CHAPTER V

HARMFUL EFFECTS OF PESTICIDES AWARENESS AND FARMING BEHAVIORS

This is the main chapter of the study and it is to find the farmers' awareness by measuring their attitudes and perceptions based on their agricultural knowledge. The main idea of the study was to find out the factors or situations which might have relationship with their pesticides awareness. The null hypothesis was that the socio-demographic or internal factors like age, education, sex, etc and institutional or external factors like training experience, loans, extension visit, etc had no relationship with the AI (harmful effects of pesticides Awareness Index) of the farmers. So the former were used as independent variables and the latter as dependent variable.

5.1 Actual scores of Awareness Index (AI)

For awareness index of the farmers the total scores for 15 questions ranged from 15 to 75 according to the scoring system by the orientation of the statements. Fifteen questions try to determine the farmers' awareness on harmful effects of pesticides were as follows;

1. Pesticides are very effective and essential in crop protection
2. Pesticides can cause serious environmental pollution
3. Pesticides should not be used more in future for the sake of protecting harmful effects

4. Pesticides are very dangerous to health as well as natural environment
5. Pesticides can be handle/used easily
6. Present rate of pesticides usage is reaching the harmful level
7. Pesticides should be the last choice in pest control
8. Mono cropping increase pest and disease outbreak
9. All insects in the field will cause yield loss
10. Crop rotation or multiple cropping can improve soil fertility and reduce insects /disease outbreak
11. Insecticides will kill not only pests but also other beneficial insects and organisms
12. All insects in the field need to be killed
13. Some insects and animals are beneficial to crops production
14. The use of pesticides in the region is very serious
15. Heavy application of pesticides is one of the reasons to protect the reduction of crop yield

The average scores responded by the sampled farmers to each question were shown in Table 5.1. For question number (1), 50.9 per cent of the farmers strongly disagreed for effectiveness of pesticides and essential in crop production. 41.8 per cent disagreed, 4.8 per cent agreed, 1.6 percent strongly agreed and 1.2 per cent did not have any idea about this statement. The average score was 1.6. For question (2), 57 per cent of the respondents agreed that pesticides could cause serious environmental pollution. 27.3 percent strongly agreed, 10.9 per cent disagreed and 4.8 per cent had no answer for that agreement. The average score was 4. The minimum score was 2 and the maximum was 5. For question (3), 50.9 per cent of the

respondents agreed the statements pesticide should not be used more in the future for the sake of protecting harmful effects. 22.4 percent strongly agreed, 10.3 per cent disagreed, 3 per cent strongly disagreed and 12.7 per cent did not have any idea for that statement. The average score was 3.8. For question (4), 54 per cent of the respondents agreed that pesticides were dangerous for human health and environment. 37.6 per cent strongly agreed, 4.8 per cent disagreed, only 0.6 per cent strongly disagreed and 3 per cent did not response. The average score was 4.2. For question (5), 50.9 per cent of the farmers agreed that pesticides could be used easily. 17.6 per cent strongly agreed, it can be assumed that these farmers had low awareness on using pesticides. 20.6 per cent disagreed, 2.4 per cent strongly disagreed and 7.9 per cent had no idea about that statement. The average score was 3.6.

For question (6), 51.5 per cent of the respondents agreed that the present rate of pesticides utilization was reaching the harmful level. 4.8 per cent strongly agreed, 30.3 per cent disagreed and 13.3 per cent had no idea for this statement. The minimum score was 2 and maximum was 5. For question (7), 56.4 per cent of the respondents disagreed that the pesticides should be the last choice in pest control. 12.7 per cent strongly disagreed, 17 per cent agreed, 3.6 per cent strongly agreed and 10.3 per cent had no idea. For question (8), 49.7 per cent of the farmers agreed that mono cropping increased pest and disease outbreak, 27.9 per cent strongly agreed, 7.9 per cent disagreed and 12.7 per cent stayed midway in this statement. There was no respondent for strongly disagree. For question (9), 52.1 per cent of the respondents disagreed that all insects in the field would cause yield loss. 4.2 per cent strongly disagreed, 15.8 per cent agreed and 3.6 per cent strongly disagreed. 23.6 per cent did not have any knowledge for this statement. For question (10), 53.3 per cent of the

farmers agreed that crop rotation or multiple cropping could improve soil fertility and reduce insects/ diseases outbreak. 30.9 per cent strongly agreed, 8.5 per cent disagreed and there was no respondent for strongly agreeing. 6.7 per cent had no idea.

