Results

The results included the following parts

Part I: Demographic characteristics, nature of work and history of studied farmers according to their chronic health problems (table I, (a&b), 2).

Part II: Farmers knowledge related to pesticides, and their visits to agriculture unit (table 3, 4& figures (2-5).

Part III: Farmers' correct knowledge regarding throughout the program, (table 5, a, b, c).

Part IV: Observed farmers practice regarding throughout the program, (table 6, a, b, c).

PartV: Self reported signs and symptoms associated with pesticide exposure (table 7).

Part VI: Relation of knowledge and practice of studied farmers with their demographic characteristics (table 8-9).

Part I: Demographic characteristics of studied farmers and their health status related to chronic illness

Table (1, a): percentage distribution of farmers according to their demographic characteristics (n=200).

Category	Frequency	%
Age		
-20 -	38	19
-30 -	88	44
-40 -	49	24.5
-50 +	25	12.5
X±SD 37.27±10.77		
Marital status		
- single	41	20.5
-Married	135	67.5
-Divorced	10	5
-widower	14	7
-**Educational level**		
Illiterate	99	49.5
Basic education	46	23
Secondary	39	19.5
University	16	8
Occupation pattern		
-Farmer only	122	61.0
- Farmer & has another work	78	39.0
Smoking status		
- smoke	148	74.0
- Non smoke	52	26.0
Rate of smoking		
-5 cigarettes	64	32.0
-10 cigarettes	-	-
- 15 cigarettes	82	41.0
20- cigarettes	2	1.0
X±SD 10.10±4.26		
Family size		
- 2 person.	64	32.0
- 3-5 persons.	75	37.0
- 5 > persons.	61	30.5
X±SD 3.61± 1.95		

*Note: Mutual Answers.

Table (1, a) shows that, the study subject's age for less than half (44%) of them ranged between 30-<40 years with a mean of 37.27 ± 10.77years. More than two thirds (67.5%) of them were married, around half (49.5%) of studied farmers were illiterate. As regards occupation, less than two thirds (61%) of them were farmer only. Regarding to number of family members, more than one third (37%) of them have three to five persons, a mean of 3.61± 1.95person. The same table shows that around three quarters (74%) of the workers were smoking, and more than one third (41%) of them were smoking 15 cigarettes/day with a mean of 10.10±4.26.cigarettes.

Table (1, b): Percentage distribution of farmers according to their nature of work (n=200).

Items	Number	%
Number of working hours in the farm/day		
3-	21	10.5
6-	84	42.0
10	95	47.5
X±SD 9.55± 3.17		
Experience as farmers(by years)		
< 10	42	21.0
10-	134	67
15-	10	5.0
20	14	7.0
X ±SD 10.1±4.26		
Total	200	

Table (1, b): illustrate nearly half (47%) of the studied farmers worked more than 10 hours/day with mean 9.55± 3.17 hours, and more than two thirds (67%) have got 10<15 years work experience as farmers with mean 10.1±4.26 years.

Table (2): Percentage distribution of the farmers according to their chronic health problems (n=123)

Items	Number	%
Complain of chronic disease		
Yes	123	61.5.
No	77	38.5
Type of chronic disease(n=123)		
Respiratory	41	33.3
Urinary	28	22.8
Integumentary	23	18.7
Gastrointestinal tract	31	25.2
Period of disease (in years) (n=123)		
-< Less than one year	32	26.0
- One year	12	9.8
- >More than one year	79	64.2
Follow- up with a doctor(n=123)		
Yes	46	37.4
No	77	62.6
Association chronic diseases pesticide as repeated by farmers exposure to the pesticides(n=123)		
Yes	41	33.3
No	82	66.7

Table (2): reveals that less than two thirds (61.5%) of the farmers had chronic health problems, one third (33.3%) of them had Respiratory problems. Regarding to the Period of disease, about two thirds (64.2) of them was suffering for more than one year. And more than one third (34.4%) of them were following up with a doctor. Also, (33.3%) of the farmers mentioned that the occurrence of the chronic diseases was due to the exposure to the pesticides.

Part 11: Farmers knowledge related to pesticides, and their visits to agriculture unit

Table (3): Percentage distribution of farmers according to their level of knowledge about pesticides (n=200)

Items	Frequency	%
Types of pesticides		
Hydro carbonate	26	13.0
Organic phosphors	114	57.0
Carbamat	49	24.5
Chlorines	11	5.5
Pesticides have negative effects		
Yes	59	29.5
No	141	70.5
Pesticides enter human body		
Yes	76	38.0
No	124	62.0
Mode of pesticide entering the body		
Smelling	64	32.0
Skin	45	22.5
Mouth	75	37.5
Eye	16	8.0
Visiting agriculture unit to seek instructions		
Yes	132	66.0
No	68	34.0
Person giving instruction regarding pesticides		
No one	122	61.0
Person giving agriculture guide	78	39.0
Instruction regarding pesticides include		
Types of pesticides	26	13.0
Methods of storage of pesticides	24	12.0
Methods of using pesticides	17	8.5
Hazards of pesticides	20	10.0
' Methods of managing pesticides' side effects	33	16.5
No instruction	80	40.0

Table (3): indicated the farmers knowledge about pesticide used. According to table (57%) of them used organic phosphors, (70%) reported no negatively effect of pesticides. In addition (62%) answerer it not enters to the human body. Concerning mode of enter to human body were smelling mouth, skin, and eye (37.5%, 32 %, 22. 5%, and 8% respectively).

