



CHAPTER III

RESEARCH METHODOLOGY

3.1 Research Design

This study is Cross-sectional analytical study by questionnaires which has created by my self. They are including area definition, population, sizes of sample, sampling and data collection.

3.2 Study Population and Sample

The target population of this research was all agriculturists who lived in Tambon Krabinoi, Amphur Meuang, Krabi Province.

3.3 Sampling technique and Sample selection

3.3.1 Population are 2,387 Agriculturists in Tambon Krabinoi, Amphur Meuang, Krabi Province. (Muang Krabi agricultur office, 2002) as table:

Table 1: Type of plantations in Tambon Krabinoi, Amphur Meuang, Krabi Province.

(Meuang Krabi agricultur office, 2002).

Types	Area (Rais)	Agriculturists (Persons)
1. Para Rubber	31,084	1,166
2. Oil Palm	19,533	259
3. Coffee	19	1
4. Coconut	390	100
5. Rice	948	75
6. Leusium domesticum	273	15
7. Rambutan	153	13
8. Durian	220	18
9. Mangosteen	155	18
10. Pomelo	258	45
11. Vegetables	99	120
12. Mixed Farming	705	146
13. Others i.e. jackfruit, Guava, Sapodilla, Lemon, Wood apple, Banana, Watermelon, etc.	1,143	411

3.3.2 Study Population are Agriculturists in Tambon Krabinoi Amphur Mueang Krabi Province 240 people which divided to Agriculturists who use pesticides 120 people and Agriculturists who do not use pesticides 120 people, calculate by EpiInfo Program which has error 0.05 and power = 80 % based on table 2

in Ohayo-Mitoko et al., 2000 (408 subjects), and table 6 in Farahat et al., 2003 (102 subjects), and table 9 and 10 in Yassin et al., 2002 (185 subjects). They are as follows:

Table 2: Relationship between exposure variables and pesticide toxicity symptoms.

Variables	Observed		Sample size needed to detect		
	Prevalence (%)		Observed difference (Epi Info)		
	Lower Exposure	Higher Exposure	Lower Exposure	Higher Exposure	Total
Ohayo-Mitoko					
Skin or extremities	10	12	3,940	3,940	7,880
Respiratory	5	19	97	97	194
Systemic	8	15	353	353	706
Eye	5	10	474	474	948
CNS	9	20	177	177	354
Farahat					
Blurred vision	10	29	77	77	154
Dizziness	4	27	46	46	92
Numbness	2	25	42	42	84
Headache	22	29	636	636	1,272
Tremors	2	15	86	86	172
Fatigue	12	29	99	99	198
Muscle power	2	10	161	161	322
Ankle reflex	2	12	120	120	240
Knee reflex	6	17	148	148	296
Superficial sensation	6	23	77	77	154
Deep sensation	0.01	2	489	489	978
Yassin					
Duration of using Pesticide(year)	82	92	196	196	392
Concentrations	77	91	120	120	240
Mixing	59	86	49	49	98

Sample size requirements varied from 84 to 7,880 subjects for different specific items in relevant previous studies. For specific calculation, data from Yassin et al. (2002) was used as a basic. Calculation was made using Epi Info 2000, Statcalc, Sample size and Power, Cohort Cross-sectional (Confidence = 95 %, Power = 80 %), 77 % and 91 % symptom prevalence with lower and higher exposure, respectively. This give a sample size requirement of 240 subjects. 240 subjects were sufficient to detect most of the pesticide exposure-related difference in toxin symptoms that had been observed in previous studies.

- For each tambon, the District Agriculture Office keeps a list of all farming households. This includes types of crops planted, so I can tell whether each family uses pesticides or not.
- For Krabinoi, I expect this list to have about 1600 households that do not use pesticides, and 800 that use pesticides.
- From each group I will select 80 households (total 160 households, of which I expect 150 to participate).
- Systematic sampling. In the group that does not use pesticides I will select every 20th household. In the group that uses pesticides I will select every 10th household.
- In each household, interview both husband and wife when possible, at times when I expect both to be at home.
- Estimate average 1.75 subjects per house, for total of about $1.75 \times 150 = 262$ subjects expected.

So I settled on a sample size of 262.

3.4 Research instrument for data collection

The instrument of this research was questionnaire which has 4 parts as follow:

Part 1 General Informations of agriculturists which including gender, age, education, smoking history, drinking alcohol, work characteristic, duration of work, type of plantation and duration of chemical usage

Part 2 Knowledge in pesticide practice of agriculturists which is 12 closed end questions. Scoring by gain 1 point per correct answer and 0 for the wrong one. Then divide into 3 levels such as:

Lower than 60 % of total means have to improve

Between 60 % - 79 % of total means average

More than 80 % of total means good

Part 3 Opinions in pesticide practice of agriculturists which is rating scale about attitude in pesticide practice 12 questions. There are 5 scales as following:

Positive attitude

Totally agree 5 marks

Agree 4 marks

No idea 3 marks

Disagree 2 marks

Totally disagree 1 mark

Negative attitude

Totally agree 1 mark

Agree 2 marks

No idea 3 marks

Disagree 4 marks

Totally disagree 5 marks

Then divide into 3 levels as:

Lower than 60 % of total means have to improve

Between 60 % - 79 % of total means average

More than 80 % of total means good

Part 4 Behavior in pesticide practice of agriculturists

Behavior in pesticide practice of agriculturists 26 questions. There are 5 scales as following:

Positive attitude

Usually 5 marks

Often 4 marks

Sometimes 3 marks

Rarely 2 marks

Never 1 mark

Negative attitude

Usually 1 mark

Often 2 marks

Sometimes 3 marks

Rarely 4 marks

Never 5 marks

Then divide into 3 levels as:

Lower than 60 % of total means have to improve

Between 60 % - 79 % of total means average

More than 80 % of total means good

3.5 Pre-test of Questionnaire

Before going to the process of data collection, the researcher submitted the draft questionnaire to thesis advisors in order to check its content validity. Then, the questionnaire were adjusted in according to comments and suggestions of thesis advisor. The questionnaire were pretested 30 agriculturists in Tambon Tapprig Amphur Meuang Krabi Province that was neighboring location.

The results were then analyzed for its reliability. For the part of knowledge in pesticide use by using Cronbach's alpha method, alpha value was 0.536 (more details are shown in the appendix). In the part of attitude in pesticide use by using Cronbach's alpha method, alpha value was 0.616 (more details are shown in the appendix). Pilot test was used for clarity of questionnaires, if pilot subjects did not understand some words or difficult to answer, researcher would change them for clarity.

3.6 Data collection

1. Create questionnaire's guidebook
2. College of Public Health, Chulalongkorn University issue letter to declare the objectives in research of community's leaders, Distric Chief, Village Headmans, health volunteer and head of agriculturists family in Tambon Krabinoi Amphur Maung Krabi Province for well coordinate in data collection. Start to collect data from June 2007 to July 2007.
3. Collect questionnaire and check for full and correction data every time.
4. Place data code, record and analysis preparation.

3.7 Data Analysis

Use both descriptive and deductive statistic as follows:

1. Descriptive Statistic: mean, frequency, percentage, standard deviation for description for general information, knowledge, attitude, behavior and symptoms.

2. Deductive Statistic to compare symptoms at different levels of exposure, to examine symptoms in relation to general characteristics and to relate knowledge, attitude and practice about pesticide use.

2.1 Chi-square for categorical dependent variables (for example, presence or absence of symptoms, gender).

For all of statistical test used in this study, the statistically significant level was set at $\alpha = 0.05$ (that is, p -values < 0.05 were considered statistically significant).