Detection of the toxicity of common chemical pesticides in their effect on the biological enemy Aphidius Colimani against aphids

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Abstract:
A study was conducted for the period 2023-2024 at the plant protection department Faculty of Agriculture / Tikrit University aimed to reveal the toxic effect of some insecticides in aphid parasites , and from pesticides circulating among farmers in our country on many insect pests, including green peach, three insecticides were used in the study (superserine, chlorfenapyr, effecect, at recommended and below recommended concentrations, aphids and parasites on them), The results of the study showed the ability of these pesticides to exterminate vital enemies and their high toxicity, as they were given at the recommended concentration after an exposure period of 7 days of treatment, the highest mortality rate corrected by the first method(spraying plants and aphids on them and then introducing parasitoids) with pesticides (Supersyrin,Chlorfenapyro Evisect) amounted to(76.23,67.23 , 88.75) respectively and in the second method it reached (76.71, 74.56.67.60) respectively, as for the concentration below the recommended, the mortality rate was high, it was given by the first method(87.42, 72.02,77.87) respectively and in the second method (76.77,82.38,70.95) respectively, therefore, it cannot be adopted in integrated control programs for its damage to vital important enemies, including the intruder Aphidius colemani.

Keywords: Aphidius colemani. , Mezus persicae (Sulzer). Evisect, Chlorfenapyr.

Introduction :

The genus Aphidius is a parasitic aphid belonging to the family aphidiidae and belongs to the order Hymenoptera, and the subfamily Aphidiinae includes more than 600 species of parasitic aphids]22[. One of the most important is the parasite Aphidius colemani, as it spreads all over the world, and it is considered an internal parasite that internally parasitizes aphids, as well as one of the most successful commercial biological control agents used in greenhouse crops to combat aphids. It is believed that this intruder is of Indian or Pakistani origin]16.]

It is considered one of the active parasites in the field of host detection, as it tracks down aphids and parasitizes them even if they are low numbers . Females are characterized by typical behavior during the egg-laying process by examining the host by drumming using antennae , as it indicates the absence of previous parasitism and the host is free from the egg of the previous intruder(10. (

The female of the parasite lays an egg in the aphid, then it hatches and develops into the larval stage, and there are four larval instars, and in the last larval age, the larva spins a cocoon inside the hemolymph of the aphid .It was first used in biological control programs in the early seventies of the twentieth century]21[,It has been widely bred and sold commercially since 1991 [5].(Kolymani is mainly used in the fight against aphids of economic importance, including from green peach, mezus persicae (Sulzer) and an insect from melon or cotton A.Giuseppe (Glover).When the appropriate conditions are available to increase the growth of the Pest from heat and humidity, the Food

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host spreads in different environments of crops and orchards and causes significant damage to them directly as a result of feeding on all parts of the plant or indirectly as follows result of infection of the plant with pathogens through mechanical transmission of plant viral diseases]13[. Its exudate secretion (Honeydew), which acts on the growth of fungi and the accumulation of dust on the lower surfaces of the leaves, can cause significant losses, estimated at billions of dollars a year, addition to its negative impact on the productivity of many agricultural crops]1.]

Chemical pesticides were used in the fight against aphid blight on its plant families, and from its active compounds with a double effect on biological enemies in the sense that it does not have an election to the pest only, and from the nature of its toxic effect on the target pest (aphids) gives The amount of damage depends on the numbers of aphids on one plant, and the damage of these insects can be observed by the obvious shortage of fruits or occurring in a general way, and when they are large numbers, the plant shrinks and dies as happens in the development, and then if it is infested with green peaches, its main harm comes from the transfer of many plant virus diseases to some important crops, including tobacco, potatoes, eggplants, tomatoes, peppers and some other vegetable crops and the Bush,]17[.the same toxicity on parasitoids, Biological Enemies of the pest . Such pesticides disrupt the natural balance of living organisms and biomass in their various environments and as a result affect the increase in the density of pests and the decrease in the percentage of enemies of vitality with the emergence of new pests that may be secondary become major pests infecting crops and orchards.

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-2Materials and methods:

-:1-2Preparation of the Mezus persicae (Sulzer) plantation.