As regard visiting agriculture unit to seek instruction, more than two thirds (66%) of them reported they visit agriculture unit while (39%)of them mentioned presence person or agriculture guider give them instruction.

Concerning the instruction give they mentioned about type pesticides, methods of storage & used, hazards of pesticides, and way of manages its side effects (13%, 16.5%, 12%, 8.5%, and 10% respectively). Also, (40%) were not receiving any instruction.

Table (4): Percentage distribution of farmer's knowledge about pesticides adverse effects on health (n=200)

Items	Frequency	%
Adverse health effects		
pesticides are secreted in mother milk		
Yes	8	4.0
No	192	96.0
pesticides accumulate at human body		
Yes	41	20.5
No	159	79.5
Places where Pesticides are accumulated		
Air	57	28.5
Soil	33	16.5
Water	4	2.0
Crops	90	45.0
Milk	11	5.5
Meat	4	2.0
Fishes	1	1.0
Exposure to pesticides lead to cancer		
Yes	22	11.0
No	178	89.0
Exposure to pesticides lead to death		
Yes	46	23.0
No	154	77.0

***** Response are not mutually exclusive

Table (4): As shown in the above table, majority (96%) of the farmers reported that pesticides are secreted in mother milk, (20.5%) know that pesticides accumulate at human body. As regard Places where Pesticides are accumulated, less than half of the farmers (45%) know that Pesticides are accumulated in crops only. Less than one fifth (23%) of farmers know that exposure to pesticides lead to death. On other hand only more than one tenth (11%) of farmers know that exposure to pesticides lead to cancer.

Figure (1): Percentage distributions of the farmers according to recommended or safe period to return farmland after spraying (n=200)

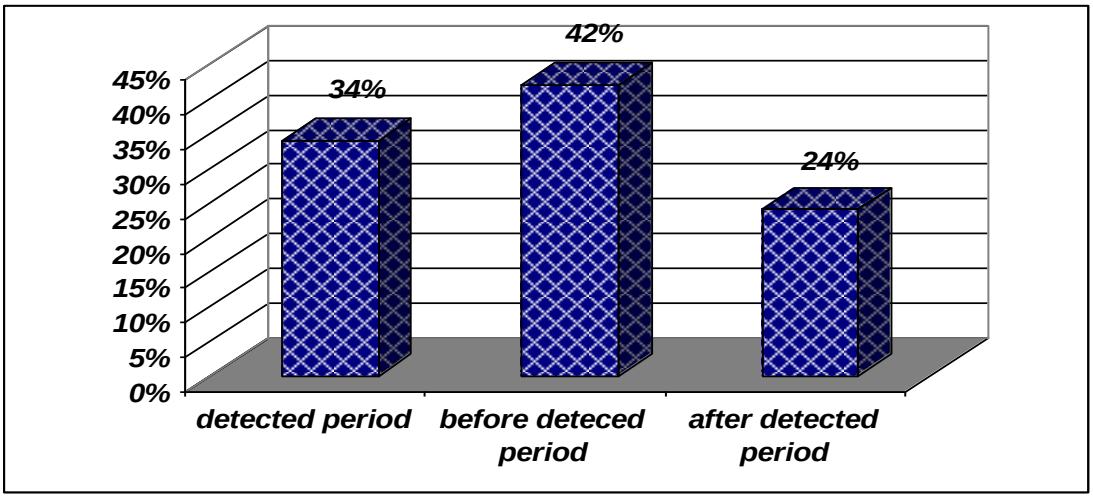

Figure (1): indicates 42% of the farmers were returning to the farmland through the recommended period.

Figure (2): The farmer management of side effects occur during pesticides spraying.

