

ORIGINAL RESEARCH

Investigating attitudes and behaviors about chemical herbicides utilization among farmers in the central district of Karaj

Authors:

Shabnam Sarvaramini^{1*},
Farid Golzardi², Yazdan
Vaziritabar³, Yavar
Vaziritabar³, Kamal Sadat
Asilan⁴ and Seyedeh Zohreh
Ebadi⁵

Institution:

1. Department of Agricultural Management and Development, University of Tehran, Karaj, Iran
2. Seed and Plant Improvement Institute, Karaj, Iran.
3. Department of Agronomy, Science and Research Branch of Tehran, Islamic Azad University, Tehran, Iran
4. Department of Agricultural Sciences (Agronomy Engineering), Payame Noor University (PNU), Tehran, Iran
5. Department of Agronomy, Karaj Branch, Islamic Azad University, Karaj, Iran

ABSTRACT:

Nowadays chemical herbicides, despite their known toxicity, are widely used in developing counties. Evaluating the patterns of their use would be interesting to assess the appropriateness of adequate intervention and penetration of herbicides. In this study, the attitudes associated with using of chemical herbicides were evaluated among farmers in the central district of Karaj. A standardized questionnaire was completed by 130 farmers. The research population consisted of 130 farmers from central district of Karaj, which were selected with the help of Cochran's formula 1598. The whole experiment was carried out by randomized sampling method and proportionate appointment of selection. Data gathering was done using questionnaire. Cronbach's alpha coefficient was higher than 0.7 which is favorable to distinguish the stability of questionnaires. Validating of the questionnaire was confirmed by experts' panel. Data analysis was accomplished with the help of SPSS software. The results indicated that attitude as well as education has positive and direct effect on behaviors of farmers to utilize chemical herbicides. Based on the results, variables of age, education, farm area, land's distance to farmers habitat and ultimately farmers experience plays a determinative role to alter the usage of chemical herbicides in their field.

Keywords:

Chemical herbicides, Farmers, attitude, behavior

Corresponding author:
Shabnam Sarvaramini

Email Id:

ssarvaramini@ut.ac.ir

Article Citation:

Shabnam Sarvaramini, Farid Golzardi, Yazdan Vaziritabar, Yavar Vaziritabar, Kamal Sadat Asilan and Seyedeh Zohreh Ebadi

Investigating attitudes and behaviors about chemical herbicides utilization among farmers in the central district of Karaj.

Journal of Research in Ecology (2015) 2(3): 027-038

Dates:

Received: 04 Aug 2014 **Accepted:** 05 Sep 2014 **Published:** 12 Feb 2015

[http://ecologyresearch.info/
documents/EC0028.pdf](http://ecologyresearch.info/documents/EC0028.pdf)

This article is governed by the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/2.0>), which gives permission for unrestricted use, non-commercial, distribution and reproduction in all medium, provided the original work is properly cited.

INTRODUCTION

Human beings are struggling with several environmental problems, pests and weeds to decline the agricultural yield devastation or to decrease the toll of these external elements with the aim of saving investment, labor and time. Dramatic population growth rate and other confinements in the term of nutrient food production induced farmers to involve different ways of pests controlling their cultivation. The main frequent of them is repellent pests' venom. In recent years most of the concerns impressively turned into utilization of chemical agriculture substances and subsequently their miserable effects on humans and ecosystems; simultaneously in convergence of Green revolution and it's policy, herbicides utilization are becoming ubiquitous (Health systems research institute, 2005).

The extravagant usage of herbicides and chemical materials has created detrimental effects on human's health and environment; and also negative consequences in economic terms addressed in this issue (Koh and Jeyartnam, 1996; Satoh and Hosokawa, 2000). Due to the immense herbicide consumption, confrontations with these chemical materials are inescapable; hence their negative impacts on human's health will subsequently increase. American public health association (APHA) has estimated that close to 127500 of the U.S farmers are at the mercy of various herbicides (Legaspi and Zenz, 1994). Under develop countries threaten more as several kinds of chemical materials (herbicides and pesticides) are becoming ubiquitous, accessible and affordable compared with developed countries. Hence herbicide or pesticide poisoning is more frequent in those countries.