A preparation for green peach insects was collected from the leaves of the radish plant located in various fields in the Tikrit area of Salah al-Din governorate, for the purpose of preparing the aphid farm in laboratory conditions, two plastic anvils with a volume of 1 kg were used, mixed soil containing a mixture of clay and sand by 75% and mixed with organic fertilizer bitmus by 25%,, and the anvils under laboratory conditions were provided with aphids on the leaves of the radish plant, after periodically checking the anvils for the presence of a green peach insect]12.]

-:2-2Numbers of the intruder farm : Aphidius colemani.

The structure, numbers and size of the A-farm have been adapted. colemani in transparent plastic containers with dimensions of 50× 35× 25 cm and open from the top, covered with a layer from the top with a boring cloth, the cloth was fixed with a synthetic rubber band and fixed in one of the walls of the container a sterile glass tube with dimensions of 1×10 cm containing a solution of bee honey or water and sugar, the tube was closed with a cotton swab and the tube was placed upside down for the purpose of feeding the intruder, the aphid farm was provided with mummies found within colonies of aphid species on cucumber leaves brought from the fields from different areas in Tikrit district and the fields of the Faculty of Agriculture, Tikrit University, the farm was constantly supplied with the family, and the dead leaves were removed to ensure continuously that no Contamination of the farm with fungi and Mold Bacteria, the farm

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was observed continuously and used a manual lens with a power of X2 magnification, for the purpose of manual inspection of insects] 14.]

-:3-2Preparation and preparation of experimental units for the requirements of laboratory experiments:

I planted 50 anvils of cucumber plant with a volume of 1 kg, used mixed soil mixed with bitmus (organic fertilizer) with 75% soil to 25 bitmus, then planted with seeds of a cucumber plant of a local variety, and the irrigation process was carried out according to the plant's need for water, the goal of this experiment is to breed, provide and multiply large numbers of insect host (aphids) to be a food balance for the parasitic biological enemy A. colemani and the preservation of large numbers of it inside the experimental units, used cylinders made of transparent plastic with open ends with dimensions of 15 cm and a height of 20 cm, then closed with a tight adhesive tape along the wall of the anvil from four directions, that is, the cylinder was placed vertically on the anvil, then covered from above with a layer of]13.]

-:4-2the method of collecting parasitoids from the farm and transferring them to the experimental units:

In the process of collecting parasites, two basic methods were used, the purpose of which is to collect and transfer mummies and parasites from the insect farm to the experimental units for the purpose of the study, the first method pulled adult individuals of parasites from the insect farm directly by the suction machine, and for the purpose of adding parasites in the exact experiments, the suction machine itself was used and transparent boring, where the tube containing the intruder is directed at an image It is straight with its end raised upwards at an angle of about 35 degrees with the finger of the hand lightly tapping on the body of the tube, which stimulates the intruder to walk towards the open end to exit from it, thereby directing the intruder to the inside of the experimental units to insert the intruder into]2.]

Either the second method is to isolate the aphid mummies from the insect farm with a soft brush or cut the paper part on which the mummies are located, and then place them inside petri dishes with a diameter of 9 cm containing the leaves of the radish and Willow plant together, the purpose of the presence of willow leaves is to prevent the growth of bacteria and mold inside the dishes]1[, the dishes were placed after the mummies were placed inside them inside an incubator at a temperature of 25 °C and relative humidity 60%, and after the process of, the females were pulled out by a pneumatic suction machine manufactured locally for this purpose, which is a transparent laboratory tube with a volume of 100 mL containing a tight lid, the work was done Two holes in the lid through which two transparent plastic tubes were inserted, the tubes were cut to a length of 30 cm for one tube, the outer two holes of the two tubes are open, the inner holes were blocked at one end by a small piece of transparent boring cloth and the second hole was kept open from the outer and inner ends to allow the pulled intruder to enter through them into the cavity of the tug.