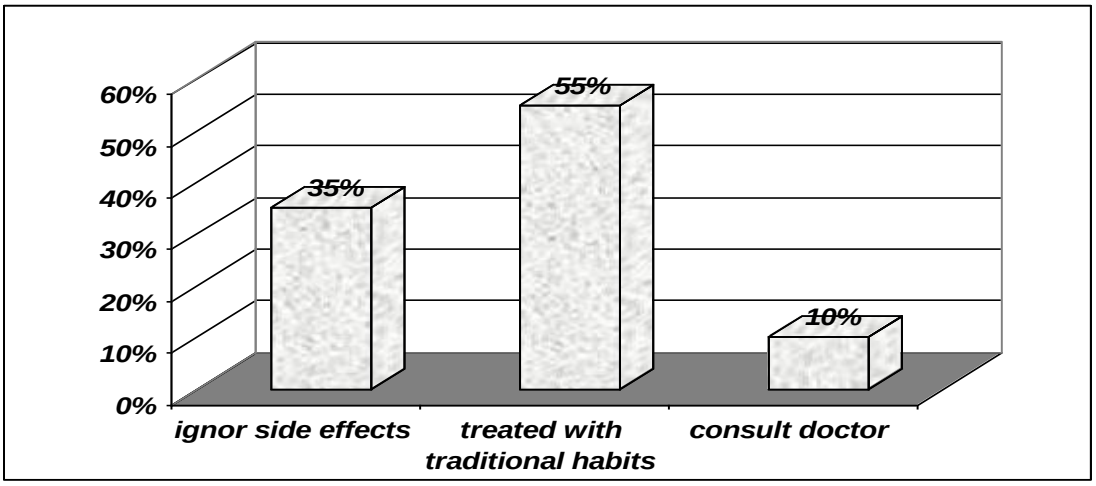

Figure (2): portray the management of pesticide side effects occur during its spray according to farmer answers 55% of the farmers reported they used traditional methods for treat side effects while 53% neglect it.

Figure (3): The reasons for not visiting the agricultural units according to farmer answers (n=200).

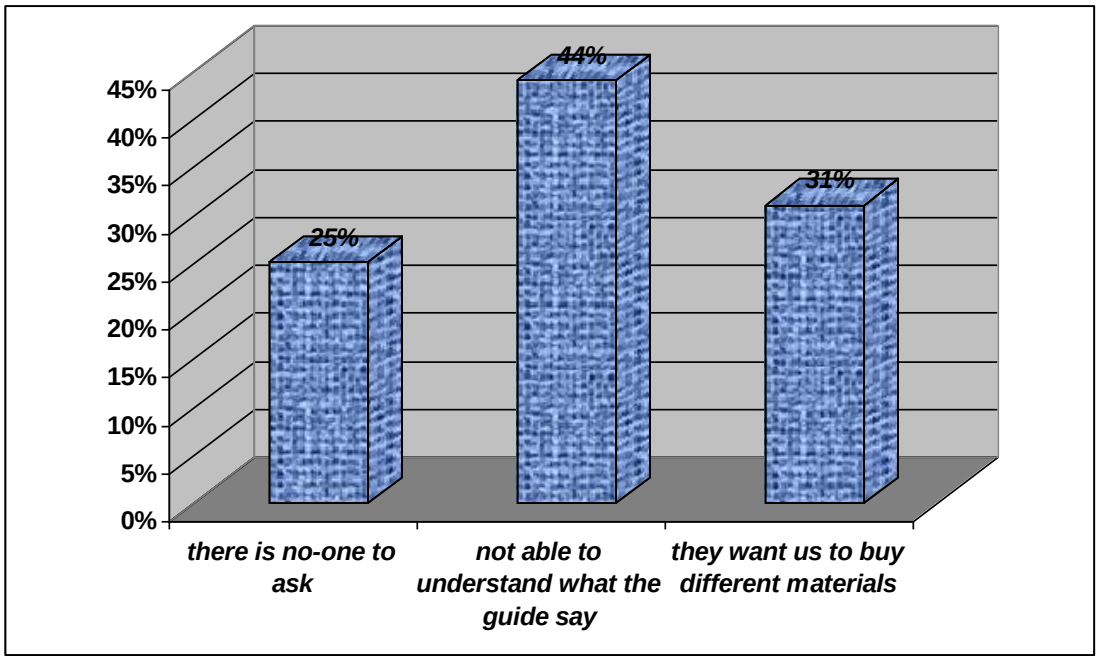

Figure (3) illustrated the most common reasons prevent farmers from visiting agricultural unit were not understand the guidance instruction and enforce farmer to buy the material available in the unit, or no body present to give instruction (44%, 31%, and 25% respectively)

Figure (4) Total knowledge of the studied farmers related to pesticide throughout the program (n=200).

