DJAS., Vol. (3) (II): (62 -69) (2024)

Damietta Journal of Agricultural Sciences
http://publication.du.edu.eg/journal/ojs302design/index.php/agr/index
ISSN: 2812-5347(Print)- 2812-5355 (Online)

Effect of different host plants on the main insect pests attacking the ornamental plants and their associated predators at Damietta district.

El Kady, H.A.*; S. S. Awadalla; T. E. Atta* and N. S. Essam***
***Plant Protection Dept. Fac. of Agric. Damietta Univ., Egypt.** hafezelkady@du.edu.eg
**** Economic Entomology Dept. Fac. of Agric. Mans. Univ., Egypt.**
* **Corresponding author E-mail**: nwrbr764@gmail.com

ARTICLE INFO
Keywords: ornamental plants, Mealybug species, Scale insects, Predatory insects

ABSTRACT

The present studies were carried out in the experimental farm belonging to the Faculty of Agriculture, Damietta University, Egypt and several areas in Damietta Governorate to evaluate the population abundance of the main insect pests attacking some ornamental plants and their associated predators during the two successive years, 2021/22 and 2022/23. The obtained results revealed that *Planococcus citri* (Risso) attracted to *Ficus nitida* trees as a host plant during the two years of study. Also, *Icerya aegyptiaca* (Douglas) attracted to four host plants among them *F. nitida* trees was the most favorable host plant followed by *F. benjamina* during the two successive years with Significant differences. Meanwhile, *Icerya Purchasi* (Mask.) attracted to two host plants and *F. nitida* was the most favorable host followed by *F. benjamina*. Moreover, *Icerya Seychellarum* (Westwood) attracted to four host plants with *F. nitida* was the most preferred host. Meanwhile, *Maconellicoccus hirsutus* (Green) attacked *Hibiscus rosae* only. Also, *Chrysomphalus ficus* (Ashmead) attacked *F. nitida* only but *Aonidiella aurantii* (Maskell) attracted to two host plants among them *F. nitida* was the most preferred host followed by *F. benjamina*. Meanwhile, *Mycetaspis personata* (Comstock) and *Ceroplastes floridensis* (Comstock) attracted to *F. nitida* trees during the two years. Also, *Saissetia oleae* (Bern.) and *Pulvinaria psidii* (Maskell) attracted to *F. benjamina* as a host plant during the two years of study. Meanwhile, *Nezara viridula* (L.) and *Earias insulana* (Boisd.) attracted *Hibiscus rosae* during the two years of study. Regarding to the predatory insects, results revealed that *Rodalia cardinalis* (Mulsant) attractive to three host plants and *F. nitida* was more favorable than *F. benjamina* and *H. rosae*. Also, *Coccinella septempunctata* (L.) attracted to three host plants among them *F. nitida* was the most preferred host followed by *Acalypha marginata* and *A. wilkesiana*. Meanwhile, *Orius* sp. attracted to five host plants and *F. nitida* was more favorable than *F. benjamina*, *H. rosae*, *A. marginata* and *A. wilkesiana*. Also, *Scymnus interrputus* (Goeze) preferred *F. benjamina* more than *hibiscus rosae*. *Cydonia vicina isis* (Mul.) attracted more to *A. marginata* than *A. wilkesiana*. Further, *Syrphus corolla* (Fab.) attracted to *acalypha wilkesiana* as a host plant during the two years of study.

