## SUMMARY

I. Ecological Studies :

1. Preference of the potato tuber moth to solanaceous crops :

Laboratory experiments were carried out to determine the preference of the potato tuber moth to potato, tomato, eggplant and pepper leaves. Results obtained showed that the insect's preference was for potato, tomato, eggplant and pepper; respectively; and the pepper infestation were negligible.

2. Susceptibility of various potato varieties to potato tuber moth P. operculella :

Field studies on five potato varieties were carried out at the Experimental Station of the Faculty of Agriculture at Moshtohor, Qalyubia during the years 1982 and 1983 to determine infestation degree of P. operculella on the potato varieties (Kondor, Gracia, Renska, Monalisa and Vulkano).

Results obtained could be summarized as follows :

2.1. Infestation of the foliage :

a. Severe level of infestation : Monalisa var.

b. Moderate level of infestation : Renska and Vulkano varieties.

c. Light level of infestation : Kondor and Gracia varieties.

2.2. Tubers infestation :

a. Moderate level of infestation : Vulkano and Renska varieties.

b. Light level of infestation : Kondor, Monalisa and Gracia varieties.

II. Biological Studies :

The effect of rearing P. operculella-larvae on the tubers of potato , tomato and eggplant fruits on the biological aspects was studied for 2 generations and under four temperature 19.6, 24.5, 29.4 and 34.3 $^{o}$C and 68 % R.H.

There were significant difference between means of the incubation periods, larval, prepupal and pupal stages. Shortest durations were obtained when the larvae were reared on potato tubers, followed by tomato and eggplant fruits.

Results obtained induced significant difference between means of pupal weights for larvae reared on different hosts. The maximum pupal weight was associated with the larvae reared on potato tubers, while the minimum one was obtained by eggplant larval feeding. Female pupal weights were higher than males when the larvae were fed on the three host plants, at different temperatures.

On the adult stage; no significant difference were found between means of the preoviposition periods. The shortest duration was obtained from moths resulted of larvae fed on potato tubers, followed by those of larvae fed on tomato and eggplant fruits, respectively. Statistical analysis of the data concerning the oviposition and post-oviposition periods, indicated insignificant difference between means.

Longest adult life span were exhibited by individuals reared on potato tubers, while shortest ones resulted from those reared on eggplant fruits. Female longevity was longer than male for larvae reared on the three tested hosts at different temperatures.

The lowest number of eggs was obtained by females of larvae reared on eggplant fruits, whereas the highest number was reported for those reared on potato tubers.

The total life cycle of the individual reared on potato tubers was shorter than on the other.

The effect of the different temperatures on the various stages of P. operculella was obvious. The suitable temperature was 29.4°C for rearing the insect and for producing highly fecundities, followed by 24.5 and 19.6°C. As for 34.3°C, this temperature was considered unsuitable for surviving the various stages of the insect and giving lowest numbers of eggs/female.