels are very good, good, fairly good and bad. It has different impacts on the adaptation according to different soil productiveness.

### **(7) Sources of Water (Dummy variable is 1 for ground water and otherwise 0)**

Source of water is able to adapt and continue to produce in uncertain conditions of organic vegetable farming and the use of locally available resources to enhance the efficiency of water is also the important of source of water.

### **(8) Farm income (Baht)**

Income is the total annual income from farm activities.

### **(9) Farmers debt (Baht)**

Debt is the total annual debt from farm activities.

**(10) Land size (Rai)**

Total operate farm areas to cause famers adapt into organic vegetable farming.

**(11) Frequency of extension visit (Time/year)**

Extension education is also considered to improve the farmers' agricultural adaptation and the research supposed that if the farmers have extension contact, they can have good exposure to news and information, consequently raise the awareness level. Because access to extension services exposes farmers to new technologies and their potential benefits, we postulate that access to extension positively affects the farmers' adaptation.

**(12) Network or membership in organic vegetable farming (Number of groups)**

By participating in local farmers' organization, farmers will accept normally information among organization members and within the neighborhood and it is also need to consider for the sharing information receiving form other places. Group membership denotes whether any household member belonged to any group. Membership in groups may expose individuals to a wide range of ideas and sometimes afford farmers the opportunity to have better access to information, which may either cause them to form a different level of adaptation.

**(13) Farmer's participation in training (Time/year)**

The level of accessibility to information and media plays a vital role in improving the perception and awareness. If farmers participate in trainings, they will access the information and technology and it will improve perception level of farmers.

**(14) Sources of knowledge (Number of sources)**

The effectiveness of various sources of knowledge is perceived as effective approaches to organic vegetable farming. Awareness can be based on practical experience, but farmers also incorporate new information and concepts from colleague farmers, agricultural extension officers, NGO, field schools, input suppliers, the media, development workers and others into their knowledge base.