-:5-2the effect of chemical pesticides on an insect of green peach and parasite A. colemani:

The following chemical pesticides were used in the control process of a green peach insect, Evisect is a systemic insecticide against insects. It acts by contact and ingestion, affects the nervous system of an insect when it

touches or sucks it. The insect refrains from feeding ; its motor activity decreases, it ceases to be active , it quickly dies]4[and the supersprin pesticide active substance has CHLORPYRIFOS 500 G/L + CYPERMETHRIN 50 G/L The basic mechanism of organ nitrile toxicity is its production of toxic cyanide ions or hydrogen cyanide, due to the decomposition of organic nitrile into cyanide ions and is a cytochrome c oxidase inhibitor in the fourth complex of the electron transport chain (located in the mitochondrial membrane of eukaryotic cells),and Commander insecticide is a stomach insecticide having trans-laminar movement. After ingestion and contact on insects stops feeding within 2 hours and dies after 2 to 4 days.It is most effective as stomach poison hence proper spray coverage is mandatory. Commander insecticide is highly effective for controlling all stages of larva and on resistant pest species. Dosage:0.5 to 1gm /liter, Suitable for Foliar Spray]10[,]11[and two concentrations were used for each pesticide, the recommended concentration is 1 and the concentration is under the recommended 0.5, the aforementioned pesticides were chosen and are common the first method is spraying the plant and aphids and then the introduction of the parasite and the second method is spraying the plant, aphids and the parasite together In the first method,.chemical pesticides were sprayed on the plant and there were aphids on it by 50 insects from each experimental unit, and then a period of four hours was left to dry, and then the parasitoids were introduced by 10 parasitoidsper experimental unit, meaning that for every 50 insects introduced 10 parasitoidsper experimental unit and worked (3) duplicates, and the second method of spraying differs from the previous method of treatment only in the spraying method, where the control was carried out by spraying the pesticide on the plant, aphids and parasites together, then the treated plants were left to dry, the data and readings were recorded every day for 7 Days of the transaction all the crunch data were recorded for the experiment. The Tilton and Henderson equation of 1955 was adopted in the relative efficiency of pesticides and through it we infer the parasitizing efficiency of the parasite]8.]

Reduction%= 1-{(n in co before treatment × n in T after treatment)/(n in co after treatment × n in T before treatment)}×100

Where: n = pest population, T = treated, Co = control

-:6-2statistical analysis:

In statistical analysis I use the complete random design system C.R.D, and the results were compared using the least significant difference L.S.D. 0. 05 , and the computer was used to analyze the results through Excel and SAS V9]18.]

Results and Discussion :

:1studying the toxicity of some pesticides at concentrations lower than recommended in the fight against aphids by treating the spraying of aphid and parasitoid plants alike.

The results of Table (1) showed that there was a discrepancy in the corrected killing percentage of aphids depending on the type of pesticide used and the duration of exposure at the recommended concentration, as the pesticide Chlorfenapyr gave the period after an exposure period of seven days, the highest corrected killing percentage was 82.37 insects, followed by the pesticide Super Severin, as the corrected killing percentage reached 76.76 insects, the pesticide Evisect had a clear effect on aphids, reaching 70.95 insects, and the percentage decreased in the first days of control there are zero insects.

The results of the statistical analysis of Table (1) also showed that there was a discrepancy in the averages of pesticide effects, the highest overall average of the pesticide effect was chlorfenapyr pesticide reached 43.77, followed by supercyprin pesticide with an overall average of 40.6, while the decrease in the effect of Evisect pesticide reached 31.87 insects.

It is also known that the longer the exposure time to the pesticide, the higher the corrected killing percentage increases with it. the results of the statistical analysis in the same table showed that the higher the exposure time after seven days of treatment, the average corrected percentage of killing reached 76.70, and it decreased the shorter the exposure period until it reached the lowest reading of the first day after the control, as it was zero insect.

Table (1): The effect of some pesticides at a concentration below the recommended in the corrected percentage of aphid mortality by the method of spraying plants aphids and parasitoids alike.

