SUMMARY

SUMMARY

Recently, fungal pathogens have shown considerable effect in controlling some phytophagous mites. Therefore, the present study aimed to throw light on survey of some pest mites, predators (mites and insects) and spider at El-Menofia and El-Fayoum on cotton crop. Also, laboratory bioassay and field study on the effect of different compound of biocides

(*Beauveria bassiana, Metarhizium anisopliae* and *Metarhizium flavovridae*) on *Tetranychus urticae*.

On the other hand, this study included the biological aspects of one spider species.

These results revealed the following points:

Field studied:-

1- Survey and identification:

Survey of mite pests and predator (mites and insects) and spiders in two locations in Egypt at El- Menofia and El-Fayoum from April to September during two seasons 2002-2003, was occurred.

-Non-predacious mites contained one Suborder Prostigmata which contains three families (Tetranychidae, Tarsonemidae, Tydeidae) including four genera and five species.

-The predacious mites were two Sub-orders (Gamasida, Actinedida), four families

(Phytoseiidae, Cheylteidae, Stigmaeidae, Tydeidae), seven genera and eight species.

-While predacious insects included three order (Coleoptera, Neuroptera, Hemiptera) , three families (Coccinellidae, Chrysopidae, Anthocoridae) three genera and five species.

-But the spiders study contained twelve families (Agelenidae, Araneidae, Dictynidae, Lycosidae, Gnaphosidae, Linyphiidae, Miturgidae, Philodromidae, Salticidae, Titanoecidae, Theridiidae and Thomisidae), fifteen genera and sixteen species.

2-Population dynamics of two spotted spider mites and predators inhabiting cotton plants at El-Menofia and El-Fayoum Governorates.

A-) El-Menofia

Data shown classify the natural infestation of different spider mites and predators during 2002 and 2003 seasons on cotton. The appearance of the two-spotted spider mites, *T. urticae* and *T. cucurbitacearum* occurred during all count dates. Generally, the low level of *T. urticae* and *T. cucurbitacearum* population observed in this locality occurred during middle of July and the first of May during 2002 and 2003 cultivated seasons, respectively.

The data also showed that Six predacious mites were recorded in cotton field experiment, *Amplyesius swirskii*, *A. cydnodactylon* , *A. gossipi*.

(Phytoseiidae), *Agistemus exertus* Gonzalez (Stigmaeidae), *Cheletogenes ornatus* (Cheyletidae) and *Pronematus ubiquitus* McGreegor (Tydeidae).

The peak of predacious mites on cotton at El-Menofia governorate was observed as 140 and 145 predacious mites during first of August 2002 and 2003, respectively. May 1st2002 and all May 2003 representing the disappearing of the predacious mites.

Biweekly counts of the predatory insects on cotton plants at El-Menofia Governorate indicated that the predacious insects are well known as very active consumers of spider mites were found throughout the two years of study in moderate numbers.

In this study, the predacious insects were belonging to families Chrysopidae. Coccinellidae and Anthocoridae. Also, *Coccinella undecimpunetata* L.,

SUMMARY ----------

C. septumpunetata Dinheyer., *Orius tristicolor* (White), *Chrysopella vularis* Schm and *Orius laevigatus* (Fieb)were the dominant collected insects on cotton plants at El-Menofia governorate.

Observation of the spiders represented on cotton plants, their numbers were small in comparison with spider mites and predators during the two seasons under study.

The highest level of population of the collected true spider was shown during mid of June of the two seasons i. e. 55 and 55 during 2002 and 2003 cotton, seasons, respectively.

Statistical analysis using F- test show there is no significant deference between the two seasons.

Data show the changes in the population of *T. urticae* in relation to the change of other biotic and a biotic factor. The analysis shows a positive relation (correlation) between each of maximum temperature & minimum temperature and *T. urticae* population. However, the all tested factors affected negatively on *T. urticae* population.

