The Social Sciences 7 (1): 30-32, 2012
ISSN: 1818-5800

Participatory Learning Process of Pesticides on Agriculturist in Nakhon Sawan Province

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Abstract: Participation learning process of pesticides on agriculturist in Nakhon Sawan province. The aim is to test and evaluate the learning process involved in the use of chemical pesticides by Agriculturist. Experimental group as growers of of jasmine, Moo 5, Tambon Khao Din Kao Liao district Nakhon Sawan province, 30 people and the control group as growers of jasmine, Moo 1, Tambon Khao Din Kao Liao district Nakhon Sawan province, 30 were obtained by simple random sampling. The instruments used in research on the level of knowledge of the 20 items measure the attitudes of 20 items and 24 items on behavioral scaling test. The collected data were analyzed by using percentage; mean, Standard Deviation (SD) and t-test (Paired t-test) were employed for testing hypotheses. The research results that sample is the female (63.3%) age 40-59 years (53.3%), elementary education (86.7%) period of time in earning a living grow the jasmine, >10 years (56.7%), used lannate for insecticide (86.7%), used furadan for fungus (60.0%), used grammoxone for herbicides (43.3%) and frequency of pesticides use since 2 time week^{-1} (50.0%), the time to spray chemical pesticides. Each time, it is ≤1 h (63.3%) and the enzyme cholinesterase at risk (50.0%). Experiment with knowledge, attitudes and behavior in the use of chemical pesticides is higher than the control group statistically significant at the 0.05 level and the amount of the enzyme cholinesterase in the blood higher than the control group had not significant statistical level of 0.05.

Key words: Participatory learning, pesticides, knowledge, attitude, behavioral, cholinesterase

INTRODUCTION

Since a previous decade, Thailand population has increased and affected to the increasing demand of agricultural products and technological developments that made to be spread of toxic substances. This evidences impact to ecosystems and overall quality of life of Thai populations that >70% are agriculturists who usually use toxic substances to increase their products and insecticide (Ministry of Science Technology and Environment, 2001) found the most of patients with substance abuse residing in the North of Thailand equal to 41.18% then the North-ease, Central and South region equivalence 31.47, 22.25 and 5.10%, respectively.

Morbidity rate of Nakhon Sawan is the 10th ranking of Thailand, the most patient is agriculturist 48.76%. Lack of knowledge, bad attitude and bad practice in using substance abuse in the farms are the causes of problem (Nakhon Sawan Provincial Health Office, 2008). Environment pollution is form issues that had caused so many problems. The study of Klinman *et al*. (2011) found that sample is the female (62.6%), age 40-59 years (62.9%), elementary education (77.9%), period of time in earning a living grow the jasmine, a little 5 more years (40.8%), used methomyl for insecticide (48.3%), used furadan for fungus (45.5%), used bipyridylium for herbicides (49.1%) and frequency of pesticides use since, 2 time week^{-1} (58.9%). Sample has the age differently, education level and the frequency in using pesticides showed different knowledge level, attitude level, behavior level and cholinesterase level at 0.05 level of significance. The successfully solution should starting with human that are the host, all steak holders have to participate in the solution.

Education is a sustainable solution by changing them to be appropriate knowledge, attitude and practice (Veeravatnanon, 2003). Therefore, this study considering in Participatory learning process of pesticide on agriculturist in Nakhon Sawan for appropriated knowledge, attitude and practice.

The research's purposes: To test and evaluate the Participation learning process of pesticides on agriculturist in Nakhon Sawan province.

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Hypothesis: Agriculturist are experimenting with the knowledge, attitudes and behavior in the use of chemical pesticides. The amount of the enzyme cholinesterase in the blood than the control group.

MATERIALS AND METHODS

Population were 131,200 agriculturist in Nakhon Sawan province. Samples were randomly selected by using simple random sampling (Neuman, 1991) from agriculturists who grow a jasmine, experimental group as growers of jasmine, Moo 5, Tambon Khao Din Kao Liao district, 30 people and the control group as growers of jasmine, Moo 1, Tambon Khao Din Kao Liao district, 30 people. Research instrument including the following; the questionnaire composing 4 parts:

- **Part 1:** Demographic characteristics
- **Part 2:** Knowledge testing form on substance abuse of agriculturist in Nakhon Sawan province
- **Part 3:** Attitude level assessment form for substance abuse of agriculturist in Nakhon Sawan province
- **Part 4:** Behavioral level assessment form for substance abuse of agriculturist in Nakhon Sawan province

The blood cholinesterase testing kit by using reactive paper for detecting blood cholinesterase of agriculturist in Nakhon Sawan province.