Pesticide utilization in Iran in 2006-2007 is calculated about 26 million kilogram just for one arable year. According to the report 19 million liter or kilogram of this valve just devoted to the cash crops and the rest applied through the orchards. From the total amount of applied venoms in cash crops the proportion of pesticides

and fungicides respectively assessed about 25 and 16%. If the expense of Iran's agricultural lands be considered about 14 million hectare, the ratio of pesticides utilization will be around 0.78 kg active ingredient or 1.85 kg commercial rate per each hectare. Furthermore if the whole agricultural production in country considered about 100 million ton, then the rate of venom utilization for each kilogram production will be about 0.11 g active ingredient or 0.26 g commercial rate of the chemicals (Zand *et al.*, 2009).

In fact world health organization (WHO) categorized these venoms to different groups (according to their venomous trait) to prevent or confine the utilization of high venomous herbicides and dictates farmers to use a few harmless ones for human's life (Eddleston *et al.*, 2004). So regarding to high mount of herbicide consumption, human's confrontation with these venoms are practically inevitable which can be occurred accidentally because of herbicide treatment, environmental pollution or polluted tools in the environment (Davies *et al.*, 1980; Edwards, 1983). The recent environmental studies declared that herbicides utilization made water contamination and soil pollution (Thapinta and Hudak, 2000; Boonyatumanond *et al.*, 2002 and Zarcinas *et al.*, 2004). In which this issue has lead a sort of scarcity for natural habitats of insects, microorganisms and cover crops. Herbicide's remnants in agricultural production terms result in costumer's health as well as commodities export confinement and subsequently economical impairments (Health Systems Research Institute, 2005).

Herbicides as a crucial entity are used in agriculture system to protect crops and their production against the weeds impairment. These chemical entities are known as indispensable elements in the agriculture system; despite of the fact that their impairment and detrimental effects are distinguished as the main factor of environmental pollution; and absolutely has negative effects on human's health and the entire world

(Yazgan and Tanik, 2005). Labor poisoning with chemical elements like herbicides, especially through under developed countries is the current issue that attributed to pesticide application. Moreover environmental pollution is the inevitable consequence of imbuing chemical materials into cultivation systems that aimed to protect crops or control pests (Recena *et al.*, 2006). Chemical venoms affect human's health in two ways; first it impairs farmer's health, which are in contact with these chemical elements and the next is the effect of pesticide remnants in food production on consumer's health (Esmaeili Sari, 2002). Several studies are carried out to investigate the utilizing rate of protective and safeness principle of pesticides among farm workers (Ergonen *et al.*, 2005; Yassin *et al.*, 2002 and Salameh *et al.*, 2004). Recena *et al.*, (2006) declared that farmers of Culturama's region in Brazil predominantly confronted with signs like headache, vertigo, bellyache and vomit after applying herbicides. Also Indonesian farmers, when got at the mercy of pesticides had similar poisoning symptoms like fatigue, vomit, dryness of throat, sting of eyes and muscle cramping (Kishi *et al.*, 1995).

Venomous dosage of chemical materials leads to drastic and persistent effects on human's health. Drastic effects usually caused by the high levels of chemical materials and approximately it is occurred in immediate time with symptoms like vertigo, nausea, diarrhea, vomit, inflammation of the lung, dermal rashes and even decease. The residual venoms rate in fresh water and food is rarely too high to cause drastic effects on human's healthiness. Generally these factors cause chronic effects which appear in the long terms of contact. Chronic effects of chemical venoms are categorized like limb impairment, reproductive system impairments, cancer, hurt to immune system and nervous system diseases (Esmaeili Sari, 2002). Attitude is an important perception in the novel term of social psychology; and known as psychical and heuristic preparation status

which is organized by experience and has active and direct effects on person's reaction in different situations that he or she will encounter and impulsively made a sort of unconscious awareness in person. Hence, attitude can be perceived as a sort of trend in response to an idea or a situation in a particular way. Human beings are fragile in decision making; this deficit plays a major role in anticipating attitude, recognition of person's character, distinction of prejudice and scientific judgments (Autoclin, 1989). So acquiring more knowledge about people attitude can easily help them to change their thought and operation to utilize pesticide in appropriate ways (Holland *et al.*, 2002). Increasing person's attitude about subjects, decrease his or her necessity to thought and decision making in novel situations; and heuristic thinking process becomes dominant in special issues which made his or her absolutely predictable. It is declared, for example factors like genus, demographic traits, social place and race has no direct effects on attitude. But indirectly affect points of view, psychical abnormalities and intentions of attitude. Not only these alternations affect attitude, but also it changes beliefs. Farmer's attitude and view basically takes root from their background and experience. Thus proficiency is an impressive factor for decision making, attitude and points of view. Ghasemi and Karami (2009) in their study to determine the trend, attitude and behavior of Fars green house holders toward venom utilization declared that most of the holders have a reckless usage of venoms in their cultivation due to the lack of conscious awareness about the other conservative management system they can run to battle pests as well as disease as an alternative solution. Aghilinejad *et al.*, (2007) in their study aimed to evaluate the effect of pesticides on farmers' health community (of about 1279 persons) reported, in different regions depends on cash crops and the effectiveness of herbicides adapted to their cultivation growers tend to use less variety of venoms. They never use protective tools in their operations and

left venom container in environment. They barely burn or bury the containers just about 27%.

