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RESISTANCE OF *CALLOSOBRUCHUS MACULATUS* FA. BRUCHIDAE (COLEOPTERAN) BY SOME UNCHEMICALS METHODS

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Abstract

A laboratory study was conducted to evaluate the effect of low temperatures on different alator insect beetle *Callosobruchus maculatus* F. algnoier beans, results showed an increase in the mortality% for each phase as a result of low temperature and increase the duration of exposure. The number of non-hatching eggs 10, number of dead larvae increased to 66, 9. Number of deadpupa 6, 66 as when use temperature-18^{0}C for 60 minutes expose. Some studies were out on controlling this pest by using of non- chemical pesticides agents by using of vegetable oils in four concentrations 0, 2, 4, 6 and 8% for eucalyptus oils, bitter almond, anise and ginger featured attraction package average 80% and 10% respectively by using concentrations of 6 and 8 for all oils.

Key words *: Callosobruchus maculatus,* effect of low temperatures, some unchemicals methods

Introduction

Manyinsect eat legumes crop pests in the field and stored, legumes have important economic crops in the world, using as a food for human and animal as fresh and Green crop or dry seeds. legumes fallow leguminous family (Fabacea) which is one of the most important plant families because it contend a large numbers of economic crop, it had about 600 species and about 1300 kinds but only 18 species used for human nutrition as ruptures and chickpeas, lentils, beans almash beans and peanut (Ali *et al.,* 1990).

Cowpea beetle are algnoier (F) *Callosobruchus maculatus* dating fallow to Bruchidae family caused a serious insect pests affecting the seeds of legumes in various parts of the world. The seeds of legumes have an especially important food for humans and animals because they contain nutrients food such as carbohydrates and proteins. This insect is also major leguminous crops insects in warehouses starting in the field and complement the bug life cycle and reproduce in the store, the importance of this insect comes because its larvae feed and develop within the seed and consumption of all its contents and thus increase the percentage of damaged seeds and reduces its nutrient value. The seed is well sown attributed food (Bhalla *et al.*, 2008) and the importance of this insect study ways to control and protect stored grain from attacking without using toxic pesticides because these food products used in human food.

Diagnosing and rearing bug

Collected samples of infected Cowpea seeds insect from local markets, the diagnosis was confirmed the bug. *Callosobruchus maculates* F. and making reference to taxonomic keys to isolate species Bruchus (Ali; 1990, Dobie and Haines; 1980). The insect rearing laboratory in Department of life sciences–college of Sciences - University of Kirkuk for a permanent colony initialized bug added 10 pairs of Insect (5 male: 5 females) to 500 grams of cowpeas infection-free glass and covered the bottles were covered by a cotton and put in the incubator in temperature 27 ± 3 m, relative humidity 60 ± 10% and was constantly renewed farm for several sequence generations to be used.

Using low temperature against southern cowpeas beetle bred on cowpeas

A three degrees were used in this study (4, -7, -18) ^{0}C (Saidi *et al.,* 1978) eggs were newly introduced 24-hour-old cowpeas seeds by ten eggs in three replicates for each and exposing hatching average recorded in seven days the seeds infected with ten caterpillars (larva/seed) 3-4-old three days also replicates and record the average number of bugs emerging after the completion of the life

cycle (25 days) and for the Pupa phase that took after being that can be observed from the outside of hatching room, then left to have completed their life cycle and the average number of bugs emerging from them were recorded.

Study effects of different concentration average extruder attraction some vegetable oil on the full insect

To carry out the study was prepared concentrations are 2, 4, 6 and 8% of all eucalyptus, aniseed, bitter almond and Ginger oils and using a Chemotropometer (Folsom 1931) to measure the influence and attraction oil extruder to make The test for treatment of the cotton piece with 1 ml of concentrate all oil used in the study and put on the right side of the tube with cotton piece treated in the left side with acetone only, then you enter ten adult in the center of the pipe and wait 20 minutes, then count the number of insects Evicted or in the device, repeated the process three times for each concentration of oils used in the study, repeated the same process with insects jams on seeds of beans, chickpeas and odes in laboratory, the results were calculated by the following equations (Shaban and Al-malah, 1983).