Data collection:

- Step 1 includes study on knowledge, attitude and levels of practice on substance abuse of pesticide and levels of blood cholinesterase on agriculturist in Nakhon Sawan province
- Step 2 includes test and evaluate the participatory learning process of pesticides on agriculturist in Nakhon Sawan province
- Step 3 includes analyzing data by statistical, percentage, mean and Standard Deviation (SD) and t-test (Paired t-test)

RESULTS

Table 1 shows that most of samples are female (63.3%), age 40-59 years (53.3%), elementary education (86.7%), period of time in earning a living grow the jasmine, >10 years (56.7%), used lannate for insecticide (86.7%), used furadan for fungus (60.0%), used grammoxone for herbicides (43.3%) and frequency of pesticides use since 2 time week^{-1} (50.0 %). The time to spray chemical pesticides. Each time, it is ≤1 h (63.3%) and the enzyme cholinesterase at risk (50.0%). Table 2 shows that the experimental group, the level of knowledge in the use of chemical pesticides is higher than the control group statistically significant at the 0.05 level.

Table 3 shows that the experimental group, the level of attitude in the use of chemical pesticides is higher than the control group statistically significant at the 0.05 level. Table 4 shows that the experimental group, the level of behavior in the use of chemical pesticides is higher than the control group statistically significant at the 0.05 level.

Table 1: Demographic characteristics of samples

Characteristics	(n = 30)	Percentage
Sex		
Male	11	36.7
Female	19	63.3
Age (years)		
<40	6	20.0
40-59	16	53.3
60+	8	26.7
Educational level		
Elementary	26	86.7
Secondary/Certificate	4	13.3
Period time of career (years)		
<5	3	10.0
5-9	10	33.3
10+	17	56.7
Types of substance abuse		
Insecticide		
Abamectin	3	10.0
Lannet	26	86.7
Abamectin and Lannet	1	3.3
Fungicide		
Furadan	18	60.0
Mancosase	8	26.7
Furadan and mancosase	3	10.0
Did not use or did not reply	1	3.3
Pesticide		
Grammoxone	13	43.3
Glyphosate	13	43.3
Grammoxone and glyphosate	4	13.4
Frequency in using substance abuse		
≤1 times week^{-1}	15	50.0
>2 times week^{-1}	15	50.0
The use of chemical pesticides		
≤1 h	19	63.3
>1 h	11	36.7
Level of enzyme cholinesterase		
Normal	3	10.0
Safe	8	26.7
Risk	15	50.0
Unsafe	4	13.3

Table 2: Compares the average level of knowledge in the use of chemical pesticides by agriculturist. The experimental and control groups

Knowledge	n	$\bar{X}$	SD	t-value	df	p-value
Experimental	30	14.20	2.797	2.279	29	0.030*
Control	30	12.33	2.940	-	-	-

Table 3: Compares the average level of attitude in the use of agriculturist. The experimental and control groups

Attitude	n	$\bar{X}$	SD	t-value	df	p-value
Experimental	30	3.680	0.084	2.279	29	0.030*
Control	30	3.452	0.066	-	-	-

Table 4: Compares the average level of behavior in the use of agriculturist. The experimental and control groups

Behavior	n	$\bar{X}$	SD	t-value	df	p-value
Experimental	30	65.13	3.608	24.259	29	0.000*
Control	30	36.37	5.474	-	-	-

Table 5: Compares the average level of enzyme cholinesterase in the blood of agriculturist. The experimental and control groups

Cholinesterase	n	$\bar{X}$	SD	t-value	df	p-value
Experimental	30	7,666.90	1,892.91	0.479	29	0.635
Control	30	7,465.63	1,946.18	-	-	-

Table 5 shows that the experimental group, the level of behavior in the use of chemical pesticides is higher than the control group statistically not significant at the 0.05 level.

CONCLUSION

Form the research, sample is the female (63.3%), age 40-59 years (53.3%), elementary education (86.7%), period of time in earning a living grow the jasmine, >10 years (56.7%) used lannate for insecticide (86.7%), used furadan for fungus (60.0%), used grammoxone for herbicides (43.3%) and frequency of pesticides use since, 2 time week^{-1} (50.0%). The time to spray chemical pesticides. Each time, it is ≤1 h (63.3%) and the enzyme cholinesterase at risk (50.0%). Experiment with knowledge, attitudes and behavior in the use of chemical pesticides is higher than the control group statistically significant at the 0.05 level and the amount of the enzyme cholinesterase in the blood higher than the control group had not significant statistical level of 0.05.

ACKNOWLEDGEMENTS

This research has completed perfectly with a support and kindness of Assistant Professor Dr. Chusri Talabmook (thesis committee chairman), Assistant Professor Dr. Tawatchai Tanee (thesis committee) who have greatly given a useful advice and weakness verification from the beginning till its completion. Eventually, researcher would like to take this opportunity to give them very much of researcher's appreciation and thank you indeed.

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