Duration of exposure	Supersyrin	Chlorfenapyr	EVISECT	Mean
After 1 day	0.00^{i}	0.00^{i}	0.00^{i}	0.00G
After 2 days	10.33^{gh}	11.64^{g}	4.51^{hi}	8.83F
After 3 days	25.53^{f}	28.63^{f}	16.48^{g}	23.55E
After 4 days	44.19^{e}	48.39^{e}	29.47^{f}	40.69D
After 5 days	58.25^{d}	62.29^{d}	43.05^{e}	54.53C
After 6 days	69.14^{c}	73.05^{bc}	58.62^{d}	66.94B
After 7 days	76.76^{ab}	82.37^{a}	70.95^{bc}	76.70A
Mean	40.60B	43.77A	31.87C	38.75
L.S.D.0.05	pesticides	Interferences	Duration of exposure	
	2.482		3.792	

:2

studying the toxicity of some pesticides with concentrations below the recommended in the fight against aphids by treating the spraying of plants and aphids and then introducing the parasite on them.

The results of Table 2 showed that there was a discrepancy in the corrected death rates of aphids depending on the type of pesticide and the duration of exposure using the recommended concentration and by spraying plants and treating the pesticide for aphids and then introducing the parasite on them, Supersyrin gave the best corrected percentage kill rate of 87.42 followed by Evisect of 77.87 followed by Chlorfenapyr as the corrected percentage kill rate of 72.02 insects in the last exposure period after seven days of

It is noted from the same table that there are significant differences in the averages of the exposure period if the averages for the periods are given upwards from the first period until they reached the highest average, and the highest was in the period after seven days, as it reached 79.10, and it decreased successively as the exposure period decreased until it reached zero in the first material after one day of exposure. This is obvious that the longer the exposure period to the pesticide, the more individuals the pest responds to the pesticides and the percentage of killing them increases. As for the total effect of the type of pesticide,

the general average for the Super Cyprin pesticide was higher than the rest of the pesticides, as it reached 43.08.

Table (2) . The effect of some pesticides at concentrations below the recommended corrected percentage of aphid mortality by spraying plants and aphids and then introducing parasitoids on them.

Duration of exposure	Supersyrin	Chlorfenapyr	EVISECT	Mean
After 1 day	0.00^{g}	0.00^{g}	0.00^{g}	0.00 G
After 2 days	10.02^{f}	3.55^{gf}	11.32^{f}	8.29 F
After 3 days	24.91^{e}	14.31^{f}	25.22^{e}	21.48 E
After 4 days	42.75^{d}	30.34^{e}	41.27^{d}	38.12 D
After 5 days	62.35^{c}	43.33^{d}	58.87^{c}	54.85 C
After 6 days	74.14^{b}	61.13 ^{c}	71.67 ^{b}	68.98B
After 7 days	87.42^{a}	72.02 ^{b}	77.87 ^{b}	79.10 A
Mean	43.08A	32.09B	40.89A	38.69
L.S.D.0.05	pesticides	Interferences	Duration of exposure	
	2.358	6.239	3.602	

:3

A study of the toxicity of some pesticides at the recommended concentration in the fight against aphids by treating the spraying of plants and aphids and then introducing the parasite on them.

It is noted from Table No. (3) and according to the statistical analysis that there are significant differences in the overlap coefficients of the pesticides used and the duration of exposure .the duration of the pesticides used gave the highest mortality value, the highest exposure period of the average year was 93.73 aphids. Chlorfenapyr exceeded the highest percentage mortality rate of 98.27 insects, followed by Supersyrin reached 95.99 aphids and the Effisect ratio decreased to 86.93 aphids.

The statistical analysis also showed that there are significant differences between the overall averages for the duration of exposure, the highest exposure period reached a percentage of deaths of 93%. Then it began to decline until it reached its lowest on the first day after exposure, with a magnitude of 7.44. As for the overall averages showing the effect of the type of pesticide, the highest overall average was Chlorfenapyr at 58.26, followed by Supersyrin at 56.37, and they do not differ significantly, but differed with the pesticide Effisect at 47.7

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Table (3): the effect of some pesticides at the recommended concentration in the corrected percentage of aphid mortality by treating the spraying of plants and aphids and then introducing the parasite on them.