Number of insects heading towards the oil and cut 50 cm from the center

$$\text{Ratio of attraction} = \frac{\textit{Number of insects heading towards the oil and cut 50 cm from the center}}{\textit{Total number of insects}} \times 100$$

$$\text{Percentage of expulsion} = \frac{\text{Number of insects reverse oil}}{\text{Total number of insects}} \times 100$$

$$\text{Power of expulsion} = \frac{\text{Total insect distances reverse oil}}{\text{Number of replicates}} \times 100$$

Budget ratio = the percentage of attraction

- the percentage of expulsion

Influence of host type in the efficacy of some vegetable oil in the fight

To carry out the study was treatment of 2, 4, 6 and 8% for each Eucalyptus, aniseed and bitter almond and ginger oils and treating a Petri dish with 1 ml of each solution concentration and added to each dish ten adults (5 males and 5 females) and three replicates, either treatment comparison, treated with acetone only, the mortality percentage was calculated after 24 hours of treatment and then corrected mortality rate using Abbott equation (Abbott, 1925) and calculated results according to the following equations.

$$\text{Mortality}\,\% = \frac{\text{Number of killed insects}}{\text{Total number of insects}} \times 100$$

$$\text{Corrected percentage of Mortality}\,\% = \frac{M - M_1}{100 - M_1} \times 100$$

M= the percentage of killed in the total treatment

M_1 = the percentage killed in the control group (acetone).

Statistical analysis

Implemented experiences using Completely Randomized design full random Design (CRD) with three replicates, and then compared with averages less significant difference test (L.S.D) at 5% probability (Al Rawee and Khalif Allah, 1980).

Results and Discussion

Use of low temperatures in southern cowpeas beetle bug control

From results in table 1 low temperature effect in different phases of South endangerment beans beetle low temperatures 4, 7 and 18^{0}C as well as treatments and control periods exposing 15, 30, 45 and 60 minutes, it was clearly from the table that the highest average number of cracked eggs was in the temperature-18^{0}C for 60 minutes the average was endangering 10 eggs and different from the rest of other treatments and moral experiment with officer followed by the average number of eggs not cracked at temperature-18^{0}C and length of 45 and 30 minutes average were 66.9 and 66.8 respectively and moral difference between the egg and followed by the average number of eggs is not cracked in the treatment temperature - 7^{0}C for 45 and 60 minutes and was 8 and 8 eggs respectively, but disagreed with the rest treatments and control, followed by the average number of eggs not cracked in the treatment of temperature-18^{0}C for 15 Min temperature treatment-7^{0}C for 30 minutes and was by 6, 66 morally disagreed with other egg of treatments with treatment control, followed by the average number of eggs is not cracked in the treatment of temperature-7m and length of exposing a 15 minute treatment temperature 4 m and length of exposing 60, 30, 45 minutes. Average were 4, 66, 5, 33, 5, 0 and 4, and there was no moral difference between egg 33 but moral difference with the rest of other treatments and treatment officer, had the lowest average number of cracked eggs in treatment temperature 4 m length exposing 15 minutes and was average 3.33 respawn there moral difference with other treatments and treatment officer except 4 temperature treatment duration exposing 30 min (4, 33) eggs. It is clear from the table 1 also the highest average number of dead larvae in the treatment of temperature -18m and a 60 minutes expose was 9, 66