For question (11), 50.3 per cent of the farmers agreed that insects killed not only pests but also other beneficial insects and organisms. 28.5 per cent strongly agreed, 8.5 per cent disagreed and 12.1 per cent no responded. The average score was 3.9. For question (12), 49.7 per cent of the respondents agreed that all insects in the field needed to be killed and 6.7 per cent strongly agreed. These farmers thought all insects in the field were able to damage their crops. But 31.5 per cent disagreed and 3.6 per cent strongly disagreed. 8.5 per cent had no idea. The average score was 3.2. For question (13), 61.8 per cent of the respondents agreed that some insects were beneficial in crop production. 10.3 per cent strongly agreed, 17 percent neutral and only 0.6 per cent strongly agree. The average score was 3.7. For question (14), 30.9 per cent agreed that the use of pesticides in the region was serious, 11.5 per cent strongly agreed, 24.8 per cent agreed and only 6.1 per cent strongly disagreed. The average score was 3. For questions 3, 5, 8, 9, 10, 11 and 14, the minimum score was 0 and maximum score was 5. For question (15), 60 per cent of the farmers disagreed that heavy application of pesticide is one of the reasons to protect the reduction of crop yield, 13.3 per cent strongly agreed, 16.4 per cent agreed and 1.8 per cent strongly agreed. 7.9 per cent had no idea for this statement. The average score was 2.3. For questions 1, 4, 7, 12, 13 and 15, the minimum score was 1 and maximum score was 5.

Table 5.1 The percentage, average, minimum and maximum scores of farmers' awareness on harmful effects of pesticides on each question

No.	% of respondents					Mean Score (n=165)	Score	
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree		Min.	Max.
1	50.9	41.8	1.2	4.8	1.6	1.6	1	5
2	0	10.9	4.8	57	27.3	4	2	5
3	3	10.3	12.7	50.9	22.4	3.8	0	5
4	0.6	4.8	3	54	37.6	4.2	1	5
5	2.4	20.6	7.9	50.9	17.6	3.6	0	5
6	0	30.3	13.3	51.5	4.8	3.3	2	5
7	12.7	56.4	10.3	17	3.6	2.4	1	5
8	0	7.9	12.7	49.7	27.9	3.9	0	5
9	4.2	52.1	23.6	15.8	3.6	2.6	0	5
10	0	8.5	6.7	53.3	30.9	4	0	5
11	0	8.5	12.1	50.3	28.5	3.9	0	5
12	3.6	31.5	8.5	49.7	6.7	3.2	1	5
13	0.6	10.3	17	61.8	10.3	3.7	1	5
14	6.1	24.8	21.2	30.9	11.5	3	0	5
15	13.3	60	7.9	16.4	1.8	2.3	1	5
			AI			**0.58**	**0.4**	**0.9**

Source: Survey data (2010)

Awareness index of the farmers were calculated by the scores resulting from these questions. The average awareness index of the respondents was 0.58, the minimum

index was 0.4 and maximum index was 0.9. According to these results the awareness of the farmers was not much high and it can be assumed that harmful effects of pesticides were not much known by the respondents.

5.2 Actual scores of Behavioral Index (BI)

For behavior index of the farmers, the total scores ranged from 0 to 100. There were 12 questions concerning about the behaviors on using pesticides.

1. Consultation technical personal when using pesticides
2. Reading the instructions
3. Timing of pesticides application
4. Compliance with pre-harvesting interval
5. Use of unregistered pesticides
6. Use the recommended amount of pesticides
7. Taking the necessary precautions during and after pesticides use
8. Careful disposal of pesticides containers
9. Careful storage of pesticides
10. Correct mixing chemicals
11. Future intention to use
12. Trends of pesticide
    - Have been using and will be using
    - Have used but thinking to reduce
    - Have used but have already reduced

The average scores of behaviors responded by the sampled farmers to each question were shown in Table 5.2.