This study aimed to investigate the attitude and behaviors of farmers about chemical herbicides utilization in Karaj province. In convergence of the main goal, farmer's attitude and behaviors about herbicides and effective elements on their attitude is assessed.

MATERIALS AND METHODS

This study was conducted appropriately in the aspect of target categorized as applied investigations from the aspects of value and controlling rate distinguished as field variations in the collecting data and data analysis method is a type of descriptive correlational study. The research population consisted of farmers from the central district of Karaj (N=1598). Samples capacities were determined for 130 people according to Cochran's formula. Sampling was done in an accident way and to collect achieved data of statistical significance, arudimentary investigation was done through literature survey, and appropriate questionnaire (in Persian language) was prepared and validated by experts. Varieties of examination were done with the help of Cronbach's alpha test. The calculated Cronbach's alpha coefficient was about 0.78 for attitude variable which presented the stability of questionnaire. In this research the dependent variable was farmers' attitude towards herbicides application; and factors like individual characteristics, age, levels of education, productive traits, occupation experience, farm area and distance between farm and habitat placed as independence in variables. Ultimately in order to determine the effective factors on farmers' attitude a relevant model was presented and data was elaborately analyzed with the statistical method of path analysis. The final analysis accomplishes with the help of the SPSS software.

RESULTS AND DISCUSSION

Farmers' personal traits

According to the result farmers' community men and women proportion was about 76.9%. The average of community age was about 49.63 and the minimum and maximum people age respectively are assessed as 22 and 77 years old; 86.9% were married, 11.5% were single and widow's proportion from the community was about 1.5%. Just about half of the population (56.9%) was illiterate or have minimum levels of education, 30.8% had high school education, 8.5% had diploma certification and just 3.8% of them have academic education which reveals the low levels of education in the investigated community. 56% of people in the community were smoking cigarette. The lowest level of experience was dedicated to 2 years of occupation and the highest value of this trait was devoted to 52 years, job experience ranges in the community was approximately between 10-15 years. Furthermore 59.2% of people were lived less than a kilometer away from their farm. The lowest and greatest farm area between people was about 1 and 6 hectares. The average of farm possession between people was about 3.046 hectares. 68.6% of people were working full-time on their farm and the rest were working part-time.

Attitude towards pollutants

To assess the attitude of farmers towards herbicides utilization, 13 variables were distinguished to present farmers' agreement or disagreement toward each of them. The average and standard deviation of each point is showed in table 1. According to table about 76% of our cases were weak attitude towards chemical herbicide utilization to control pests and plant diseases among repliers (average was about 3.29). Most of the repliers (just about 58%) had low awareness about water contamination and soil fertility reduction made by chemical herbicide utilization and the necessity of natural fertilizers. They never concern to the major role of water as well as soil throughout their cultivation. Also

Table 1. Prioritizing the population attitude towards pollutants

Variables	Average	Standard deviation	Coefficient variance
Soil and water is the source of life and should be conserved	3.890	0.950	0.244
Water contamination by venom	3.250	0.941	0.289
Soil fertility reduction by venom	3.450	1.022	0.296
Environment recognition and conservation is a successful key factor in agriculture	3.119	0.932	0.298
Necessity of natural fertilizers utilization	3.413	1.039	0.304
Successful farmer known as a person who produces healthy food without venom utilization	2.831	0.871	0.307
Correlation between production quality and optimal venom usage	3.172	1.023	0.322
Chemical control is as last and most detrimental way of controlling	2.960	0.957	0.323
Utilizing the weak and split dosage of venom is better	3.030	0.991	0.327
The extravagant herbicide utilization by great farmers	3.460	1.142	0.330
Ecological environment interruption due to the venom utilization	3.650	1.220	0.334
Prevailing the refractory disease due to excessive venom consumption	3.705	1.261	0.340
Food healthiness and organic cultivation is important	2.940	1.009	0.343
Attitude	3.290	1.028	0.310

The mean range can be altered between 1 to 5 points (1: High disagreement; 5: High agreement).

there were few ones (23%) who perceive chemical control as the most detrimental and the last way of controlling mechanism. Farmers barely had attention to optimal herbicide utilization or utilizing natural entities as alternative resource instead of chemical materials; they have no concern about ecological interrupting effect of herbicides on environment and organic cultivation.