Caterpillar with a moral difference with control treatment, followed by the average number of dead larvae in the treatment of temperature-18 m and length of 45 minutes and endangering the treatment temperature-7 m length Exposing 45 and 60 minute average 0.9, 33.8 and 33.9 and a moral difference between larva but moral difference with the rest of other treatments and treatment officer and subsequent treatment of the temperature-18m and the duration of 30 minutes and endangering the treatment temperature-7m for exposing 30 minutes treatment temperature-18m and length Exposing a 15 minute treatment temperature-7m and length of exposing 15 minutes and 4 temperature treatment duration 60 minutes average were endangering 8, 00, 6:00, 7, 33, 7, 66, 6, 00 larva respectively with a moral difference with control treatment, the average number of dead larvae in 4 temperature treatment duration is Math 60, 30, 15 minutes (5, 66, 5, 33, 4, 00) Caterpillar respectively, The table also shows that the highest average number of dead will be virgins in the treatment of temperature-18 m and 7 m and a 60 minutes expose was 6, 66, 6, 3 virgins no moral difference between the moral difference even with control treatment, followed by the average number of dead virgins in the treatment of temperature-18 m and 7 m and length of exposing 45 d Sister was 3, 33, 3, 00 virgins respectively, and the average number of dead virgins in the treatment of temperature-18m, 4m and a 60 minutes expose 15 and was 2, 66, 2, 33 virgins respectively, followed by the average number of dead virgins in the treatment of temperature-7m, 4m and length of exposing 15, 30 and 45 minutes was 2.00 virgins the And to.

These results agreed with Mohamed Saleh and Saleh (2007) the temperature influence on the beetle life cowpeas, the duration of each phase varies depending on the temperature, and the temperature was a moral influence is evident in adult life where life was 3.1, 4.14, 2.7, 5.3 days for males and 7.12,8.6 and 2.4 days for female when temperatures were 35, 30, 20, 25^{0}C respectively.

These results are consistent with presenting her findings to Ismail and Mohamed (2001) in the use of low temperatures in the fight against bean beetle has led to an increase in the average number of dead individuals to freak. With low temperature and increase the duration of exposure, where the highest average number of cracked eggs and larvae dead virgins 3, 4, 7, 5.5 respectively when temperature-15 m and females were more tolerant to low temperatures than males at exposure periods 15, 30 minutes, bringing the number of deaths 2, 4 respectively of phase was more influential low temperatures with time to kill half the people exposed (LT50) 8 minutes at the temperature of-15 m, followed by larval phase-15 minutes then developed an egg 30 minutes and finally developed the Pupa 50 minutes.

Table 1: Effect of low temperatures in the egg, larva and pupa stages of the Southern cowpea beetle and for different exposure periods.

Treatments	Time	Average number of unhitching eggs		Average number of larvae Dead		Average number of virginsDead	
4°c	15	*33. 3	f	0.4	g	2.00	def
	30	33.4	fe	5.33	fg	2.00	def
	45	66.4	e	5.66	f	2.00	def
	60	33.5	e	6.00	ef	2.33	de
- 7°c	15	0.5	e	6.00	ef	2.00	def
	30	66.6	d	7.66	cd	3.00	cd
	45	0.8	c	8.33	abcd	4.33	bc
	60	0.8	c	9.00	abc	6.33	a
-18°c	15	66.6	d	7.33	de	2.66	de
	30	66.8	bc	8.00	bcd	3.33	bcd
	45	66.9	ab	9.33	ab	4.66	b
	60	0.10	a	9.66	a	6.66	a
Control	15	0.1	g	1.00	h	0.66	f
	30	33.1	g	1.33	h	1.33	ef
	45	66.0	g	1.33	h	0.66	f
	60	33.1	g	1.66	h	1.33	ef
LSD		7.1		30.1		17.1	

*Numbers with similar characters within the column are not significantly different according to the L.S.D multilevel selection under the level of probability of at 0.05 levels.

Effect of kind of attractive effect and some vegetable concentration average extruder for the Grand southern Cowpea beetle

Effect of 2% concentration

Study influence extruder and bitter for four oils plant is bitter almond, eucalyptus, ginger and anise in a beetle South beans using anise oil 2% concentration gave the highest expulsion amounted to 80.00 and lowest attract 20, 00% with budget accounted for 209, 00–either BA eucalyptus oil ratio is the ratio of the package and pull 76, 66, 23, 33% respectively with budget accounted for 53, 33-allozalmer oil for the proportion of the package and pull 73, 33, 26, 66% respectively in budget accounted for 171, 66. As for the ginger oil, expulsion accounted for and attraction 56, 66 and 43, 33% respectively with budget accounted for 37, 66 – after 20 minutes of treatment using a chemical run out as is evident in Table 2.