Introduction

Ornamental plants in the present are playing an important role in the modern life. They are cultivating for local use in garden or for medicinal purpose and perfumes extraction. Particulate matter pollution is a major concern in developed countries. Plants have some factors that affect insect behavior which that host plant quality is a key determinant of the fecundity of insects at both the individual and the population scale. **(Yerjanovich and Mamadiyoroglu 2021; Francini *et al.* 2022; Chekuri *et al.* 2020; Kingsley and Marshall 2014; Awmack & Leather 2002).** There are several serious insect pests attacking these ornamental plants, which cause serious damage and economic loss. **(Ülgentürk and Çanakçioğlu 2004; Afroze and Johri 2004; Pal and Sarkar 2009; Pencheva and Yovkova 2016; Ramadan 2011; Khan *et al* 2019).** Mealybugs affect plants by sucking sap and

their feeding can result in yellowing leaves, stunting, dieback or death of the plants. They secrete honeydew that supports the growth of black sooty mold on plant parts. **(Johari *et al.* 2021; Khan 2020; Mari *et al.* 2007; Hosseini and Hajizadeh 2011; Culik *et al.* 2013).** The Integrated Pest Management (IPM) program needs updating the information regarding the definite role of the natural enemies against this insect pests. The role of predatory insects in controlling the insect pests has been studies by several investigators **(Ballal and Verghese 2015; Ahmed and Majeed 2016; Perdikis *et al.* 2011; Schmidt *et al.* 2003; Rusch *et al.* 2010).** Therefor, the objective of the present studies were aimed to study the following: Surveying the insect pests and their predatory insects inhabiting some ornamental plants, The population density of the insect pests and their associated predatory insects attacking the ornamental plants, Evaluating the seasonality average number of the insect pests and their associated predatory insects on different host plants during the two years of study and The relationship between the injourous and associated predators on the ornamental plants during the two years of study.

Materials and methods

The present studies were carried out in the experimental farm belonging to the Faculty of Agriculture, Damietta University, Egypt and several areas in Damietta Governorate to evaluate the population abundance of the main insect pests attacking some ornamental plants and their associated predators during the two successive years, 2021/22 and 2022/23. No insecticides were applied during the two years of investigation. Five trees from the same size and same age of each ornamental plant (*ficus nitida, ficus benjamina, hibiscus rosae, acalypha marginata and acalypha wilkesiana*) were chosen. Samples were collected biweekly during the two successive years from the beginning of September 2021 till October 2023. Each sample consisted of 100 leaves and 25 branches that randomly collected from each host plant. From each tree of each host plant, 20 leaves and 5 branches (four leaves and one branch from each direction of the tree) were collected. The collected leaves and branches were taken to the laboratory in polyethylene bags to examine using binocular stereomicroscope. Costat software program (2004) was used to analyze the effect of certain weather factors on the population densities of the recorded insects **and their predators.**

Results

During the first year 2021/22:

Results arranged in Table (1) show the average number of the main insect pests attacking the ornamental plants during first year 2021/22 at Damietta district . It can be noticed that, *P. citri* attracted *F. nitida* only with an average of 18.9±0.14 indivi./sample, while *I. aegyptiaca* attacked four host plants and the highest numbers were recorded on *F. nitida, ficus benjamina, A. marginata* and *A. wilkesiana* and presented by 18.2±27.0, 17.0±27.0, 16.1±27.0 and 14.9±27.0 indivi./sample, respectively without significant differences. Meanwhile, *I. purchasi* showed preference to two host plants (*F. nitida* and *F. benjamina*) with averages of 18.3±27.0 and 15.7±27.0 indivi./sample, respectively which did not significantly differ. *Icerya seychellarum* attacked to four host (*Ficus nitida, F. benjamina, A. marginata* and *A. wilkesiana*) without significant differences between mean which were 17.0±27.0, 15.1±27.0, 14.7±27.0 and 14.1±27.0 indivi./sample, respectively. Moreover, *M. hirsutus* attracted to *H. rosae* only with an average of 18.4±2.59 indivi./sample. Also, *C. ficus* attracted to *F. nitida* only with an average of 16.4±0.82 indivi./sample. Meanwhile, *A. aurantii* attracted to two host plants and the highest attractiveness was for *F. nitida* and *F. benjamina* and presented by 15.0±27.0 and 13.6±27.0 indivi./sample, respectively without significant differences. *M. personata* also attracted to *F. nitida* only with an average of 14.5±0.82 indivi./sample. *Ceroplastes floridensis* attacked *F.nitida* only with an average of 14.5±1.22 indivi./sample, while *S. oleae* attacked *F. benjamina* only with an average of 15.2±2.04 indivi./sample. Moreover, *P. psidii* attacked *F. benjamina* only with an average of 14.2±0 indivi./sample. Also, *N. viridula* attacked *H. rosae* only with an average of 7.1±0.14 indivi./sample. Meanwhile, *E. insulana* attacked *H. rosae* only with an average of 4.7±0.82 indivi./sample.