Table 5.2 The percentage, average, minimum and maximum scores of farmers' behaviors on pesticides practices on each question

Question Number	% of respondents		Mean score (n= 165)	Scores		Standard deviation
	Yes	No		Minimum	Maximum	
1	80	20	4	0	5	2
2	95.2	4.8	4.7	0	5	1
3	44.8	55.2	2.2	0	5	2.5
4	68.5	31.5	3.4	0	5	2.3
5	33.9	66.1	6.6	0	10	4.7
6	69.1	30.9	6.9	0	10	4.6
7	55.8	44.2	5.8	0	10	4.9
8	89.1	10.9	8.9	0	10	3.1
9	92.7	7.3	9.3	0	10	2.6
10	93.3	6.7	9.3	0	10	2.5
11	94.5	5.5	0.5	0	10	2.3
12	47.9		2.7	0	10	2.7
	50.3					
	1.8					
	BI		**0.6**	**0.95**	**0.15**	

Source: Survey data (2010)

For question number (1), 80 per cent of the farmers consulted with the technician when using pesticides and 20 per cent did not. The average score was 4. For question number (2), 95.2 per cent of the farmers read the instruction. The

average score was 4.7. For question (3), 44.8 per cent of the farmers applied pesticides when the pest attack occur and 55.2 per cent applied pesticides whether pest attack or not in their crops. The average score was 2.2. For question (4), 68.5 per cent of the farmers followed the pre-harvesting interval. The average score was 3.4. The minimum and maximum scores for question 1 to 4 were 0 and 5.

For question (5), 66.1 per cent of the farmers used unregistered pesticides. The average score was 6.6. For question 5 to 10 the minimum score was 0 and maximum score was 10. For question (6), 69.1 per cent of the farmers used recommended rate of pesticides. The average score was 6.9. For question (7), 55.8 per cent of the respondents took precaution during and after pesticides application. The average score was 5.8. For question (8), 89.1 per cent of the farmers followed careful disposal of pesticides containers. The average score was 8.9. For question (9), 92.7 per cent of the farmers stored pesticides carefully. The average score was 9.3. For question (10), 93.3 per cent of the farmers mixed correct chemicals. The average score was 9.3. For question (11), 94.5 per cent of the farmers intended to use pesticides in the future. The average score was 0.5. For the last question, there were three trends of pesticides use. 47.9 per cent of the farmers still using and they have a plan to use pesticides. 50.3 per cent had been using but thinking to reduce for using pesticides. Only 1.8 per cent had been used but already reduced.

Behavior index of the farmers were calculated by the scores resulting from these questions. The average behavior index was 0.6, the maximum index was 0.95 and minimum was 0.15. Therefore it can be assumed that behavior of the farmers were medium on using pesticides practices.

5.3 The results of factor analysis

It was found that there were many multi correlations among the independent variables themselves and many independent variables make more complicated in developing a model. Therefore data reduction (under Factor Analysis) was applied to extract the main factors or components which have higher value of variance i.e, having eigenvalue greater than one.

Table 5.3 Components extracted by factor analysis showing the total variance explained

Components	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	3.247	23.189	23.189
2	1.916	13.687	36.877
3	1.641	11.723	48.600
4	1.298	9.272	57.873
5	1.027	7.334	65.207
6	.923	6.592	71.799

By the results of extraction method of factor analysis, five components were found to have eigenvalues greater than one and they explained 65.207 % as cumulative. It was also found that there was a little bit difference in the percent of variance in component one and two but was not a big different in others components, for example component (1) had 23.19%, component (2) had 13.69% , component (3) had 11.72%, etc. shown in Table 5.3 and rotated component matrix table was shown in Table 5.4.

Table 5.4 Rotated component matrix of first method

Variables	Components				
	1	2	3	4	5
Farm income (x_1)	**0.911**	0.167	-0.023	-0.130	0.117
Family income (x_2)	**0.897**	0.154	-0.014	-0.103	0.252
Extension visit (x_3)	**0.704**	-0.132	0.025	0.249	-0.054
Total land (x_4)	**0.472**	0.281	0.090	-0.465	0.061
Training experience (x_5)	0.114	**0.822**	-0.030	0.198	0.097
Number of training (x_6)	0.290	**0.778**	0.011	-0.130	0.009
Information access (x_7)	-0.217	**0.503**	-0.144	-0.144	0.096
Getting loan (x_8)	0.044	**0.463**	0.283	0.343	0.111
Growing experience (x_9)	-0.056	-0.089	**0.917**	-0.061	-0.104
Years of pesticides using (x_{10})	0.061	0.027	**0.915**	-0.089	0.049
Production of crops (x_{11})	-0.104	-0.069	-0.146	**0.747**	0.102
Sharing information (x_{12})	0.213	0.349	-0.019	**0.529**	-0.085
Non- farm income (x_{13})	0.095	-0.046	0.049	0.142	**0.877**
Education (x_{14})	0.124	0.291	-0.100	-0.102	**0.554**

Source: computed by SPSS 16

Note. Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

The first component appeared to be wealth and extension contact as it is composed of farm income (x_1), family income (x_2), extension visit (x_3) and total land (x_4). The second component explained about 13.69% of total variance and should be

termed as community support as it consists of training experience (x5), number of times for training (x_6), information access (x_7), and getting loans (x_8).