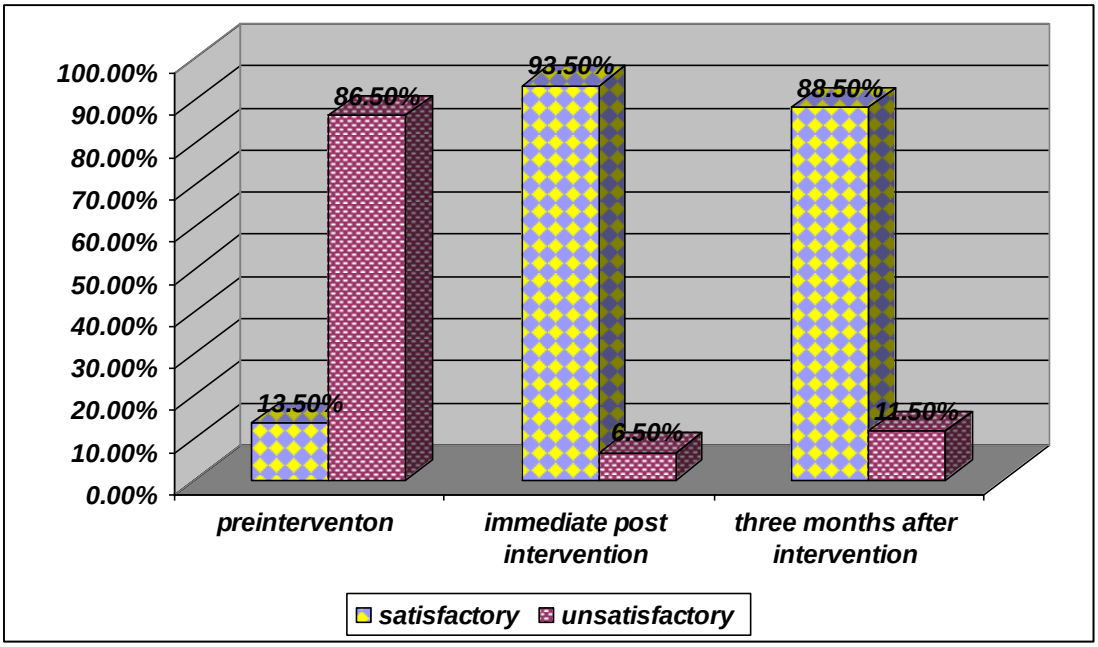

Figure (4) portray total knowledge about pesticide process throughout the program. The results revealed 13.5% of farmer reported satisfactory knowledge pre-program, this percentage of satisfactory level of knowledge increased in post 1 and slight decreased in post 11(93.5% and, 88.5% respectively).

Table (8): the relation between farmer demographic characteristics and total knowledge score in relation to pesticide throughout the program (n=200).

	Total knowledge score Pre-intervention				**Total knowledge score Immediate after-intervention**				**Total knowledge score Three months after-intervention**			
	unsatisfactory		satisfactory		unsatisfactory		satisfactory		unsatisfactory		satisfactory	
	No	%	No	%	No	%	No	%	No	%	No	%
Age												
-20 -	33	16.5	5	2.5	0	0.0	38	19	1	0.5	37	18.5
-30 -	78	39	10	5	6	3	82	41	9	4.5	79	39.5
-40 -	42	21	7	3.5	5	2.5	44	22	9	4.5	40	20
-50 -	20	10	5	2.5	2	1	23	11.5	4	2	21	10.5
$\overline{X}^2$ - **P value**	$\overline{X}^2$ = 1.27		P >0.05		$\overline{X}^2$ = 3.85		P >0.05		$\overline{X}^2$ = 5.84		P >0.05	
-Educational level												
Illiterate	86	43	13	6.5	9	4.5	90	45	14	7	85	42.5
Preparatory	39	19.5	7	3.5	3	1.5	43	21.5	5	2.5	41	20.5
Secondary	35	17.5	4	2	0	0.0	39	19.5	3	1.5	36	18
University	13	6.5	3	1.5	1	0.5	15	7.5	1	0.5	15	7.5
$\overline{X}^2$ - **P value**	$\overline{X}^2$ = 0.857		P >0.05		$\overline{X}^2$ =3.80	P >0.05			$\overline{X}^2$ = 1.68		P >0.05	
Occupation pattern												
-Farmer only	107	53.5	15	7.5	7	3.5	115	57.5	13	6.5	109	54.5
- Farmer & has another work	66	33	12	6	6	3	72	36	10	5	68	34
$\overline{X}^2$ - **P value**	$\overline{X}^2$ =0.389		P >0.05		$\overline{X}^2$ = 0.299		P >0.05		$\overline{X}^2$ = 0.219		P >0.05	
Years of using pesticides												
-5	36	18.0	8	4.0	5	2.5	39	19.5	8	4.0	36	18.0
-10	119	59.5	17	8.5	8	4.0	128	64.0	15	7.5	121	.60.5
-15	8	4.0	1	5.0	0	–	9	4.5	0	–	9	4.5
-20	10	5.0	1	5.0	0	–	11	5.5	0	–	11	5.5
$\overline{X}^2$ - **P value**	$\overline{X}^2$ =1.16		P >0.05		$\overline{X}^2$ =3.18		P >0.05		$\overline{X}^2$ =4.55		P <0.05	

Table (8) showed that there were a highly significant relation between studied farmers total knowledge scores and their years throughout program implementation in about two thirds 60.5% of the farmers who are working for more than ten years have satisfactory level of knowledge about safe practice. While no statistically significant relation was observed among the studied farmers regarding the total knowledge scores and their age, educational level and occupation pattern post and after three month from the program implementation.

Table (9) Relation of demographic characteristics of farmer's their total practice in pesticide process throughout the program (n=200).