Regarding to the predatory insects data illustrated in Table (1) show the average number of these predators associated with the main insect pests attacking the ornamental plants during first year 2021/22 at Damietta district. It can be noticed that, *R. cardinalis* attacked three host plants and the highest numbers were recorded on *F.nitida*, *F.benjamina* and *H. rosae* and presented by 8.3±27.0, 7.9±27.0 and

7.7±27.0 indivi./sample, respectively without significant differences. Also, *C. septempunctata* attacked to three host plants and the highest numbers were recorded on *F.nitida, A. marginata* and *A. wilkesiana* and presented by 7.5±27.0a, 7.3±27.0a and 6.5±27.0ab indivi./sample, respectively. Meanwhile, *Orius sp* attacked to five host plants and the highest numbers were recorded on *F. nitida, F. benjamina, H. rosae, A. marginata* and *A.* for *A. marginata* and *A. wilkesiana* and presented by 7.2±27.0a and 6.5±27.0a indivi./sample, respectively. Moreover, *S. wilkesiana* and presented by 7.0±27.0a, 6.0±27.0ab, 5.6±27.0b, 5.3±27.0b and 5.2±27.0b indivi./sample, respectively. *S. interrputus* also attacked to two host plants and the highest attractiveness was for F. *benjamina* and *H. rosae* and presented by 7.7±27.0a and 7.2±27.0a indivi./sample, respectively. *C.vicina isis* attacked to two host plants and the highest attractiveness was

corolla attacked to *A. wilkesiana* only with an average of 6.2±27.0a indivi./sample.

***Table (1) Effect of different host plants on populations (±SE) of the main insect pests that attacking some ornamental plants and their associated predators during 2021/22 season at Damietta district**

Host plant / Insects	Ficus nitida	Ficus benjamina	Hibiscus rosae	Acalypha marginata	Acalypha wilkesiana	Total±SE
Mealybug species						
P. citri	18.9±0.14	0.00	0.00	0.00	0.00	**18.9±0.14**
I. aegyptiaca	18.2±27.0a	17.0±27.0a	0.00	16.1±27.0a	14.9±27.0a	**66.2±1.17**
I. purchase	18.3±27.0a	15.7±27.0a	0.00	0.00	0.00	**34.0±1.3**
I.seychellarum	17.0±27.0a	15.1±27.0a	0.00	14.7±27.0a	14.1±27.0a	**60.9±1.03**
M. hirsutus	0.00	0.00	18.4±2.59	0.00	0.00	**18.4±2.59**
Total±SE	**72.37±0.67**	**47.8±0.78**	**18.4±2.59**	**30.1±0.57**	**29±0.33**	
Scale insects						
C. ficus	16.4±0.82	0.00	0.00	0.00	0.00	**16.4±0.82**
A. aurantii	15.0±27.0a	13.6±27.0a	0.00	0.00	0.00	**28.6±0.7**
M. personata	14.5±0.82	0.00	0.00	0.00	0.00	**14.5±0.82**
C. floridensis	14.5±1.22	0.00	0.00	0.00	0.00	**14.5±1.22**
S. oleae	0.00	15.2±2.04	0.00	0.00	0.00	**15.2±2.04**
P. psidii	0.00	14.2±0	0.00	0.00	0.00	**14.2±0**