Table 5.5 Components extracted by PCA and their independent variables (first method)

No.	Name	Independent variables included
1	Wealth and extension contact	Farm income, family income, total land, extension visit
2	Community support	Training experience, number of training, information access, getting loan
3	Experience	Growing experience, using pesticides years
4	Commercialization	Sharing information about pesticides, Production of crops
5	Education	Education , non- farm income

The third component explained 11.72% of total variance and consists of growing experience (x_9) and years of using pesticides (x_{10}) termed as experience. The component (4) showed only 9.27% variance and consists of sharing information about pesticides (x_{11}) and production of crops (x_{12}) including commercial and semi-commercial production termed as commercialization. The last component explained only small percent (7.33%) and it is including education (x_{14}) and non-farm income (x_{13}) designated as education factor. These components were named as accordingly to their common meanings (Table 5.5). When naming the factors the items that have higher factor loading as being more representative of the factor than items with lower factor loading.

5.4 The results of Tobit regression analysis

5.4.1 The relationship between AI and factor scores of the main components

The result of Tobit model, using five factor scores resulting form factor analysis as independent variables and awareness index (AI) as dependent variable shows there was relationship between these variables. Tobit model shows log likelihood function of 157.42 and Akaike IC value was (-300.84). Akaike information criterion (AIC) rewards the relative goodness of fit of the statistical model and the minimum AIC value was the preferred model. The β_0 (constant) was 0.579 and the components 1, 2, 4 and 5 have significant relation with AI (Table 5.6). Education component was strongly significant relation with AI. Therefore, it can be said that when the farmers have high education they have high awareness on harmful effects of pesticides.

Wealth and extension contact (component 1) includes farm income, family income, total land and extension visit was significantly related with awareness index at 0.1 level of significant. This mean that the individuals with higher income can buy some facilities such as newspapers, TV, radio or telephone, etc, meaning that he /she might have more opportunities of being exposed to different media of information sources. Besides they can spend more money and time to go to urban area more frequently than those with lower income. So if the farmers have higher income, they can probably improve the awareness level. Lwin (2006) also confirm that wealth status was significantly related with awareness index.

The component (2) community support significantly correlated with AI at 0.05 level of significant. This means that when the farmers have training experience for

safe use of pesticides, they have high awareness on harmful effects of pesticides. The higher the numbers of times for training the more the farmers have high awareness on harmful effects of pesticides. Also they have more information about pesticides and they can be managed well in using pesticides. Lwin (2006) also pointed out that information accessibility played a vital role in expressing the AI level of farmers.

Table 5.6 Result of AI (dependent) and main components in Tobit regression model

Variables	Marginal Effects	
	Coefficient	P[|Z| > z]
Constant	0.579	0.000
Wealth and extension contact	0.013	0.072*
Community support	0.014	0.049**
Experience	0.007	0.326
Commercialization	0.014	0.056**
Education	0.022	0.002***

Correlation is significant at 1% (***), 5% (**) and 10% (*) level

Log likelihood function = 157.42, Akaike IC= -300.841

The component (4) was significantly correlated at 0.05 level of significant with AI. This means sharing about the good and weak points in using pesticides for crop protection between growers or technicians is very important. Therefore, if there is more sharing about pesticides the farmers will have more awareness on harmful effects of pesticides. Production of crops including commercial and semi-commercial farmers had not different awareness on harmful effects of using pesticides.

The component (5) education was strongly significant with AI at 0.01 level of significant. That mean education is very important in awareness of the farmers. The

higher the education of the farmers, the more they have awareness on harmful effects of pesticides. Matthews (2007) also stated that education was important for having the pesticides awareness of the farmers.

