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Title of Thesis: Ecological Studies and Effect of Some Alternative Pesticides on
Some Grasshoppers at Fayoum Governorate.

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ABSTRACT

This work concerned with qualitative and quantitative survey of the grasshoppers collected weekly during two successive years (Jan ٢٠٠٦-to Jan ٢٠٠٨) from garden weeds and one season (summer ٢٠٠٨) from rice plants cultivated in two locations; isolation of entomopathogenic fungi from dead and moribund collected grasshoppers. Studying the effect of some alternative pesticides two plant extract oils (garlic and sweet marjoram) and two entomopathogenic fungi on the ٤th nymphal instar of *schistocerca gregaria*, compared with the recommended chemical insecticides, Dursban. Seventeen grasshopper species were obtained from garden weeds and nineteen species from rice plants, among them, ١٠ species were obtained from weeds and rice. *i.e.* twenty six species of grasshopper were collected from garden weeds and rice plant.

- Grasshoppers were collected weekly of the mentioned locations and dates, identified and classified into ٣ groups as their annual counts / ٢٠ sweeping groups (Predominant = >٥٠٠ individuals, Median = ١٠٠- <٥٠٠ individuals and Rare = < ١٠٠ individuals).
- Relationship between weekly and seasonal count of each group; and some weather factors (max. and min. temp. and R.H.%) were determined by using simple correlation and regression coefficients.
- Counts for the species of all mentioned groups were recorded all the year round on weeds and all period of the rice plants growing at both mentioned locations. However, the populations increased gradually during the successive weeks of study to record the higher counts, in general, during Sept. or Oct. On weeds, for all groups, on period of activity was observed during the period extended from June until Nov.

- Statistical analyses indicated, in general, that the experimented weather factor affected significantly on annual and seasonal population of each of grasshoppers groups. However, such effects were either positive on populations of grasshoppers collected from weeds or negative on those collected from rice plants.
- Four entomopathogenic fungi, *Beauveria bassiana*, *Aspergillus flavus*, *Aspergillus sp*, *Pencillum sp* were isolated from insect dead and moribund collected grasshoppers.
- Studying toxicity of chemical insecticide, Dursban and two plant essence oils, Garlic and sweet marjoram indicated the calculated LC₅₀ values were in respective, 2,99, 61.9,030 and 14080,89 ppm., with toxicity index of 100, 0.049 and 0.021, respectively. The determined slope of the toxicity lines were, 2.67, 2,3 and 8,7, respectively.
- By using the entomopathogenic fungi, *B. bassiana*, determined LC₅₀ and LC₉₀ of *S. gregaria* 5th nymphal instar after 3 and 6 days of treatment were, 9,26x10⁻⁷ & 2.6x10⁻⁶; and 4,64x10⁻⁷ & 9,43x10⁻⁶, respectively; with toxicity slope values of 0.88 and 0.00, respectively.
- By using the entomopathogenic fungi, *Talaromyces flavus*, determined LC₅₀ and LC₉₀ of *S. gregaria* 5th nymphal instar after 3 and 6 days of treatment were, 3,42x10⁻⁷ & 1,3x10⁻⁶; and 2,44x10⁻⁶ & 8,10x10⁻⁶, respectively; with toxicity slope values of 0.81 and 2,44, respectively, with toxicity index of 100 and 36,93 of *T. flavus* and *B. bassiana* after 3 days, while 100 and 0,26 after 6 days.

KEY WORD: Grasshoppers – Survey – Ecology - *schistocerca gregaria* – Alternative pesticides – Entomopathogenic fungi – Plant extract oils – Pesticides.