Duration of exposure	Supersyrin	Chlorfenapyr	Evisect	Mean
After 1 day	9.67^{m}	12.67^{ml}	0.00^{n}	7.44G
After 2 days	19.33^{kl}	25.67^{kg}	14.33^{ml}	19.78F
After 3 days	40.13^{hi}	41.82^{h}	32.31^{ij}	38.09E
After 4 days	62.19^{fg}	58.65^{g}	52.85^{g}	57.90D
After 5 days	76.67^{de}	79.03^{cd}	68.73^{fe}	74.81C
After 6 days	90.67^{ab}	91.71^{ab}	78.73^{cd}	87.04B
After 7 days	95.99^{ab}	98.27^{a}	86.93^{bc}	93.73A
Mean	56.378A	58.263A	47.70 B	54.114
L.S.D.0.05	pesticides	Interferences	Duration of exposure	
	3.589	9.494	5.482	

-:4A study of the toxicity of some pesticides at the recommended concentration in the corrected percentage of aphid mortality by spraying treatment of plants, aphids and parasitoids alike.

The results of table number (4) showed that there is a difference and discrepancy between the corrected percentage of death of aphids in light of spraying aphids and the parasite at the recommended concentration depending on the type of pesticide and the duration of exposure, the pesticides gave good results in aphid deaths and the excellence of the pesticide Chlorfenapyr, which gave the highest value in (after seven days) reached 100 insects, followed by Evisect with a corrected percentage mortality rate of 93.24 insects, then followed by Supersyrin at 81.89, the highest impact of the pesticide type was chlorfenapyr, with an overall average of 67.04, followed by Evisect at 55. 67 and the maximum of Supersyrin was 48.53.

Table (4):- The effect of some pesticides at the recommended concentration in the corrected percentage of aphid mortality by spraying treatment of plants, aphids and parasitoids alike.

Duration of exposure	Supersyrin	Chlorfenapyr	Evisect	Mean
After 1 day	12.33^{k}	14.67^{jk}	11.67^{k}	12.89G
After 2 days	18.33^{jk}	28.00^{i}	20.67^{j}	22.33F
After 3 days	33.54^{hi}	59.74^{f}	40.32^{h}	44.54E
After 4 days	51.42^{g}	7808^{e}	61.60^{f}	63.70D
After 5 days	65.51^{f}	90.93^{bc}	75.38^{e}	77.27C
After 6 days	76.66^{e}	97.91^{ab}	86.80^{cd}	87.13B
After 7 days	81.89^{de}	100.00^{a}	93.24^{a-c}	91.71A
Mean	48.528A	67.047B	55.669C	57.08
L.S.D.0.05	pesticides	Interferences	Duration of exposure	
	2.645	6.998	4.04	

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A study of the toxicity of some pesticides in concentrations below the recommended in the corrected percentage of deaths of the parasite by spraying plants and aphids and then introducing parasites on them.

The results of table number five showed that there was a discrepancy in the percentage of deaths corrected for the parasite depending on the type of pesticide used, the recommended concentration and the duration of exposure, as Supersyrin gave the highest mortality rate after a seven-day period of control amounted to 87.42 intruders, followed by Evisect, which reached the percentage of deaths (seven-day exposure period) amounted to 77.87 intruders, and this result of the general average did not differ significantly from the result of the average General Chlorfenapyr, reaching 72.02 parasitoidsfor the same period the last exposure (after seven days) is also noted through statistical analysis that there is a superiority in the overall average duration of exposure after seven days, higher than the previous one, it was 79.11, which is a high percentage of the loss of vital enemy.

Table (5) spraying plants and then introducing the parasite at the recommended concentration and its effect on the corrected percentage of mortality on the parasite.

Duration of exposure	Supersyrin	Chlorfenapyr	Evisect	Mean
After 1 day	0.00^{i}	0.00^{i}	0.00^{i}	0.00G
After 2 days	10.02^{f}	3.55	11.32^{f}	8.29 F
After 3 days	24.91^{e}	14.3^{f}	25.22^{e}	21.48 E
After 4 days	42.75^{d}	30.34^{e}	41.26^{d}	38.12 D
After 5 days	62.35^{c}	43.32^{d}	58.87^{c}	54.85 C
After 6 days	74.14^{b}	61.13^{c}	71.67^{b}	68.98B
After 7 days	87.42^{a}	72.02^{b}	77.87^{b}	79.11A
Mean	39.15A	37.02A	34.26A	36.81
L.S.D.0.05	pesticides	Interferences	Duration of exposure	
	5.296	14.011	6.239	

-(6)A study of the toxicity of some pesticides at concentrations below the recommended in the corrected percentage of parasitoid mortality by spraying treatment of plants and aphids and parasitoids.