5.4.2 The relationship between AI and BI

By the research hypothesis, the correlation between awareness index (AI) and behavioral index (BI) was run and Pearson correlation showed that AI was positively correlated with BI at 0.05 level (2- tailed) (Table 5.7). The value of Pearson r^2 value was only (0.167). It is not very strong relationship but at least it can be said that there was correlation between AI and BI. And the Tobit regression also showed significant at 0.05 levels, β_0 (constant) is 0.49 and log likelihood function is 74.54. The Akaike IC value was (-143.73) shown in Table 5.8. According to the regression equation, BI was predicted to be increased 0.264 when AI increased by one unit. There is a positive relationship between awareness and behavior, this mean the higher the awareness on harmful effects of pesticides, the better the safe farming practices will probably be performed.

Table 5.7 Correlation between AI and BI

		Awareness Index	Behavioral Index
Awareness Index	Pearson Correlation	1	0.167**
	Sig. (2-tailed)		0.032
	N	165	165
Behavioral Index	Pearson Correlation	0.167**	1
	Sig. (2-tailed)	0.032	
	N	165	165

** Correlation is significant at 5 % level

Table 5.8 Tobit regression model of BI (dependent) and AI (independent)

Variable	Standard Error	Marginal Effects	
		Coefficient	P[|Z| > z]
Constant	0.071	0.490	0.000
AI	0.121	0.264	0.029**

** Correlation is significant at the 5% level, Log likelihood function= 74.54

5.5 Alternative method

It is the second method of factor analysis; it is to find the relationship between the main components (extracted from the contextual variables) with an additional variable, AI and BI. One thing being different from the first one is that the awareness index (AI) was considered to be one of the factors that can influence the farmers' behavior along with all other independent variables. The second method was run to know the combination of main components of socio-demographic contexts and awareness of the farmers has relationship with their behavioral practices.

Table 5.9 Components extracted by PCA showing the total variance explained (second method)

Components	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	3.327	22.180	22.180
2	1.919	12.792	34.973
3	1.669	11.126	46.099
4	1.378	9.187	55.286
5	1.081	7.204	62.490
6	0.927	6.181	68.672

Table 5.10 Rotated component matrix of second method

Variables	Component				
	1	2	3	4	5
Farm income	**0.918**	0.142	-0.017	0.147	-0.050
Family income	**0.902**	0.131	-0.019	0.258	-0.045
Extension visit	**0.687**	-0.185	0.008	-0.058	0.295
Total land	**0.514**	0.315	0.114	0.034	-0.387
Training experience	0.110	**0.778**	-0.023	0.183	0.287
Number of training	0.307	**0.763**	0.038	0.087	-0.014
Information access	-0.171	**0.543**	-0.141	-0.015	-0.099
Getting loan	0.057	**0.429**	0.257	0.026	0.414
Growing experience	-0.052	-0.098	**0.917**	-0.093	-0.034
Years of using pesticide	0.058	0.010	**0.918**	0.113	-0.059
Production of crops	-0.187	-0.166	-0.177	0.254	**0.683**
Sharing information	0.190	0.276	0.000	-0.060	**0.591**
Non-farm income	0.092	-0.041	-0.018	**0.732**	0.019
Education	0.141	0.309	-0.121	**0.484**	-0.128
AI	0.058	0.079	0.125	**0.679**	0.187

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 25 iterations.

The results of the factor analysis also shows 5 main components found to have eigenvalues greater than one. However the five components in this analysis explain lower than that of the first method with cumulative variance of 62.49% (Table 5.9). The rotated component matrix gave very similar output with first method shown in Table 5.10. Table 5.11 shows the main components and its respective contexts for the second method.

Table 5.11 Components extracted by PCA and their independent variables (second method)

No.	Name	Independent variables included
1	Wealth and extension contact	Farm income, family income, total land, extension visit
2	Community support	Training experience, number of training, information access, getting loan
3	Experience	Growing experience, using pesticides years
4	Education and awareness	Education , AI, non- farm income
5	Commercialization	Sharing information about pesticides, production of crops

Table 5.12 Result of BI (dependent) and main components with AI in Tobit regression model (second method)

Variables	Marginal Effects	
	Coefficient	P[|Z| > z]
Constant	0.643	0.000
Wealth and extension contact	0.008	0.441
Community support	-0.004	0.706
Experience	0.024	0.031**
Education and awareness	0.032	0.004***
Commercialization	0.034	0.003***

Correlation is significant at 1% (***) and 5% (**) level
Log likelihood function= 82.74, Akaike IC = -151.476

The Tobit regression of the five factor scores of main components together with AI were associated with BI at highly significant level and log-likelihood function was 82.74 (Table 5.12). The value of log likelihood function was lower than the first method. The Akaike IC value (- 151.476) was higher than the first method. Among the five components, the component 3 (experience including growing experience and

using pesticides years), the component 4 (knowledge including education and non-farm income) and the component 5, sharing information and production were highly significant at 0.5 and 0.01 level.

