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5. SUMMARY

The present study was carried out in Greater Cairo area which includes Cairo Governorate and certain zones from both Giza Governorate and Kaliobeya Governorate. The experiments were planned and conducted throughout the period extending from Oct, 2008 to Dec. 2010.

our study included a survey of insect pests associating with Lawns planted in previously mentioned areas, in addition to accompanied natural enemies. The investigation, also comprised studying the population fluctuation of the most prevailing and injures pests on lawn and the weather factors affecting them.

Obtained data can be summarized as follows:

I- Survey study :

Throughout two year, 26 insects species belonging to 20 Families and 8 orders were observed and recorded (Table 3) at Nasr City, Japanese Garden, El-Zohria Garden, El-Orman Garden, 6th October City and Smart village.

Lepidopterous species were the first in rank, it represented by 7 species followed by Homopterus species (5 species). While each of Coleoptera, Hymenoptera and Orthoptera, came in third degree (3 species for each). However, both Dictyoptera and Diptera occupied while Dictyoptera one species .

Surveyed species can be classified according to their status into the following groups:

Harmful insects observed on lawns during the tested period (2 successive years) are

1- **Order : Lebidoptera** : seven Lebidopterous species were recorded on lawns, they are :

- *Deudorix livia* (Fam. : Hesperidae)
- *Agrotis ipsilon* (Fam. : Noctuidae)
- *Spodoptera exigua* (Fam. : Noctuidae)
- *Vanessa cardui* (Fam. : Nymphalidae)
- *Theclinesthes onycha* (Fam. : Lycaenidae)
- *Pieris rabae* (Fam. : Pieridae)
- *Pachyzancla* (*Herpetogramma*) *licarsisalis* (Fam. : Pyralidae)

2- Order : Homoptera : five Homopterous species were recorded on lawns, they are :

- *Schizaphis graminum* (Fam. : Aphididae)
- *Cicadulina bipunctella* (Fam. :Cicadellidae)
- *Empoasca decipiens* (Fam. :Cicadellidae)
- *Odonaspis ruthae* (Fam. : Diaspididae)

-*Antonina graminis* (Fam. : Pseudococcidae)

3-**Order : Coleoptera** : one Coleopterous species were recorded on lawns, they are :

-*Pentodon bispinosus* (Fam.: Scarabaeidae)

4- **Order : Orthoptera** : three Orthopterous species were recorded on lawns, they are :

- *Aiolopus strepens* (Fam.: Acrididae)
- *Omocestus viridulus* (Fam.: Acrididae)
-*Gryllotalpa gryllotalpa* (Fam.: *Gryllotalpidae*)

B - Beneficial insects

Were surveyed Beneficial insects were presented as predaceous and visitor insects by ten insect species were recorded on lawns as beneficial species to lawns plants. These insect species are belonging to 7 Families and 5 orders .

Beneficial insects observed on lawns during the tested period (2 successive years) are

1-**Order : Coleoptera** : two Coleopterous species were recorded on lawns, they are :

- *Coccinella sepetmpunctata* (Fam. : Coccinellidae) - predator
- *Hippodamia convergens* (Fam. : Coccinellidae) – predator

2-**Order : Hymenoptera** : three Hymenopterous species were recorded on lawns, they are :

- *Cataglyphis bicolor* (Fam. : Formicidae)
- *Monomorium pharaonsis* (Fam. : Formicidae)
- *Vespa orientalis* (Fam. : Vespidae)

3-**Order : Dictyoptera** : two Dictyopterous species were recorded on lawns, they are :

- *polyphaga aegyptiaca* (Fam.: Blattidae)
- *Calidomantis savegnyi* (Fam.: Mantidae)

4-**Order : Diptera** : two Dipterous species were recorded on lawns, they are :

- *Calcitrons* L. (Fam.: Muscidae)
- *Musca spp.* (Fam.: Muscidae)

5-**Order : Odonata**: two Odonatous species were recorded on lawns, they are :

- *Ischnura senegalensis* (Fam.: Agrionidae)

II. Population studies :

The population fluctuations of the three most dominant insect pests on lawns were studied.

The obtained results can be summarized as follows:

1. Population fluctuation of *Pentodon bispinosus* adults and larvae on *P. Vagenaton* plant during 2009 and 2010 seasons:

During 2009-2010 season the seasonal activity of *Pentodon bispinosus* (Coleoptera: Scarabaeidae) infesting lawns was monitored with ground traps and direct counting under lawns for two successive years at Nasr City – Cairo Governorate. This

location cultivated with *Paspalum vagenatum*. The obtained results revealed the presence of 2 generations in the year for *P. bispinosus*, The two overlapping generations occurred in early and end of summer. The seasonal activity of *P. bispinosus* correlated closely with weekly means of max. & min. temperatures and soil temperature in the two years whereas while relative humidity (%R.H.) correlated poorly with insect activity in two years.

The amount of variability in *P. bispinosus* population was 51.16 - 52.47% and larvae population was 67.67-69.96% on *P. vagenatum* plants; in the two years, respectively.