Table 2: Extruding and seductive effect of 2% for four vegetable oils in adult south cowpea beetle grown on cowpea.

Oils	Extruding force	Seductive force	Extruding %	Seductive %	Budget %
Bitter almonds	*80.66	252.33	26.66	73.33	-171.66
Yansun	00.42	00.176	23.33	76¡66	-53.33
Ginger	79.66	117.33	43.33	56¡66	-37.66
Anson	23.33	232.33	20	80	-209

*every number are the mean of 3 replicates.

Effect of 4% concentration

As shown in table 3 influence extruder and bitter almond oils, tractor eucalyptus, ginger and anise in southern cowpeas beetle bred on cowpeas using concentration 4% eucalyptus oil showed the highest expulsion, expulsion accounted attraction 86, 66% and 13, 33%, respectively, and the ratio Budget-141, 66 and then expulsion rate and attraction of bitter almond oil 80, 00:20, 00% respectively and the percentage of budget-187, 67 for anise oil, the proportion of the package and pull 70, 00% and 30.00% respectively in budget ratio-205, 88 and expulsion and attraction of ginger oil 56, 66 and 43, 33% Respectively and budget rate-48, 66, after 20 minutes of treatment using chemical and run out device as shown in the table 3.

Effect of 6% concentration

Examining influence extruder and bitter almond tractor, eucalyptus, ginger, aniseoils in southern cowpeas beetle bred on cowpeas using concentration 6% found that eucalyptus showed the highest expulsion, expulsion accounted attraction 83, 33, 16, 66% respectively and the proportion of the budget. 199, 99, followed by bitter almond aniseed oils that have the same impact as expulsion

Table 3: Extruding and seductive effect of 4% for four vegetable oils in adult south cowpea beetle grown on cowpea.

Oils	Extruding force	Seductive force	Extruding %	Seductive %	Budget %
Bitter almonds	*40.33	00.228	00.20	00.80	-187.67
Yansun	26.33	00.168	13.33	86.66	-141.66
Ginger	69.66	118.33	43.33	56.66	-48.66
Anson	23.77	229.66	00.30	00.70	-205.88

*every number are the mean of 3 replicates.

and accounted for 76, 66, 23, 33% respectively and the percentage of their budget-175, 66 f-206 for Ginger oil, expulsion accounted attraction 56, 66 and 43, 33% respectively and budget-4 ratio was -34 as shown in table 4.

Table 4: Extruding and seductive effect of 6% for four vegetable oils in adult south cowpea beetle grown on cowpea.

Oils	Extruding force	Seductive force	Extruding %	Seductive %	Budget %
Bitter almonds	*37.33	243.33	23.33	76.67	-206
Yansun	13.33	213.33	16.66	83.33	-199.99
Ginger	46.66	51	43.33	56.66	- 34.4
Anson	27.66	203.33	23.33	76.66	-75.66

*every number are the mean of 3 replicates.

Effect of 8% concentration

The results of a study showed the effect of attraction and extruder vegetable in southern cowpeas beetle bred on cowpeas and 8% concentration use that anise oil gave the highest expulsion, expulsion accounted attraction 76, 66, 23, 33% respectively and the proportion of the budget – 179, 00, followed by the percentage of the package and pull Bitter almond oil 73, 33, 26, 67% respectively budget ratio was 39, 66 for eucalyptus oil, the proportion of the package and pull 60 and 40%, respectively, with the proportion of the budget-27, 66 was fired and attraction of ginger oil 56, 66 and 43, 33% respectively and the percentage of budget-89, 33 and after Over 20 minutes of treatment using a chemical run out of us is evident in the table 5.

