SUMMARY

SUMMARY

A-Biological study:

1- Effect of temperature on the biology of *S. cerealella*:

Some biological data of *S. cerealella* were recorded at three constant temperatures of 30, 25 and 20°C and 65±5%RH. The obtained results indicated the following:

- The shortest incubation period (3.4±0.5 days) was found at 30°C and the longest (7.8±0.4 days) at 20°C.
- The highest hatching rate (85.6±3.9%) was obtained at 25°C, while lower values (74.8±9% and 69.8±4.8%) were found at 30 and 20°C, respectively.
- The longest pre-oviposition periods and post-oviposition periods were recorded at 20°C, while the shortest periods at 30°C.
- Adult longevity was decreased with increasing the temperature, whereas, the shortest longevity (6.7±1.4 days) was detected at 30°C, and the longest (9.6±0.5 days) at 20°C.
- The mean number of eggs laid per female was 134; 176 and 223 eggs at 20, 25 and 30°C, respectively, indicating that the highest number of insect eggs was laid at higher temperature (30°C).

1.1. Effect of temperature and type of food on developmental period of *S. cerealella*:-

The results revealed that the incubation period of eggs didn't affect by the type of food, when reared on wheat or maize grains, but it affected by temperature as mentioned above.

On the other hand, larval-, pupal- and total developmental periods, adult longevity and total life cycle detected on wheat grains were obviously shorter than those on maize grains. These values were temperature-dependent, whereas they were longer at lower temperature (20°C) as compared with higher temperature (30°C).

1.2. Effect of type and quantity of food on number of emerged moths at 28±1°C and 65±5%RH.

Results showed that *S. cerealella* was affected by the type and quantity of food. The amount of food consumed by the larvae and number of emerged moths were greater on wheat than maize grains. This result indicated that *S. cerealella* prefers wheat grains more than maize grains as insect food.

B-Toxicological study:

1- Toxic activity of some insecticides against *S. cerealella*:

The efficacy of the botanical insecticide Neemazal 5%EC, the organophosphorus insecticides, *i.e.* Malathion

57%EC and Actellic (pirimiphos-methyl) 50% EC was evaluated in the laboratory at 28±1°C and 65±5%RH against *S. cerealella* infestation. Two different treatments were conducted. In the first one, treated grains were exposed to 4 pairs of moths, while in the other one, the treated grains were infested with 100 eggs in each replicate. Inhibition rates of the resulted moths were considered as mortality rates.

The obtained results showed that, the toxic activity of the different tested insecticides in the two treatments was concentration –dependent, whereas the inhibition rates of moth emergence increased with the increase of concentration. Also, it was found that the lethal concentration values required to achieve 95% reduction in moth emergence resulted from moths treatment were 239, 6.7 and 3.94 ppm for Nemmazal, Malathion and Actellic, respectively.

The corresponding values in eggs treatment were 374, 7.3 and 1.4 ppm, respectively. These data indicate clearly, that Actellic was the most effective, followed by Malathion, while Neemazal was the least effective against *S. cerealella* infestation.

2- Bioactivity of certain plant extracts as grain protectants against *S. cerealella*:

The acetone and petroleum ether extracts of the seeds of Dill (*Anethum graveolens* L.); Black pepper (*Piper nigrum*

L.); Cumin (*Cumminum cyminum* L.), Lupine (*Lupinus termis*) and Clerodendron (*Clerodendron inerme*) leaves were evaluated in the laboratory at 28±1°C and 65±5%RH against *S. cerealella* infestation.

The results indicated that the bioactivity of the tested extracts was concentration-dependent, whereas, the inhibition rates of moths resulted from eggs or moths infestation increased obviously with the rise of concentration. Meanwhile, the bioactivity of all tested extracted was relatively greater to moths infestation than eggs.

Based on the LC_{95} values, the results revealed that seed extracts of Dill were the most effective followed by Black pepper and Cumin, while the extracts of Lupine seeds and Clerodondron leaves were the least effective against *S. cerealella* infestation.

Thus, it could be recommended to use the seeds extracts of Dill, Black pepper and Cumin as grain protectants against *S. cerealella* infestation in the frame of an integrated pest management program.