Total±SE	**60.48±0.67**	**43.0±0.19**	**0.00**	**0.00**	**0.00**	
Other insect species						
N. viridula	0.00	0.00	7.1±0.14	0.00	0.00	**7.1±0.14**
E. insulana	0.00	0.00	4.7±0.82	0.00	0.00	**4.7±0.82**
Total±SE	**0.00**	**0.00**	**11.8±1.2**	**0.00**	**0.00**	
Predatory insects						
R. cardinalis	8.3±27.0a	7.9±27.0a	7.7±27.0a	0.00	0.00	**23.9±0.24**
C. septempunctata	7.5±27.0a	0.00	0.00	7.3±27.0a	6.5±27.0ab	**21.3±0.41**
Orius sp	7.0±27.0a	6.0±27.0ab	5.6±27.0b	5.3±27.0b	5.2±27.0b	**29.1±0.57**
S. interrputus	0.00	7.7±27.0a	7.2±27.0a	0.00	0.00	**14.9±0.25**
C.vicina isis	0.00	0.00	0.00	7.2±27.0a	6.5±27.0a	**13.7±0.35**
S. corolla	0.00	0.00	0.00	0.00	6.2±0.27	**6.2±0.27**
Total±SE	**22.8±0.53**	**21.6±0.07**	**20.5±0.18**	**19.8±0.04**	**24.4±0.09**	

Means followed by the different letters for each insect pest in a column are significantly different at 5% level of probability.

During the Second year 2022/23:

Results arranged in Table (2) show the average number of the main insect pests attacking the ornamental plants during second year 2022/23 at Damietta district . It can be noticed that, *P. citri* attracted *F. nitida* only with an average of 20.9±1.63 indivi./sample, while *I. aegyptiaca* attacked four host plants and the highest numbers were recorded on *F. nitida, ficus benjamina, A. marginata* and *A. wilkesiana* and presented by 20.3±27.0, 18.4±27.0, 18.3±27.0 and 17.0±27.0 indivi./sample, respectively without significant differences. Meanwhile, *I. purchasi* showed preference to two host plants (*F. nitida* and *F. benjamina*) with averages of 18.6±27.0 and 16.7±27.0 indivi./sample, respectively which did not significantly differ. *Icerya seychellarum* attacked to four host (*Ficus nitida, F. benjamina, A. marginata* and *A. wilkesiana*) without significant differences between mean which were 17.3±27.0, 16.8±27.0, 16.1±27.0 and 15.7±27.0 indivi./sample, respectively. Moreover, *M. hirsutus* attracted to *H. rosae* only with an average of 18.7±1.63indivi./sample. Also, *C. ficus* attracted to *F. nitida* only with an average of 17.7±2.72indivi./sample. Meanwhile, *A. aurantii* attracted to two host plants and the highest attractiveness was for *F. nitida* and *F. benjamina* and presented by 15.1±27.0 and 14.9±27.0 indivi./sample, respectively without significant differences. *M. personata* also attracted to *F. nitida* only with an average of 14.9±0.82 indivi./sample. *Ceroplastes floridensis* attacked *F.nitida* only with an average of 15.4±1.22indivi./sample, while *S. oleae* attacked *F. benjamina* only with an average of 15.6±0.14 indivi./sample. Moreover, *P. psidii* attacked *F. benjamina* only with an average of 14.8±1.36 indivi./sample. Also, *N. viridula* attacked *H. rosae* only with an average of 7.4±0.54 indivi./sample. Meanwhile, *E. insulana* attacked *H. rosae* only with an average of 5.2±0.27indivi./sample.

Regarding to the predatory insects data illustrated in Table (2) show the average number of these predators associated with the main insect pests attacking the ornamental plants during second year 2022/23 at Damietta district. It can be noticed that, *R. cardinalis* attacked three host plants and the highest numbers were