	Total performance score Pre-intervention				**Total performance score Immediate after-intervention**				**Total performance score Three months after-intervention**			
	Inadequate		Adequate		Inadequate		Adequate		Inadequate		Adequate	
	No	%	No	%	No	%	No	%	No	%	No	%
Age												
-20 -	37	18.5	1	0.5	0	–	38	19	2	10	36	18.0
-30 -	84	42.0	4	2	2	1.0	86	43	13	6.5	75	37.5
-40 -	46	23.0	3	1.5	5	2.5	44	22	11	5.5	38	19.0
-50 -	23	11.5	2	1	2	1.0	23	11.5	4	2.0	21	10.5
$\overline{X}^2$ - **P value**	$\overline{X}^2$ = 1.09		P >0.05		$\overline{X}^2$ = 7.22		P <0.05		$\overline{X}^2$ = 4.98		P <0.05	
-Educational level												
Illiterate	93	46.5	6	3.0	6	3.0	93	46.5	18	9.0	81	40.5
Preparatory	43	21.5	3	1.5	3	1.5	43	21.5	8	4.0	38	19.0
Secondary	38	19	1	0.5	0	–	39	19.5	3	1.5	36	18.0
University	16	8	0	0	0	–	16	8	1	5.0	15	7.5
$\overline{X}^2$ - **P value**	$\overline{X}^2$ = 1.78		P >0.05		$\overline{X}^2$ =3.59		P >0.05		$\overline{X}^2$ = 3.58		P >0.05	
Occupation pattern												
-Farmer only	116	58	6	3	4	2	118	59	16	8	106	53
-Farmer & has another work	74	37	4	2	5	2.5	73	36.5	14	7	64	32
$\overline{X}^2$ - **P value**	$\overline{X}^2$ =0.004		P >0.05		$\overline{X}^2$ = 1.08		P >0.05		$\overline{X}^2$ = 0.872		P >0.05	
Years of using pesticides												
-5	40	20	2	1.0	4	2.0	40	20	9	4.5	35	17.5
-10	129	64.5	7	3.5	5	2.5	131	65.5	21	10.5	115	57.5
-15	8	4	1	5.0	0	–	9	4.5	0	–	9	4.5
-20	11	5.5	0	–	0	–	11	5.5	0	–	11	5.5
	$\overline{X}^2$ =1.31		P >0.05		$\overline{X}^2$ =3.31		P >0.05		$\overline{X}^2$ =4.57		P >0.05	

Table (9) Showed that there were a highly significant relation between studied farmers total practice scores and their age (P <0.05. While no statistically significant relation was observed between studied farmers total practice scores and their educational level, occupation pattern and, years of using pesticides post and after three month from the program implementation.

To summarized whole parts according to hypothesis and research question, the results showed that the statistically significant relation was observed between studied farmer's total knowledge scores and their years of usage after three month from the program implementation in about two thirds of the farmers who are working for more than ten years have a safe practice($p<0.05$). Also, there is statistically significant relation was observed between studied farmer's total performance scores and their age post and after three months in program implementation.

Table (5, a) Farmers' correct knowledge related to pesticides usage during preparation techniques throughout program (n-200)

Items	Pretest		Immediate Post T		Post III		$^{1}\overline{X}$	P^{1}_{1}	$^{2}_{2}\overline{X}$	P^{2}_{2}
	No	%	No	%	No	%	Immediate &post		Pre&follow	
Source of Buying pesticides							97.15	<0.001	50.50	<0.001
	13	6.5	168	84.0	76	38.0				
Time of buying pesticides	80	40.0	166	83.0	119	59.5	72.99	<0.001	17.40	<0.001
Counseling agriculture guide regarding suitable amount of pesticides	27	13.5	153	76.5	121	60.5	35.01	<0.001	95.88	<0.001
Buying protective clothes while des	12	6.0	162	81.0	165	82.5	17.73	<0.05	17.15	<0.05
Prepare Places where pesticides are stored	101	50.5	175	87.5	152	76.0	9.44	<0.05	27.08	<0.001
Follow instruction on pesticides' label	77	38.5	175	87.5	160	80.0	34.06	<0.001	35.80	<0.001
check pesticides(expired datas)	20	10.0	172	86.0	166	83.0	13.07	<0.05	38.04	<0.001

$\overline{X}_{1}$, p1 = between pre and immediate, $\overline{X}^{2}_{2}$, P^{2}_{2} = between pre and after three months.