The results of Table No. 6 showed that there is a discrepancy in the percentage of deaths corrected for the parasite depending on the type of pesticide used, the spraying method and the duration of exposure .Chlorfenapyr gave the highest mortality rate for the parasite at 82.38, followed by Supersyrin at 76.77, followed by Supersyrin with a percentage mortality rate for the parasite at 70.95, this high percentage is due to the last exposure range after seven days of treatment.

Through the table, the increase in the effect of pesticides on the general averages is noted by the effect of the exposure time of the seven readings, where the highest value of the effect of Chlorfenapyr reached 43.77, followed by Supersyrin, which reached 40.61, followed by Evisect, which reached 31.87 . Also, through the same table, he noticed an increase in the impact of pesticides with an increase in the duration of exposure to the death of the intruder up to the seventh day, as the general average reached 76.70, and this percentage is

very high, leading to the elimination of a large number of parasitoidsin the environment.

Table (6) spraying plants, aphids and parasitoids with the recommended concentrations and their effect on the parasitoid.

Duration of exposure	Supersyrin	Chlorfenapyr	Evisect	Mean
After 1 day	0.00^{i}	0.00^{i}	0.00^{i}	0.00G
After 2 days	10.33^{gh}	11.64^{g}	4.51^{hi}	8.83F
After 3 days	25.53^{f}	28.63^{f}	16.48^{g}	23.55E
After 4 days	44.19^{e}	48.38^{e}	29.47^{f}	40.68D
After 5 days	58.25^{d}	62.29^{d}	43.05e	54.53C
After 6 days	69.14^{c}	73.05^{bc}	58.63^{d}	66.94B
After 7 days	76.77^{ab}	82.38^{a}	70.95^{bc}	76.70 A
Mean	40.603B	43.769 A	31.873 C	38.75
L.S.D.0.05	pesticides	Interferences	Duration of exposure	
	2.482	6.567	3.792	

-:(7)A study of the toxicity of some pesticides at the recommended concentration in the corrected percentage of mortality of the parasite by treating the spraying of plants with aphids and the parasite together.

The results of the statistical analysis in Table (7) showed that there are significant differences in the treatment with pesticides at the recommended concentration with aphids and the parasite, both supersyrin with the highest mortality rate of the parasite reached 76.70, followed by Chlorfenapyr with the corrected percentage of deaths of the parasite reached 74.56, and then Evisect treatment came seven days later with a corrected percentage of deaths of the parasite reached. Through the same table, it is noted that there are differences and significant differences between the general averages of the effect of pesticides on the parasite, where Supersyrin reached the highest value of 45.03, followed by Chlorfenapyr reached 42. 57 the percentage decreased in Evisect, as it is noted that the percentage of pesticide effects in the seven different periods increased successively until it reached the highest value of 72.96 in a pesticide treatment for the duration of exposure after seven days.

Table (7) spraying plants, aphids and parasitoids both at the recommended concentrations and the effect on the parasitoid.

Duration of exposure	Supersyrin	Chlorfenapyr	Evisect	Mean
After 1 day	3.33^{hi}	0.00^{i}	0.00^{i}	1.11 E
After 2 days	16.06^{h}	13.03^{hi}	15.75^{i}	14.95 D
After 3 days	39.28^{g}	39.28^{g}	36.51^{g}	38.36 C
After 4 days	47.05^{fg}	46.84^{fg}	44.27^{fg}	46.05C
After 5 days	61.00^{b-d}	56.36^{d-f}	53.65^{ef}	57.01 B
After 6 days	71.81^{a-c}	67.89^{a-d}	61.76^{a-d}	67.16 A
After 7 days	76.71^{a}	74.56^{ab}	67.60^{a-d}	72.96 A
Mean	45.037A	42.567 AB	39.937 B	42.514
L.S.D.0.05	pesticides	Interferences	Duration of exposure	
	5.093	13.475	7.780	

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-:(8)

A study of the toxicity of some pesticides at the recommended concentration in the corrected percentage of mortality of the parasite by spraying plants and aphids and then introducing the parasite on them.