Also they had no awareness about refractory diseases made by frequent herbicides utilization.

Farmers’ attitude towards herbicides application

Result showed utilization of protective tools through spraying and concerning to safeness principles was so weak among farmers. Generally the two variables of attitude and concerning to safeness principles

Table 2. Utilizing protective tools through herbicides application

Variables	Average	Standard deviation	
Using wet handkerchief to cover mouth and face	0.322	1.023	
Mask	0.327	0.991	3.030
Glove	0.396	0.978	3.178
Protective Glass	0.397	1.260	2.711
Apron	0.403	1.093	2.530
Helmet	0.431	1.071	2.480
Safety Footwear	0.555	1.310	2.360
Dress	0.774	1.196	1.260
Utilizing protective tools	0.425	1.110	2.590

The mean range can be altered between 1 to 5 points (1: Never; 2: On demand; 3: Occasionally; 4: Most of the time; 5: always).

Table 3. Taking consideration of protective and sanitary principles

	Average	Standard deviation	Coefficient variance
Washing hands and tools after spraying	4.10	1.57	0.413
Prevent eating and drinking through spraying herbicides	3.87	1.72	0.469
Prevent smoking through spraying herbicides	3.72	1.21	0.230
Prevent keeping foods nearby herbicides	3.68	0.32	0.670
Prevent keeping herbicides close to water	3.54	1.84	0.510
Not consuming herbicides over the advised dosage	3.32	1.56	0.520
Absence of children through spraying	3.28	1.83	0.600
Presenting commodities to market early after spraying	3.07	1.76	0.660
Not spraying with wet cloth	2.87	0.98	0.320
Changing cloth before and after herbicides application	2.67	0.51	0.360
Taking shower after herbicides utilization	2.27	1.03	0.380
Not keeping herbicide cans for other use	1.80	0.77	0.430
Keeping safety tools in home	1.40	1.51	0.530
Considering to protective and sanitary principles		1.06	0.420

The mean range can be altered between 1 to 5 points (1: Never; 2: On demand; 3: Occasionally; 4: Most of the time; 5: always).

represented farmers' attitude about herbicides application. Therefore there seen a low trend to use safety tools like mask, glove, protective glass, apron, helmet, foot wear and appropriate dress between populations. The frequent protective tool among them was a wet handkerchief that they cover their face and mouth toward herbicides; afterwards tools like mask, glove and glass respectively dedicated greatest average in the category.

Result showed that most of the people avoided smoking or drinking water while they were spraying and they tend to wash their hand and tools after treatment. But they were careless about sanitary principles. For example, they did not consider an appropriate distance for maintaining foods, water and herbicides; they used extravagant rate of herbicide from advised dosage or put their commodities to market early after spraying. They sprayed farm when children were present there and used herbicide's cans in their kitchens; moreover the lack of protective tools in their homes intensified this issue. According to the result, it is revealed that most of them did not concern to change their cloth before and after spraying, taking shower or not utilizing the wet cloth while they were spraying herbicides.

Inferential achievements

Investigation of effective factors on farmers' attitude towards herbicide utilization

Result showed farmers' attitudes, beliefs and perception has made positive impacts toward chemical venom utilization; it is generally believed that attitude takes effect from different parameters and these points might be change in different situations. Factors like age, grade of education, farm area, far from field to habitat and occupation experience are known as effective variables on farmers' attitude according to several studies. To assess the effective key factors on farmers' point of view and attitudes about venomous materials, herbicides and so forth, the correlation coefficient test of Pearson and Spearman was used.

Result showed (Table 4) there was significant and positive relation between ages, grade of education and occupation experience on farmers' attitude and view about herbicides utilization (at the 0.01 probability level). Also there was significant relationship between farmers' views, attitudes and the distance from field to their habitat (at the 0.01 probability level); and there was significant relationship between people's attitude and view (at the 0.01 probability level). Numerous studies

Table 4. Correlation analysis of effective factors on farmers' attitude and behavior toward herbicides application

Variable	Point of View		Attitude	
	Test type	correlation coefficient	Test type	correlation coefficient
Age	Pearson	0.617**	Pearson	0.359**
Grade of education	Spearman	0.783**	Spearman	0.967**
Field area	Pearson	0.068	Pearson	0.033
Far from Field to habitant	Pearson	0.187*	Pearson	0.286*
Occupation experience	Pearson	0.614**	Pearson	0.571**
View			Pearson	0.797**
Attitude	Pearson	0.797**		