Table (5, a): Shows the farmers correct knowledge about pesticide and its preparation before used throughout the programs. According to the table a significant improvements in all items of knowledge related to preparation pesticide post program. Concerning farmer knowledge related to process of buying pesticide only 6.5 % pre- program reported correct answer. while this percentage increased to reach 84% post immediate program implementation and their drop to 38% after 3 months. On other hand 13.5% goes to agriculture units to ask about suitable amount of pesticide used increased to 76.5% immediately and slight drop 60.5% in correct answer reported after 3 months. Only 10% of farmers reported they read the expire date this percentage increased 86.5% post are slight decreased in post two – three months. Meanwhile 6% of them buy protective clothes pre program, While 81% and 82.5% respectively in post I and post II respectively. On other hand 50 % of farmers reported correct answer about storage of pesticide pre program this correct answer increased to reach 87.5% and 76% p1 and p 11 respectively. Concerning follow instruction written in pesticide container 38.5% of them reported correct answers in pre intervention and increased in post I post II 87. % and 80% respectively.

Table (5, b) Percentage distribution of the studied farmers' according to their correct knowledge related to spray process of pesticides throughout the program (n-200).

Items	Pretest		Immediate Post T		Post III		$\overline{X}_1$	P^1_1	$\overline{X}^2_2$	P^2_2
	No	%	No	%	No	%	Immediate &post		Pre&follow	
Preparing pesticides alone	11	5.5	175	87.5	142	71.0	6.954	<0.05	16.049	<0.001
Technique of preparing	24	12.0	157	78.5	160	80.0	67.26	<0.001	31.34	<0.001
Place for preparing pesticides	89	44.4	150	75	143	71.5	81.48	<0.001	38.89	<0.05
Family members help in spray	29	14.5	188	94	186	93.0	14.23	<0.05	9.75	<0.05
Wearing protective clothes(gloves, mask, boot,faceshield,and respirator	81	40.5	187	93.5	164	82.0	83.14	<0.001	81.46	<0.001
Testing pesticides	83	41.5	194	97.0	191	95.5	87.31	<0.001	81.46	<0.001
Methods of testing pesticides	8	4.0	101	59.5	120	60.0	32.08	<0.001	27.76	<0.001
Methods of spraying	12	6.0	122	61.0	118	59.0	21.76	<0.05	16.36	<0.05

$\overline{X}_1$, p1 = between pre and immediate, **$\overline{X}^2_2$, P^2_2 = between pre and after three months.**

Table (5, b): Shows the farmers correct knowledge about spray pesticide process used throughout the programs. According to the table a significant improvements in all items of knowledge related to preparation pesticide post program. Concerning farmer knowledge related to Preparing pesticides alone, only 6.5 % pre- program reported correct answer. while this percentage increased to reach 87.5% post immediate program implementation and their drop to 71.0% after 3 months. As regard technique of preparing only 12% of them pre- program reported correct answer. While this percentage increased to reach 78.5%, 80% respectively post immediate program implementation and after 3 months. Concerning place for preparing pesticides 44.4 of them reported correct answers in pre intervention and increased in post I, post I175%, 71.5% respectively. Only 14.5 % of farmers reported that their family members help in spray process this percentage increased 94% post immediate program implementation and slight decreased in post three months 93%. Meanwhile 40.5% of them wearing protective clothes pre program, this correct answers increased to reach 93.5 % post immediate program implementation and slight decreased in post11 three months later 82%.Concerning testing pesticides 41.5% of them reported correct answers in pre intervention and increased in post I post 11 97 % and 95.5%respectively. Concerning farmer knowledge related to methods of testing pesticides, only 4% % pre- program reported correct answer. While this percentage increased to reach 59.5% and 60% respectively immediate program implementation and after 3 months. Concerning methods of spraying 6% of them reported correct answers in pre intervention and increased in post I post 11 61 % and 59.0% respectively.

Table (5, c) Farmers' correct knowledge related to pesticides during usage and after spraying process 0f pesticides throughout the program (n-200).

Farmer correct knowledge about his role in during and post spray pesticides	Pretest		Immediate Post T		Post III		$\overline{X}_1$	P^1_1	$\overline{X}^2_2$	P^2_2
	No	%	No	%	No	%	Immediate &post		Pre&follow	
Wearing protective clothes during process of spraying	80	40.0	135	67.5	122	61.0	22.17	<0.05	16.03	<0.005
Time of spraying	30	15.0	190	95.0	195	97.5	32.21	<0.001	27.06	<0.001
Not eat, drink, or smoking during spraying process	75	37.5	180	90.0	185	92.5	81.61	<0.001	76.14	<0.001
After finishing the process of										
Methods of getting ride of pesticides containers	40	20.0	175	87.5	160	80.0	77.22	<0.001	63.91	<0.001
Washing spraying instruments	22	11.0	180	90.0	170	85.0	82.33	<0.001	58.42	<0.001
Washing the clothes used during spraying separated	20	10.0	182	91.0	170	85.0	83.17	<0.001	54.37	<0.001

$\overline{X}_1$, p1 = between pre and immediate, **$\overline{X}^2_2$, P^2_2 = between pre and after three months.**