B-)El-Fayoum

The half monthly count data for different arthropods in El-Fayoum governorate revealed that the infestation was observed for mostly sampling dates except for predacious mites and true spiders which were absent during May 2002 and observed as 6 spiders only during the middle of May 2003 for spiders.

The beginning of July harbored the highest level of *T. urticae* 95 and 92 during 2002 and 2003, respectively, where the peak was observed for predacious mites during middle and first of July i. E. 60 and 64 mites, respectively

The spider mite, *T. cucurbitacearum* was absent from cotton fields at El-Fayoum governorate.

SUMMARY ----------

Also, the predacious insects which belonging to the same families mentioned before in El-Menofia governorate reached to the highest abundance during the beginning of August, 141 and 138 individuals, during 2002 and 2003, respectively, and for spiders during the middle of July of the two tested seasons, respectively.

The predacious mites which colleted were *A. swiriski*, *A. Cydnodactylon, N. longispinosus*, *Agistemus exertus* and *Pronematus ubiquitus*. Their peaks observed at first of August of the two seasons i.e. 136 and 141 during 2002 and 2003, respectively.

The commonest collected true spider species were belonging to families Lycosidae, Linyphiidae and Salticidae .The spiders were found on cotton plants during most dates of the study seasons. Inspections of plants indicated that the arachnids were almost absent from cotton fields during the first count of the study (first of May).The observed peak of spiders population at El-Fayoum governorate was noticed in middle of July i.e. 36 and 44 individuals during 2002 and 2003, respectively. Statistical analysis of given data using F-test showed that there is no significant differences between the two seasons at the same region. The obtained results showed that the predacious mites, insects and spiders were recorded on cotton during the investigation in the study periods were similar to that obtained at El-Menofia governorate but in smaller number.

3-Field experiment

-Field experiment was carried out at Giza experimental station during the season 2003 to evaluate some environmentally safe compounds in controlling spider mite *T.urticae* on cotton plants. These compounds were *M. anisoplae, M. flavovridae,* and *B. bassiana* .This studs revealed that *M. flavovridae* exhibited the highest initial kill activity against the motile stages of *T. urticae* (95.6%), while the *M. anisoplae* was the lowest (72.2%).

Laboratory studied :-

1-Compounds of bioassay such as *Beauveria bassiana*, *Metarhizium anisoplae*, and *M. flevovridae* were used under laboratory conditions at 30±2°C and 95±5R.H. at the different concentration.

M. flevovridae (3.4×10^3, 1.7×10^3, 0.85×10^3, 0.425×10^3 and 0.213×10^3), *M. anisopilae* (64×10^3, 32×10^3, 16×10^3, 8×10^3 and 4×10^3), *B. bassiana* (5.2×10^3, 2.6×10^3, 1.3×10^3, 0.65×10^3 and 0.325×10^3) concentrations against adult and immature of *T. urticae*.

M. anisoplae was the highest pathonogenicity compared with *M. flavoridae* and *B. bassiana.*

The calculated LT_{50} and LT_{90} were (5.09, 4.78) and (20.9, 11.8) days for adult and immaturs or *T. urticae* respectively. The calculated LC_{50} and LC_{90} for adult and immaturs were (331.31×10^3, 4.25×10^3) and (864.31×10^3, 8.98×10^3) respectively.

2-Biological aspects of the spider *Nurscia albomaculata* at 30 ^{0}C and 60-70% R.H.

- The first spiderlings till third one were fed on the adult of two spotted spider mite, *T. urticae* while from the fourth spiderlings till the adult stage fed on the larvae of *Spodoptera littoralis*.

- The developmental stages of this species were 6 spiderlings for female and male respectively.

- Total immature longevity for female was 206.5±69.2 while 135.5±60.9 days for male respectively.

- Female consumed from first to third spiderlings 3915±176 adult stage of *T. urticae* while the male consumed 3166±197 respectively.

- Female consumed from fourth to adult stage 454±41 of *Spodoptera littoralis* larvae while the male consumed 343.3±22.5 of the same prey respectively.

- The duration of the first instar was longer and then decreased during the second and third instars.

SUMMARY ----------