5.6 Summarized Inference

The results of the Tobit regression in second method also proved that the combination of main components of socio-demographic and the awareness of the farmers on harmful effects of pesticides had significant relation with BI. The Tobit regression results pointed out that the three components together with awareness index influenced the behavioral index at high significant level. Experience component was significant at 0.05 level, education and awareness and commercialization components were significant at 0.01 level. And it shows that the awareness of the farmers on the harmful effects of pesticides influenced their behaviors together with other three related components or factors.

The Akaike IC value of first method (-300.841) was lower than the second method (-151.476), the minimum AIC value rewards the goodness of fit of the statistical model. Therefore it can be said that the first model explained better correlation between the independent (contextual variables) and dependent (AI) than the second model.

Therefore the alternative hypothesis of research thesis (1) was accepted that there were some socio-demographic contexts and institutional contexts which were relating with the awareness on harmful effects of pesticides of the farmers and hypothesis (2): the awareness of the farmers in turn influenced their farming behavior.

The Tobit regression model for awareness (first method) would be

$AI = \beta_0 + \beta_1 (F_1) + \beta_2 (F_2) + \beta_4 (F_4) + \beta_5 (F_5)$

$AI = 0.579 + 0.013(F_1) + 0.014(F_2) + 0.014(F_4) + 0.023(F_5)$

AI = Awareness index

β_0 = Constant

β_1 = Coefficient for independent variable component 1 and so on

F_1 = Component $1_{(\text{wealth and extension contact})}$ = Farm income, family income, total land, extension visit

F_2 = Component $2_{(\text{community support})}$ = Training experience, number of training, information access, getting loan

F_4 = Component $4_{(\text{commercialization})}$ = Sharing information, production of crops

F_5 = Component $5_{(\text{education})}$ = Education, non- farm income

According to this equation, awareness index will be predicted to increase 0.013 when the wealth and extension contact grown up by one. Similarly when the community support increase in one unit the awareness index will be increased 0.014, awareness index also increased 0.014 and 0.023 when the commercialization and education components increased by one unit respectively. Awareness index was predicted to be 0.579 when all independent variables were zero.

In fact, this research was not to predict the awareness of the farmers on harmful effects of pesticides but to find out the factors influencing on the awareness of the farmers on using pesticides. The first model gave one component at 0.01 level, two components at 0.05 level and one at 0.1 level of significant.

By the Tobit regression results,

$\beta_1 \neq 0, \beta_2 \neq 0, \beta_3 \neq 0, \beta_4 \neq, \beta_5 \neq 0$

Therefore it can be concluded that the selected socio- demographic contexts and institutional contexts were associated with the harmful effects of pesticides awareness level of the farmers.

Then the correlation and regression between the AI and BI also showed the significant values and it can be concluded that the awareness of the farmers on harmful effects of pesticides influenced on their farming practices.

The second method of regression model for behavioral index would be

$BI = \beta_0 + \beta_3 (F_3) + \beta_4 (F_4) + \beta_5 (F_5)$

$BI = 0.643 + 0.024(F_3) + 0.032(F_4) + 0.034(F_5)$

BI = Behavioral Index

β_0 = Constant

β_1= Coefficient for independent variable component 1 and so on

F_3= Component $3_{(experience)}$ = Growing experience, using pesticides years

F_4= Component $4_{(education\ \&\ awareness)}$ = Education, AI, non- farm income

F_5= Component $5_{(commercialization)}$ = Sharing information, production of crops

According to the above equation, behavioral index was predicted to be increased 0.024 when the experience increased by one. Similarly when the education and awareness and commercialization components were increased by one unit the behavioral index will be increased 0.032 and 0.034 respectively. But behavioral index was predicted to be 0.643when all independent variables were zero.

In this model, all regressions have positive coefficient and it means that the farming behaviors are positively dependent on those components and awareness index. So it can be concluded that awareness of the farmers on harmful effects of pesticides plays a vital role in expressing the farming behaviors or practices.