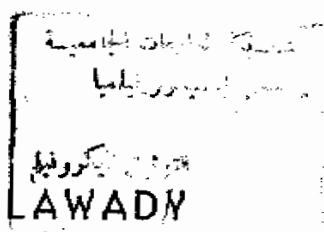


ECOLOGICAL STUDIES ON CEREAL APHIDS IN EGYPT

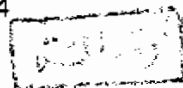
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A thesis submitted in partial fulfillment of
the requirements for the degree of

MASTER OF ENVIRONMENTAL SCIENCES

FROM

Department of Agricultural Sciences
The Environmental Studies and Researches
Institute

Ain Shams University

1995

52157



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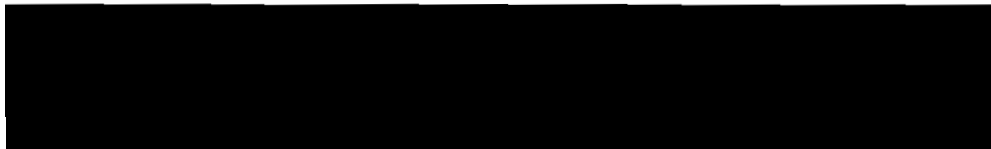
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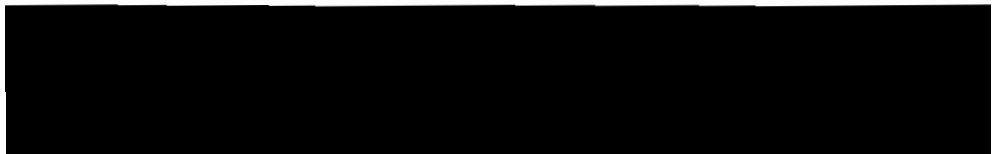
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Bird-cherry oat aphid, *Rhopalosiphum padi* (L.) was the dominant species found to infest wheat plants. The most common predator associated with this aphid species was *Coccinella undecimpunctata* L. throughout two successive seasons (1991-92 & 1992-93) at Sids, Beni Suef Governorate.

Seasonal abundance for the both species were more abundant during second season than first one. *R. padi* began to infest wheat plants after 7-8 weeks from sowing date. Aphid infestation started with few numbers of alate forms on the last week of January where wheat plants at seedling establishment, tillering and shooting stages. Then population increased gradually till reached its maximum activity on the last week of March, where wheat plants at the end of flowering stage. In the meantime, the seasonal abundance of coccinellid predator was in harmony with aphid. Afterwards, both species decreased gradually and disappeared completely on the end of April, where wheat plants at ripening stage.

Simultaneous effect of five ecological factors (one biotic + 4 abiotic) on the seasonal fluctuation of *R. Padi* were investigated throughout the two seasons. Results revealed that populations of *R. padi* and *C. undecimpunctata* were positively and significantly correlated with each other. Also, the weekly maximum and mean temperature were positively effected on the corresponding weekly mean of aphid population, but correlation values were insignificant. On contrary, weekly, mean percentage of relative humidity showed negative insignificant effects on aphid population through the two seasons.

The combined effects of the three main ecological factors, i.e. weekly mean number of predator (biotic), weekly mean temperature and weekly mean percentage of relative humidity (abiotic); as a group, on

seasonal fluctuation on the population of *R. padi* were effective by 43.31% during 1991-92 and 64.93% during 1992-93. The other remain percentage probably due to the phenology of wheat plants.

Effects of adding four rates of nitrogen fertilizer (40, 70, 90 and 120 units/fed.) to wheat plants and their response to infestation with *R. padi* were investigated. Results, revealed that wheat plants which received 90 or 70 (N) units/fed. harboured the highest aphid population; while those received 40 or 120 (N) units/fed. harboured less or moderate population. These phenomena probably due to that wheat plants which received moderate rates of nitrogen fertilizer (70 or 90), the plant sap provided aphid with accessible amounts of amino acids which are necessary for rapid multiplication. On the other hand, wheat plants which received the lowest rate of nitrogen (40) resulted plants with light green colour, reducing tillering and plants were shorter and wheat plants were unfavourable for aphid multiplication. Wheat plants which received the highest rate (120) probably produced substance (s) which acts as a deterrent aphid from probing or may be toxic for aphids.

Losses a assessment of five yield components of wheat plants due to *R. padi* infestation were estimated where results indicated that grain yield could be used as a parameter to estimate the loss assessments. Infestation with *R. padi* caused 9.32% and 9.79% reduction in grain yield throughout the two seasons.

Key Words:

Rhopalosiphum padi (L.), *Coccinella undecimpunctata* L.; seasonal abundance, Ecological factors, Biotic and Abiotic factors, Nitrogen fertilizer, Loss assessment, Grain yield, Yield components, Wheat.

ACKNOWLEDGMENT

The writer wishes to express her sincere appreciation and gratitude to prof. **Dr. Abdel Rahman H. Amin**, Professor of Economic Entomolgy Plant protection Dept., Faculty of Agriculture, Ain Shams University for his keen supervision, valuable advice and ecouragment throughout the course of this investigation as well as preparing the manuscript.

Also sincere thanks to members of Wheat Research Dept., Agric Research Center, specially **Dr. Enayat H. Ghanem** and **Dr. Abdel Ghani Mostafa**, sinior researcher for their sincere guindance and help throught present works.

Thanks also due to **Dr. Magdy El-Hariry** and **Dr. Goda El-Defrawy** at Aphid Research Department protection Institute for their assistance in field experimental design and aphid sampling techniques.



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