** Significant at the 0.01 probability level.

Table 5. Results of multiple regression analysis

S.O.V	SS	df	MS	F Value	R	R Square	Adjusted R Square	Sig.
Regression	3672.139	5	734.428	64.394	0.85	0.722	0.711	0.00
Result	1414.238	124	11.405					
Total	5086.377	129						

Adjusted R-squared is computed using the formula $1 - ((1 - Rsq)(N - 1) / (N - k - 1))$ where k is the number of predictors.

indicated that farmers' view has a significant effect on their attitude toward venoms and chemical material utilization (as a dependent variable) with independent variables. So a line arregression multiple variables is used to determine the alternations of farmers' attitude toward herbicides application.

Indeed the five before mentioned variables (age, grade of education, field area, far from field to habitant and occupation experience) presented 72% alternations of dependent variable about people's attitude toward venoms application. Beta coefficient result showed the variable of education's grade with the rate of 0.644 impressively affected people's attitude compared with other variables. This rate presents a unit alternation in standard deviation of education variable, made 0.432 unit changes in standard deviation of relevant variable. Then variables of age (with beta value of 0.432), occupation experience (with beta value of -0.069), field area (with beta value of 0.053) and the distance from field to habitant (with beta value of 0.021) respectively affected people's view.

To estimate the of farmers' behavior toward herbicides application (as a dependant variable) with other independent variables, a linear regression multiple variable (according enter method) is used (Table 7 & 8).

Indeed, the six aforementioned variables (fixed value, age, grade of education, field area, far from field to habitat and occupation experience) dedicated 72% alternations of dependent variable about people's attitude around herbicides application. According to beta coefficient results, the variable of educational grade with beta value of 0.855 affected people's attitude rather than other variables. This value indicates one unite alternation on standard deviation of education variable (as an independent factor), accurately about 0.855 unit alternation will occur through the dependent variable of aforementioned trait. Hence variables like field area with beta value of 0.250, view with beta value of 0.113, occupation experience with beta value of 0.077, age with beta value of -0.002 respectively categorized as effective factors on people's view.

Table 6. Variables' coefficient in ultimate regression equation of farmers' attitude, towards herbicides utilization

variable	Unstandardized Coefficients		Standardized Coefficients	t value	Sig.
	B	Std. Error	Beta		
Constant	3.603	1.481		2.434	0.016
Age	0.193	0.029	0.432	6.731	0.00
Grade of education	3.098	0.278	0.644	11.124	0.00
Field area	0.279	0.261	0.053	1.067	0.008
Far from field to habitat	0.062	0.15	0.021	0.413	0.018
Occupation experience	-0.039	0.042	-0.069	-0.941	0.004

According to result (Table 6), the regression analysis provided a linear formula:

$$Y = 3.603 + 0.193(X_1) + 3.098 X_2 + 0.279 X_3 + 0.062 X_4 - 0.039(X_5)$$

Y: The knowledge of organic agriculture among students

X₁: Age

X₂: Grade of education

X₃: Field area

X₄: The far from field to habitant

X₅: Occupation experience

Table 7. Results of multiple regression analysis

S.O.V	SS	df	MS	F Value	R	R Square	Adjusted R Square	Sig.
Regression	81385.59	6	13564.265	275.619	0.965	0.931	0.927	0.00
Result	6053.302	123	49.214					
Total	87438.892	129						

Result of vector analysis test (Table 9 & Figure 1) showed that education had the most direct, significant and positive effect on farmers' protective attitude toward chemical venoms application; so that the major part of correlation through variables were pertained to education and protective attitude of the community.

Also, education variable indirectly by changing the people's view, impressively affects their conservative attitude. Not only education increase and improves person's knowledge toward pollutants, it can appropriately investigate operating or not operating the conservative attitude through community; subsequently

person's view will change toward pollutants which ultimately results attitude alternation. It has a positive, direct and significant effect on farmers' conservative attitude; it plays major role to determine the attitude instability and environment devastation via the extravagant venoms utilization and disregarding to conservative principles in the whole studied region. According to the result (Table 9), variables like age, occupation experience and distance from field to habitat had no direct effect on attitude; but indirectly by impressing people's view, their attitude was being affected with aforementioned factors. Hence, by increasing the farmers' age their experience toward