Effect of different concentrations of vegetable oil on the death average for the Grand southern Cowpea beetle bred on cowpeas

The results showed in table 6a high average of mortality in higher concentrations of vegetable oil with the highest average percentage of mortality in South beans beetle it was 100% when the concentration 8% for all vegetable oils were used either when using a concentration of 6% average percentage of mortality were 100% for using of ginger oils and bitter almonds,

Table 5: Extruding and seductive effect of 8% for four vegetable oils in adult south cowpea beetle grown on cowpea.

Oils	Extruding force	Seductive force	Extruding %	Seductive %	Budget %
Bitter almonds	33.66	522	26.67	73.33	-39.66
Yansun	89.33	117	00.40	60.00	-27.66
Ginger	32.00	121.33	43.33	56.66	-89.33
Anson	22.33	201.33	23.33	76.66	-179.00

*every number are the mean of 3 replicates.

but when using of eucalyptus and anise with a concentration 6%, an son oil 4% and use bitter almond oil in concentration 2% the average percentage of the total mortality were 92, 30% and 84, 60% for using ginger oils, bitter almond and anise with concentration 4% so there is no moral difference between concentrations of 8%, 6%, 4% for four types of oils and 2% If you use only the bitter almond soil, It was the average percentage of the total mortality 76, 90% when using ginger oil, the lowest average percentage of death beetle cowpeas 61, 50% in case of use in concentrations of 2% oils and this differs morally with other treatments except ginger oil treatment in concentration 2%.

These results agree with Khader (2002) and Ani, (2015) using plant extracts to combat southern Cowpea beetle Rue, garlic has increased the total death rate with increasing duration of exposure and high concentration extracts used BMI The loss to 60% allszab and 92% of garlic at the higher concentration (1800 ppm) and dropped this effect at lower concentrations, reaching 16% allszab 18% as a minimum of garlic when concentration (112.5 ppm). The results of comparisons of plant extracts as relative toxicity to extract Garlic was more toxic by 2. 8 times in a 24hour treatment and shows results obtained from these treatments higher average of death for all plant extracts in 24 hours than after one hour. This was confirmed by Ani (2015) that a decrease in the proportion and number of holes out of adults when using almond oil and coconut oil India Neem Oil the paper after two months of treatment in combating insect beetle cowpeas and

Table 6: Effect of different concentrations of vegetable oils on the mortality percentage of south cowpea beetle grown on cowpea.

Oils	Average of corrected mortality %							
	Concentration %							
	2		4		6		8	
Bitter alomonds	*61.5	c	92.3	ab	92.3	ab	100	a
Yansun	76.9	bc	84.6	ab	100	a	100	a
Ginger	92.3	ab	84.6	ab	100	a	100	a
Anson	61.5	c	84.6	ab	92.3	ab	100	a

southern India coconut oil has proved more effective against these Stinger. And these results matched with indicated Ibrahim Nasser (2009) that use sunflower oil, rapeseed oil, cotton seed oil, olive oil, sesame oil, soybean oil to prevent the seeds of chickpea Cowpea beetle bugs appeared on Sesame and olive oils and sunflower concentration 5.7% had given the highest I Response of Cowpea beetle and prevented them from laying eggs, Singh *et al.*, (2011) when using four oils including corn oil, sunflower, peanuts and Sesame in fighting southern cowpeas beetle has used to lower the whole life span in every kind of *Callosobruchus maculatus* and *C. chinensis* when using corn and sunflower oils resulted in a decrease in the total life span in the third type of beetles cowpeas if used of 10 ml oil/kg of beans and use 5 ml/kg of peanut oil to protect the seeds of cowpeas from Cowpea beetle for even after 6 months after treatment and not for oil effect In percentage of germination even after six months of treatment. Maina and Lale (2004) showed that adult does not appear after two months of treatment four types of seeds of Neem oil beans or alsbhabh in dose 0, 16 ml/20 grams of seeds, but there were no differences between the use of 0, 4 and 8 ml/20 gm of seed.

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