2. Population fluctuation of *Pentodon bispinosus* adults and larvae on *Cynodon dactylon* plants during 2009 and 2010 seasons:

During 2009-2010 season the seasonal activity of *Pentodon bispinosus* (Coleoptera : Scarabaeidae) infesting lawns was monitored with ground traps and direct counting under lawns for two successive years at 6 October City - Greater Gize Government. This location cultivated with *Cynodon dactylon* . The obtained results revealed the presence of 1-2 generations in the year for *P. bispinosus*. may be one or two overlapping generations occurred in end of summer according to the environmental conditions of Giza Governorate. The seasonal activity of *P. bispinosus* correlated closely with weekly means of

max. & min. temperatures and soil temperature in the two years whereas relative humidity (%R.H.) correlated poorly with insect activity in two years.

The amount of variability in *P. bispinosus* population was 84.45 - 51.18% and larvae population was 70.54 - 45.65 % on *C. dactylon* plants; in the two years, respectively.

3. Population fluctuation of *Agrotis ipsilon* moths on *Paspalum Vagenatom* during 2008-2009 and 2009-2010 seasons:

Results of the population fluctuation of *Agrotis ipsilon* on the lawn (turf grass) *Paspalum Vagenatom* plants during 2008-2009 and 2009-2010 seasons. the seasonal activity of *A. ipsilon* (Lepidoptera : Noctuidae) infesting lawns was monitored with light traps for two successive years in one location at Nasr City – Cairo Governorate. This location cultivated with *Paspalum vagenatum* .

The obtained results revealed it was one - three generations in the year for *A. ipsilon* infesting on *P. vagenatum* plants, two overlapping generations occurred in spring and early summer. The seasonal activity of *A. ipsilon* correlated closely with weekly means of max. & min. temperatures and wind velocity (m/ sec.) in the two years whereas while relative humidity (%R.H.) correlated poorly with insect activity in two years. The changes in the weekly counts of moth population referred to the single effect

of each climatic factor, especially temperature.

The amount of variability in moth population was 65.03-62.61% on *P. vagenatum* plants; in the two years, respectively.

4. Population fluctuation of *Agrotis ipsilon* moths on *Cynodon dactylon* during 2008-2009 and 2009-2010 seasons:

Results of the population fluctuation of *Agrotis ipsilon* on the lawn (turf grass) *Cynodon dactylon* plants during 2008-2009 and 2009-2010 seasons. the seasonal activity of *Agrotis ipsilon* (Lepidoptera : Noctuidae) infesting lawns was monitored with light traps for two successive years at 6 October City - Greater Gize Government . This location cultivated with *C. dactylon* .

The obtained results revealed the presence of one - two generations in the year for *A. ipsilon*, two overlapping generations occurred in Winter and early summer. The seasonal activity of *A. ipsilon* correlated closely with weekly means of max. & min. temperatures and wind velocity (m/ sec.) in the two years whereas while relative humidity (%R.H.) correlated poorly with insect activity in two years.

The amount of variability in moth population was 54.99-50.62% on *C. dactylon* plants; in the two years, respectively.

5. Population fluctuation of *Pachyzancla licarsisalis*:

Conducted the current study, the Smart village in Giza Governorate for two years (2008/2009 & 2009/2010) in order to study the seasonal activity of the insect *Pachyzancla licarsisalis*

infesting lawns in Smart village where they were monitoring the activity of insect in three lawns using light traps

The seasonal activity of *Pachyzancla* (*Herpetogramma*) *licarsisalis* (Walk.) (Lepidoptera: Pyralidae) infesting lawns was monitored with light traps for two successive years in three locations at Smart Village, Giza Governorate. The 1st location cultivated with *P. vagenatum* (ever green plant); the 2nd location cultivated with *L. Perenne* (winter grass) mounted on *P. vagenatum* and the 3rd ones cultivated with *L .perenne* (winter grass). The obtained results revealed three generation a year for *P. licarsisalis* either on *P. vagenatum* plants or on *L. Perenne* (winter grass) mounted on *P. vagenatum* plants, two overlapping generation occurred in spring and early summer and one generation in autumn. On the other hand, *P. licarsisalis* has 2-3 generations on *L. perenne* (winter grass) plants one generation in autumn and may be one or two overlapping generations occurred in spring and early summer according to the environmental conditions of Giza Governorate. The seasonal activity of *P. licarsisalis* correlated closely with weekly means of max. & min. temperatures and soil temperature in the two years whereas relative humidity (%R.H.) correlated poorly with insect activity in two years. The changes in the weekly counts of moth population referred to the single effect of each climatic factor, especially soil temperature. The amount of variability in moth population was

40.0 - 51.1% on *P. vagenatum* plants; 58.2 - 60.7% on *L. Perenne* (winter grass) mounted on *P. vagenatum* plants and 12.7- 35.6% on *L. Perenne* (winter grass) plants in the two years, respectively.