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## SUMMARY

Cotton leafworm, *Spodoptera littoralis* is one of the most important insect pest attacking cotton in Egypt. For long time, this insect is controlled with conventional insecticides. To avoid extensive use of chemical insecticides, the current study was focused on selecting proper IPM programme to control this pest.

For these reasons the field and laboratory experiments were conducted during 1999 and 2000 cotton seasons at Kafr El-Sheikh governorate to evaluate some new methods to control cotton leafworm.

The obtained results could be summarized as follows:

### 1. Population dynamics of leafworm:

There are three sharp peaks on cotton during both seasons. The first peak started in May and extended until the late of June, the second peak started in the third week of July and extended from first week of August to third one started in the late of August and extended to the first week of September.

### 2. Population dynamics of predators:

#### 2.1. Lady-bird beetles, *Coccinella* spp:

This predator had two peaks of population abundance for each of cotton season, the first peak occurred during June and other during September.

#### 2.2. Lady-bird beetles, *Scymnus* spp.:

Two peaks of abundance were observed for *Scymnus* spp. population during 1999 cotton season within June and July Months. The

population density during 2000 cotton season was observed one peak only during June.

**2.3. Aphid lion, *Chrysoperla carnea*:**

The population density of aphid lion was observed and recorded three peaks of abundance during June, August and September within 1999 and 2000 cotton seasons.

**2.4. Rove beetles, *Paederus alfieri*:**

The rove beetles were the dominant predators and the population occurred throughout the whole period of cotton season recording two peaks of abundance during July and August in both seasons. This insect occupied the second order after anthocorid bug insect.

**2.5. Anthocorid bug, *Orius* spp.:**

The population of the bug had one peak only during June in both seasons. Although, this predator had one generation, it is dominate predators.

**2.6. Syrphids:**

The population density of Syrphids was considerably low during the two seasons which it occupy the late order of predators. Its, recorded three peaks during July, August and September within two seasons.

**3. Efficiency of IPM programmes on *Spodoptera littoralis***

**3.1. Efficiency of IPM programmes on *Spodoptera* egg-masses:**

The results observed that the chemical insecticide is the most efficient reduction (56.96%). The treatments (Mycogen, Mimic and pheromone) reduced the deposit egg-mass (21.6, 18.7 and 16.7%), respectively. This result clear that the percent reduction of deposited egg-

masses for three factors of integrated control which were remember, before, non different significantly between its.

The results also revealed that the NPV treatment non reduced the deposited egg-masses.

### 3.2. Efficiency of IPM programmes on *Spodoptera* larvae attacking cotton leaves:

The data showed that the treatment of insecticides reduced maximum level (63.23%). However, the treatments Mycogen, Mimic and Pheromone treatments reduced the number of larvae (15.88, 20.88 and 16.05), respectively. Moreover, therefore no significant differences between them. The data also showed that the viral treatment did not effect on the level of larval infestation.

### 4. Efficiency of some methods on natural enemies:

All tested insecticides significantly reduced the population densities of all tested predators. The results showed that the highest reduction of predators were 29, 35.8, 25.19, 38.59, 27.37 and 35.1% for *Ch. carnea*, *Coccinella* spp., *Orius* spp., *P. alferii*, *Scymnus* spp. and Syrphids.

The average reduction of predators as following 15.4, 12.5, 2.07, 4.12, 4.27 and 8.58% for *Ch. carnea*, *Coccinella* spp., *Orius* spp., *P. alferii*, *Scymnus* spp. and Syrphids, respectively, as result exposure for NVP biocides and percent reduction recording 12.55, 13.5, 5.08 + 3.42, 6.45 and 11.2% for Mycogen.

The total reduction of predators as resulting exposure of synthetic pheromone of *S. littoralis* were 5.8, 3.6, 0.35, +5.7, 1.7 and 6.22% for

*Ch. carnea*, *Coccinella* spp., *Orius* spp., *P. alfierii*, *Scymnus* spp. and Syrphids.

**5. Total parasitism in fields treated with chemical and non-chemical treatments:**

The data showed that the parasitism on *S. littoralis* larvae collected from plots treated with different applications. In 1999 cotton season the highest total parasitism was detected on larvae collected from fields treated with sex pheromone (25.05%), followed by NPV (24.05%), Mycogen (23.91) and untreated plots (23.89%). The least total parasitism was found to be that of curacron (11.78%) and mimic (13.65%). Regardless of treatments, parasitism of *Microplitis* was greatly higher (13.67%) than those of other parasitoids (1.24-2.48%). Statistical analysis revealed no significant differences in parasitism of different treatments when *Periboea* and *Chelinus* were considered. The differences of parasitism among different treatments were particularly evident in case of *M. rufiventris*.

During the cotton season, 2000, the total parasitism proved to be highest in Mycogen plots (21.68%), followed by NPV (20.13%) and sex pheromone (19.63%). The least levels of parasitism were those of mimic and curacron; 14.11 and 14.53%, respectively. As in the previous season, *Microplitis* was superior (11.95%) compared to other parasitoids (1.46-1.79%). No significant differences in parasitism due to different treatments were detected for *Zelee*, *Tachina* and *Chelionus*.