Table 8. Variables' coefficient in ultimate regression equation of farmers' behavior, towards herbicides utilization

variable	Unstandardized Coefficients		standardized Coefficients	t value	Sig.
	B	Std.Error	Beta		
Constant	-2.644	3.148		-0.840	0.403
Age	-0.111	0.07	-0.06	-1.591	0.114
Grade of education	17.072	0.818	0.855	-20.879	0
Field area	0.537	0.545	0.250	0.985	0.327
Far from field to habitat	-0.041	0.311	-0.003	-0.131	0.896
Occupation experience	0.181	0.087	0.077	2.080	0.056
View	0.468	0.187	0.113	2.511	0.003

According to the result (Table 8), the regression analysis provided a linear equation:

$$Y = -2.644 - 0.111(X_1) + 17.072 X_2 + 0.537 X_3 - 0.041 X_4 - 0.181 X_5 + 0.468(X_6)$$

- X₁: Age
 X₂: Grade of education
 X₃: Field area
 X₄: The far from field to habitat
 X₅: Occupation experience
 X₆: View

Table 9. The total direct and indirect effects of variables on people's attitude toward herbicides utilization

Variable	Direct effect	Indirect effect	The total direct and indirect effects of each variable
Age	0	0.057	0.011
Grade of education	0.855	0.072	0.927
Field area	0	0.005	0.005
Far from field to habitat	0	0.002	0.002
Occupation experience	0	0.007	0.007
View	0.113	0	0.112

herbicides consumption will be increased. So they will distinguish herbicides poisoning symptoms and have more experience about herbicides drastic effects on water, soil and environment which gradually made a sort of alternation in their view over the pollutants.

Salameh *et al.*, (2004) declared that the wrong concept seriously can affect farmers' attitude in term of self protection against the chemicals and their hazards. The result of other studies is in convergence of the current investigation (Yassin *et al.*, 2002; Recena *et al.*, 2006). Ghasemi and Karami (2009) reported farmers' attitude play a major role in environment devastation by more trends in venoms application and less attention to conservative principles in the region. Yang *et al.*, (2005)

reported farmer's knowledge, perceptions and practices have a direct effect on their attitude.

CONCLUSION AND RECOMMENDATIONS

Since the aim of the study is, investigation of farmer's attitude and behavior toward venoms application and also the effective elements on their attitude; it is perceived that most of the farmers had a weak attitude toward venoms utilization to control pests and disease in their management. Moreover they never did concern to conservative and protection principles. The following result tried to determine the effective factors on farmer's attitude and behavior.