The results of Table No. (8) showed that there is a discrepancy in the percentage of deaths corrected for the parasite depending on the type of pesticide and the duration of exposure in the treatment of spraying plants and aphids and then the introduction of parasitoidson them, Evisect in the last reading after seven days gave the highest mortality value of 88.75 intruders, followed by the treatment of the same pesticide after six days reached 77.94, the supersyrino chlorfenapyr pesticides achieved high mortality rates of 76.23 and 67.23 parasitoidsin a row. Through the same table, the averages for pesticides showed variation, with Evisect giving the highest value of 50.07, followed by Supersyrin with an average of 45.02, followed by Chlorfenapyr at 36. 38 intruder.

It is also noted in the same table and through statistical analysis that there are significant differences between the average length of the exposure period .it is known that the longer the exposure period, the higher the percentage of deaths corrected for intruders, so the higher the value in the average year for the duration of exposure after seven days was 77.41, and then decreased the shorter the exposure period until the control reading reached 3.33 parasitoidsafter three days .

Table (8) spraying the plants and then introducing the parasite at the recommended concentrations and their effect on the parasite individuals.

Duration of exposure	Supersyrin	Chlorfenapyr	Evisect	Mean
After 1 day	0.00^{m}	0.00^{m}	10.00^{k-m}	3.33 G
After 2 days	16.06^{kl}	6.36^{lm}	19.39^{k}	13.94 F
After 3 days	41.67^{hi}	31.35	39.28^{h-j}	37.43 E
After 4 days	52.05^{fg}	39.83	49.62^{gh}	47.17 D
After 5 days	59.12^{e-g}	49.83^{gh}	65.51^{bc}	58.16 C
After 6 days	69.98^{b-d}	60.05^{d-f}	77.94^{b}	69.32 B
After 7 days	76.23^{bc}	67.23^{c-d}	88.75^{a}	77.41 A
Mean	45.016B	36.379 C	50.071 A	43.82
L.S.D.0.05	pesticides	Interferences	Duration of exposure	
	3.862	10.217	5.899	

Discussion

By discussing the previous tables we note the high corrected mortality rates of the parasite with its effect on aphids, due to the severity of the toxicity of these pesticides, for which companies produce pesticides that mix more than one active substance with an effective effect in reducing the numerical density of agricultural pests and a wide range of many harmful and useful insects by the type of active substance, its chemical nature and mechanics , the basic mechanism of toxicity of organic nitrile is its production of toxic cyanide ions or hydrogen cyanide, Due to the decomposition of organic nitrile into cyanide ions and is a cytochrome c oxidase inhibitor in the fourth complex of the electron transport chain (located in the mitochondrial membrane of eukaryotic cells (9)(10). By combining with the ferric iron atom in this enzyme. The

Binding of cyanide to this cytochrome prevents the transfer of electrons from cytochrome c oxidase to oxygen. As a result, the electron transport chain is disrupted and the cell can no longer produce ATP for energy. Tissues that depend primarily on aerobic respiration, such as the central nervous system and the heart, are particularly affected. Cyanide is also known to produce some of its toxic effects by binding to catalase, glutathione peroxidase, methemoglobin, hydroxocobalamin, phosphatase,]17[tyrosinase, ascorbic acid oxidase, xanthine oxidase , succinic dehydrogenase, and copper oxide/zinc superoxide dismutase. Effesect is a systemic insecticide against insects. It acts by contact and ingestion, affects the nervous system of an insect when it touches or sucks it]14[. The insect refrains from feeding ; Therefore, these biochemical targets are present in the pest and in the special biological enemy of the pest that such pesticides disturb the natural balance of living organisms and biomass in their various environments and as a result affect the increase in pest density and the decrease in the percentage of biological enemies with the emergence of new pests that may be secondary become major pests that affect crops and orchards, so we cannot recommend using them in the field of Integrated Pest Control and Pest Management in clean agriculture

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