Table (5, c): Shows the farmers' correct knowledge related to pesticides during usage and after spraying process 0f pesticides throughout the program. According to the table a significant improvements in all items of knowledge related to preparation pesticide post program. Concerning farmer knowledge related to wearing specific clothes during process of spraying, only 40 % pre- program reported correct answer. while this percentage increased to reach 67.5% post immediate program implementation and their drop to 61% after 3 months. As regard time of spraying, only 15%of them pre- program reported correct answer. While this percentage increased to reach 95. %, 92% respectively post immediate program implementation and after 3 months. Concerning eat, drink, or smoking during spraying process 37.5% of them reported correct answers in pre intervention and increased in post I, post I1 90%, 92.5% respectively. Only 20 % of farmers reported that methods of getting ride of pesticides containers after finishing the process of spraying this percentage increased 87.5% post immediate program implementation and slight decreased in post three months 80%. Meanwhile 1% of them washing spraying instruments after finishing the process of spraying pre program and increased in post I, post I190%, 85% respectively. Concerning farmer knowledge related to washing the clothes used during spraying separated, only 10% pre-program reported correct answer. While this percentage increased 91% post immediate program implementation and slight decreased in post three months 85%.

Table (6, a): The observed farmers practice in preparation of pesticide for used throughout the program (n=200).

observed farmers practice preparation techniques	Pretest		Immediate Post T		Post III		$\overline{X}_1$	P^1_1	$\overline{X}^2_2$	P^2_2
	No	%	No	%	No	%	Immediate &post		Pre & follow	
Mixing the pesticides										
Not done Correctly	80	40.0	42	21.0	64	32.5	144.61	<0.001	141.166	<0.001
Correctly done	–	–	101	50.0	101	50.5				
Using specific material in the process of mixing										
Not done Correctly	157	78.5	25	12.5	35	17.5	15.74	<0.001	42.99	<0.001
Correctly done	43	21.5	175	87.5	165	82.5				
Selecting best place for mixing pesticides										
Not done Correctly	30	15.0	14	7.0	34	17.0	85.30	<0.001	172.31	<0.007
Correctly done	170	85.0	186	93.0	166	86.0				
Mixing pesticides alone							85.40	<0.001	172.31	<0.007
Not done Correctly	187	93.5	28	187	187	93.5				
Correctly done	13	6.5	172	86.0	172	86.0				
Wearing specific clothes										
Not done Correctly	80	40.0	42	21.0	64	32.5	144.61	،<0.001	141.66	،<0.001
Correctly done	–	–	101	50.0	101	50.5				
Testing the pesticides										
Not done Correctly	172	86.0	99	49.5	99	49.5	0.216	>0.05	0.216	>0.05
Correctively	28	14.0	101	50.5	101	50.5				

$\overline{X}_1$, p1 = between pre and immediate, **$\overline{X}^2_2$, P^2_2 = between pre and after three months.**

Table (6, a) presents the farmer observed practice in preparation in pesticide for used throughout the program. According the table all observed items for preparing pesticide for used improved significantly post program. As regard mixing pesticide no one performed correctly pre program while post program post 1 & post 11 half of them performed it correctly. Also 21.5% of them used right equipment to mixed pesticide pre intervention this practice increased to reach 87.5% in post 1 and slight decline in post 11 82.5%. Majority of farmer select the correct place for mixed the pesticide before program and increased in post 1 & post 11 93% & 86% respectively. Only 6.5% of them mixed pesticide alone and this percentage increased to reach 86% post program. No, one wearing protective clothes before spray pre program but post program half of them used protective clothes. On other hand only 14% farmer test pesticide in correct way and post program half of them correct test in correct way.

Table (6, b): The farmer observed practice during spray process of pesticide throughout the program (n=200).

farmer observed practice during spray process of pesticide	Pretest		Immediate Post T		Post III		$\overline{X}_1$	P^1_1	$\overline{X}^2_2$	P^2_2
	No	%	No	%	No	%	Immediate &post		Pre & follow	
Methods of spraying										
Not done Correctly	143	71.5	15	7.5	9	4.5	26.92	<0.001	16.866	<0.001
Correctly done	67	33.5	185	92.5	191	95.5				
Wearing specific clothes										
Not done Correctly	121	78.5	25	12.5	35	17.5	15.74	<0.001	42.99	<0.001
Correctly done	43	21.5	175	87.5	165	82.5				
Select the best time for spraying pesticides							1.540	>0.05	2.615	>0.05
Not done Correctly	121	94.0	66	33.0	34	17.0				
Correctly done	12	6.0	134	67.0	166	83.0				
Not eat, drink, or smoke during spraying process										
Not done Correctly	127	63.5	12	6.0	32	16.0	0.211	>0.05	1.403	>0.05
Correctly done	-	-	150	75.0	123	16.5				

$\overline{X}_1$, p1 = between pre and immediate, $\overline{X}^2_2$, P^2_2 = between pre and after three months

Table: (6, b) presents that the farmers observed practice during spray process of pesticide throughout the program. According the table all observed items during spray process of pesticide improved significantly post program. According the table it was observed methods of spraying, more than one third 33.5% performed correctly pre-program. While post program post1 92.5% & post 11 most of them performed correctly 95.5%. As regard wearing specific clothes less than one fifth 21.5% of farmers performed correctly pre-program. While increased post program performed it correctly and after three months. 87.5%, 82.5 respectively. Also, 6% of studied farmers select the best time for spraying pesticides pre-intervention this practice increased to reach 67%& 83% in post immediately and after three months respectively. All of farmers eat, drink, and smoke during spraying process pre-intervention this practice decreased to reach 75% in post immediate and16.5% after three month.