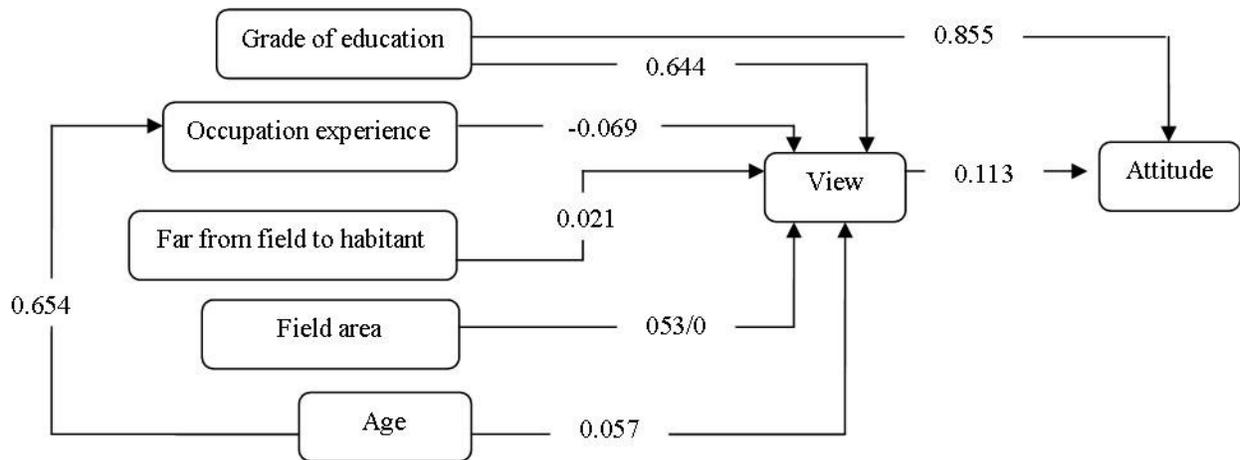


Figure1. The relation of farmers' attitude and view toward herbicide utilization

Results showed that most of the farmers were approximately young and have low grade of literate and experience. Their information about herbicide drawbacks was not that much and they use herbicides accurately once in a while. Living in the field made them more at the mercy of perilous impacts of herbicides application; they also kept herbicides' cans, dresses and other polluted tools close to their edible things like water and foods. Furthermore farmers often used their own experience to provide or spray herbicides instead of concerning to relevant guideline or advised principles; also the harvest time and putting commodities to market was determined based on personal experience. Although they knew the perilous impacts of herbicides, they didn't use protective tools and essential conservative rules. On the other side, numerous believed that the permanent herbicide utilization provided them to resist over venoms; so inaccurate attitude can consequence a serious issue to consider conservative principles among applicants. Handkerchief, for example, was the sole tool to protect mouth and face among farmers; however, they often tend to prevent eating, drinking or smoking because they believed that it can make them sick. Whereas they simply didn't concern to other parameters; for example they put her bicidecansa way in environment or threw it in trash container which threaten public

health; they didn't pay attention to rinse their hands, protective tools and other polluted equipment; they used herbicides excessively over the advised dosage and put their commodities to markets without passing the Corens period. The main reason of this irresponsibility came back to lack of awareness and inadequate information as well as farmers' less tolerate toward pests invasion and extravagant herbicide utilization to eliminate pests immediately. Economical production was their priority and they tend to produce marketable, blatant and persuasive products whenever they find the appropriate market value. So to make marketable commodities they use excessive herbicides dosage; furthermore before passing the Corens period they put their production to market. The next issue was their basic recognition about chemical materials; they were more likely to purchase herbicides which are more economical and accessible in market. Factors like insensitivity to the children existence in spraying time, reusing herbicides' cans, lack of equipping applicants to protective tools, lack of attention toward changing cloth before and after herbicides treatment, utilizing the wet cloth through the spraying operation and not concerning to take shower are the consequence of weak awareness toward venoms drawbacks among farmers. According to result it is suggested:

- Regarding to positive effects of education on people's attitude and view about venoms application, it is known as a key factor of boosting farmers' awareness toward pollutants.
- Presenting instructive terms to familiar farmers with chemical venoms, herbicides and their perilous drawbacks; warning about dangerous effects of excessive herbicide utilization on environment and human's health; instructing the principle of accurate spraying; introducing protective tools and their advantages to increase farmers' awareness.
- Providing brochures, media programs and instructive posters; making connection between farmers and agricultural engineers to introduce perilous and low dangerous herbicides, Corens period and advised dosage of herbicides in farmers' community.
- Monitoring production, distribution and utilization of herbicides; legislating appropriate rule to deny perilous venoms consumption; obliging protective tools utilization and imposing strict fines to confine herbicide application especially for excessive consumption.
- Changing consumers' standpoint toward prevalent agricultural commodities and encouraging them to purchase organic and healthy productions via media programs, agricultural magazines and so forth.

REFERENCES:

Aghilinejad M, Mohammadi S and Farshad AA. 2007. The effect of pesticides utilization on farmers' health. *Research in medical.* 31(4):18-26.

Autoclin B. 1989. Social psychologie (translated by Kardan MA).8th edition. Volume2. Andishe publish. Tehran.

Boonyatumanond R, Jaksakul A, Pancharoen P and Monthip Sriratana Tabucanon. 2002. Monitoring of organochlorine pesticides residues in green mussels (*Pernaviridis*) from the coastal area of Thailand. *Environ Pollute.* 119 (2): 245-252.

Davies JE, Freed VH, Enos HF, Barquet A, Morgade C, Danauskas JX. 1980. Minimizing occupation exposure to Pesticides: epidemiologic overview. *Reside Reviews.* 75:7-20.

Department of Disease Control. 2007. Bureau of Epidemiology. Annual epidemiological surveillance report 2006. Nonthaburi: Ministry of Public Health, Thailand.

Eddleston M, Karalliedde L, Buckley N, Fernando R, Hutchinson G, Isbister G, Flemming Konradsen, Douglas Murray, Juan Carlos Piola, Nimal Senanayake, Rezvi Sheriff, Surjit Singh, SB Siwach and Lidwien Smit. 2002. Pesticide poisoning in the developing world; a minimum pesticides list. *Lancet.* 360 (9340):1163-1167.

Eddleston M and Phillips MR. 2004. Self poisoning with pesticides. *BMJ.* 328(7430):42-44.

Edwards CA. 1983. Environmental pollution by Pesticides. 1st edition, London and New York Plenum Publishing Company. (12):184

Ergonen AT, Salacin S, Ozdemir MH. 2005. Pesticide use among greenhouse workers in Turkey. *Clinical Forensic Medicine, J.* 12(4):205-208.

Esmacili Sari A. 2002. Pollutants, Sanitation and Standard in environment. Naghshe-Mehr publication. Tehran.

Federal Insecticide. Fungicide and Rodenticide Act ("Federal Environmental Pesticide Control Act of 1972") amended, Washington DC, United State Environmental Protection Agency, office of Pesticide Control Program.1972.

Ghasemi S and Karami E. 2009. The attitudes and behaviors of Fars greenhouse holders toward venom application. *Journal of Economics and Agricultural Development.* 23(1):28-40.

Health Systems Research Institute. Research and Development Program on Healthy Public Policy and Health Impact Assessment. The summary of pesticides situation in Thai society. Nonthaburi: Ministry of Public Health, Thailand. 2005. (Transcript in Thai language).

- Holland RW, Verplanken B, Knippenberg A. 2002.** On the nature of attitude-behavior relations. The strong guide, the weak follow. *European journal of social psychology*. 32(6):869-876.
- Kishi M, Hirschhorn N, Djajadisastra M, Satterlee LN, Strowman S, Dilts R. 1995.** Relationship of pesticide spraying to signs and symptoms in Indonesian farmers. *Scand Work Environ Health*. J. 21(2):124-133.
- Koh D and Jeyaratnam J. 1996.** Pesticide hazards in developing countries. *SCI Total Environ*. 188 (suppl 1): S78-85.
- Legaspi JA and Zenz C. 1994.** Occupational health aspect of pesticides. In: Zenz C, editor. *Occupational medicine*. 3rd edition. USA, Mosby Co. p:617-53.
- Recena MC, Caldas ED, Pires DX, Pontes ER. 2006.** Pesticides exposure in culturama, Brazil: knowledge, attitudes, and practices. *Environmental Research*. J. 102 (6):230-236.
- Salameh PR, Baldi I, Brochard P, Saleh B. 2004.** Pesticides in Lebanon: a knowledge, attitude, and practice study. *Environment Research*, J. 94(1):1-6.
- Satoh T and Hosokawa M. 2000.** Organophosphates and their impact on the global environment. *Neuro toxicology*, 21(1-2): 223-7.
- Thapinta A and Hudak PF. 2000.** Pesticide use and residual occurrence in Thailand. *Environ Monitor Assess*. 60(1): 103-114.
- USEPA Office of Pesticide Programs FY. 2002.** Annual Report. Washington, DC: US Environmental Protection Agency.2002. [http://www.epa.gov/oppfead1/annual/2002/2002 annual report.pdf](http://www.epa.gov/oppfead1/annual/2002/2002%20annual%20report.pdf)
- WHO. 1998.** Multi level course on the safe use of pesticides and on the diagnosis and treatment of Pesticide poisoning. Course manual. Geneva.
- World Health Organization. 2006.** Sound management of hazardous wastes from health care and from agriculture. New Delhi; WHO south-East Asia Regional Office.
- Yang P, Iles M, Yan S and Jolliffe F. 2005.** Farmer's knowledge, perceptions and practices in transgenic Bt cotton in small producer Systems in Northern China. *Crop Protections*, J. 24:229- 239.
- Yassin MM, Abu Mourad TA, Safi JM. 2002.** Knowledge, attitudes, practice and toxicity symptoms associated with pesticide use among farm workers in Gaza Strip. *Occupational and Environment Medicine*, J. 59(6):387-394.
- Yazgan MS and Tanik A. 2005.** A new approach for calculating the relative risk level of pesticides. *Environment International*, J. 31(5):687- 692.
- Zand E, Baghestani MA, NezamAbadi N, Minbashi Moeini M and Hadizadeh MH. 2009.** A review on the last list of herbicides and the most important weeds of Iran. *Weed Research Journal*. 1(2):83-100.
- Zarcinas BA, Pongsakul P, Mclaughlin MJ. Gill Cozens. 2004.** Heavy metals in soils and crops in Southeast Asia. 2. Thailand. *Environ Goethe Health*. 26 (4): 359-71.

Submit your articles online at ecologyresearch.info

Advantages

- **Easy online submission**
- **Complete Peer review**
- **Affordable Charges**
- **Quick processing**
- **Extensive indexing**
- **You retain your copyright**

submit@ecologyresearch.info
www.ecologyresearch.info/Submit.php