Table: (6, c): The farmer observed practice post spray process of pesticide throughout the program (n=200).

farmer observed practice post spray process of pesticide	Pretest		Immediate Post T		Post III		$\overline{X}_1$	P^1_1	$\overline{X}^2_2$	P^2_2
	No	%	No	%	No	%	Immediate &post		Pre & follow	
Method of getting ride off pesticides disposal bottles										
Not done Correctly	183	91.5	10	5.0	22	11.0	10.397	<0.05	8.127	<0.05
Correctly done	-	-	169	84.5	151	75.5				
Clean materials used in the process of spraying										
Not done Correctly	155	77.5	32	16.0	44	22.0				
Correctly done	–	-	130	65.0	129	64.5	19.38	<0.001	21.56	<0.001
Methods of getting of trace										
Not done Correctly	54	27.0	11	5.5	18	9.0	4.978	>0.05	3.070	>0.05
Correctly done	13	6.5	157	78.5	144	72.0				
Methods of cleaning clothes used in the process of spraying										
Not done Correctly	127	63.5	12	6.0	36	18.0				
Correctly done	73	36.5	188	94.0	164	82.0	0.147	>0.05	0.108	>0.05

$\overline{X}_1$, p1 = between pre and immediate, **$\overline{X}^2_2$, P^2_2 = between pre and after three months.**

Table (6, c): presents that the farmer observed practice post spray process of pesticide throughout the program. According the table all observed items post spray process of pesticide improved significantly post program. According the table observed method of getting ride off pesticides disposal bottles, no one performed correctly pre-program. While post program most of them performed it correctly 84.5% and slight decline in post 11 75.5%. Also, no one of them clean material used in the process of spraying pre-intervention this practice increased in post1 and post 1165%, 64%, respectively. 6.5%of them used correct methods of getting or trace pre-intervention this practice increased in post 1 and post 11 to reach 78.5%, and 72% respectively. On other hand only 36.5% of studied farmers cleaning their clothes used in the process of spraying clothes in correct method pre-program intervention. While post program majority of them performed it correctly 94 % and slight decline in post 11 82%.

signs and symptoms associated with pesticide exposure Part1V: Self reported

Table (7): percentage distribution of farmers according to stated signs and symptoms (n=200)

Side effects	Pretest		Immediate post		Three months after		$\overline{X}^2$	P	$\overline{X}^2$	p
	No	%	No	%	No	%	Pretest &Immediate post		Pretest & Three months after	
Neurological side effects							31.45	<0.001	52.68	<0.001
Headache and Sweating	96	48.0	26	13.0	17	8.5				
Drowsiness and fainting	18	9.0	19	9.5	12	6.0				
Absence of symptom	113	56.5	155	77.5	171	85.5				
Eye side effects										
Eye redness and blurring of vision	99	49.5	61	30.5	38	19.0	17.40	<0.05	40.50	<0.001
excessive tears and eye sore	22	11.0	26	13.0	17	8.5				
Absence of symptom	79	39.5	113	56.5	145	72.5				
Digestive system										
Nausea and vomiting	81	40.5	42	21.0	25	12.5	10.17	<0.05	46.31	<0.001
Diarrhea	37	18.5	25	22.5	28	14.0				
Absence of symptom	82	41.0	133	66.5	147	73.5				
Respiratory										
Dyspnea and cough	80	40.0	50	25.0	20	10.0	9.04	<0.05	10.87	<0.05
Asphyxia or chest pain	26	13.0	33	16.5	27	13.5				
Absence of symptom	94	47.0	117	58.5	153	76.5				
Skin										
Hand itching and body itching	85	42.5	47	23.5	12	6.0	17.47	<0.001	20.47	<0.05
Skin erosion	17	8.5	20	10.0	9	4.5				
Absence of symptom	98	49.0	133	66.5	179	89.5				

Notes: :Mutual Answer

Table (7): represent the signs and symptoms of pesticides exposure as reported by the farmers. According the table all observed items regarding absence of symptom and signs associated with pesticide exposure of pesticide improved significantly post program. Regarding to the neurological side effects the study show that, less than half 48% of the studied farmers has sweating. In relation to eye side effects results shows that, less than of half 49.5 of them has eye redness and blurring of vision. As regards to digestive system the study reports that more than fifth 41.0 of studied farmers were suffering from eye sore. Less than half 47.% of the farmers were suffering from cough and dyspnea. Less than half 42.5 of the farmers were has hand itching.