recorded on *F.nitida*, *F.benjamina* and *H. rosae* and presented by 8.6±27.0, 8.5±27.0 and 8.2±27.0 indivi./sample, respectively without significant differences. Also, *C. septempunctata* attacked to three host plants and the highest numbers were recorded on *F.nitida*, *A. marginata* and *A. wilkesiana* and presented by 8.4±27.0, 8.3±27.0 and 8.0±27.0 indivi./sample, respectively without significant differences. Meanwhile, *Orius sp* attacked to five host plants and the highest numbers were recorded on *F. nitida*, *F. benjamina*, *H. rosae*, *A. marginata* and *A. wilkesiana* and presented by 8.5±27.0a, 7.2±27.0ab, 6.8±27.0b, 6.6±27.0b and 6.5±27.0b indivi./sample, respectively. *S. interrputus* also attacked to two host plants and the highest attractiveness was for F. *benjamina* and *H. rosae* and presented by 8.0±27.0a and 7.9±27.0a indivi./sample, respectively. *C.vicina isis* attacked to two host plants and the highest attractiveness was for *A. marginata* and *A. wilkesiana* and presented by 8.0±27.0a and 7.9±27.0a indivi./sample, respectively. Moreover, *S. corolla* attacked to *A. wilkesiana* only with an average of 7.4±27.0a indivi./sample.

***Table (2) Effect of different host plants on populations (±SE) of the main insect pests that attacking some ornamental plants and their associated predators during 2022/23 season at Damietta district**

Host plant / Insects	Ficus nitida	Ficus benjamina	Hibiscus rosae	Acalypha marginata	Acalypha wilkesiana	Total±SE
Mealybug species						
P. citri	20.9±1.63	0.00	0.00	0.00	0.00	**20.9±1.63**
I. aegyptiaca	20.3±27.0 a	18.4±27.0 a	0.00	18.3±27.0 a	17.0±27.0 a	**74.0±1.17**
I. purchase	18.6±27.0 a	16.7±27.0 a	0.00	0.00	0.00	**35.3±0.95**
I.seychellarum	17.3±27.0 a	16.8±27.0 a	0.00	16.1±27.0 a	15.7±27.0 a	**65.9±0.57**
M. hirsutus	0.00	0.00	18.7±1.63	0.00	0.00	**18.7±1.63**
Total±SE	**77.1±1.27**	**51.9±0.65**	**18.7±1.63**	**34.4±0.9**	**32.7±0.53**	
Scale insects						
C. ficus	17.7±2.72	0.00	0.00	0.00	0.00	**17.7±2.72**
A. aurantii	15.1±27.0 a	14.9±27.0 a	0.00	0.00	0.00	**30.0±0.1**
M. personata	14.9±0.82	0.00	0.00	0.00	0.00	**14.9±0.82**
C. floridensis	15.4±1.22	0.00	0.00	0.00	0.00	**15.4±1.22**
S. oleae	0.00	15.6±0.14	0.00	0.00	0.00	**15.6±0.14**
P. psidii	0.00	14.8±1.36	0.00	0.00	0.00	**14.8±1.36**
Total±SE	**63.1±0.81**	**45.3±0.03**	**0.00**	**0.00**	**0.00**	
Other insect species						
N. viridula	0.00	0.00	7.4±0.54	0.00	0.00	**7.4±0.54**
E. insulana	0.00	0.00	5.2±0.27	0.00	0.00	**5.2±0.27**
Total±SE	**0.00**	**0.00**	**12.6±1.1**	**0.00**	**0.00**	

Predatory insects						
R. cardinalis	8.6±27.0 a	8.5±27.0 a	8.2±27.0 a	0.00	0.00	**25.3±0.16**
C. septempunctata	8.4±27.0 a	0.00	0.00	8.3±27.0 a	8.0±27.0 a	**24.7±0.16**
Orius sp	8.5±27.0 a	7.2±27.0 ab	6.8±27.0 b	6.6±27.0 b	6.5±27.0 b	**35.6±0.63**
S. interrputus	0.00	8.0±27.0 a	7.9±27.0 a	0.00	0.00	**15.9±0.05**
C.vicina isis	0.00	0.00	0.00	8.0±27.0 a	7.9±27.0 a	**15.9±0.05**
S. corolla	0.00	0.00	0.00	0.00	7.4±27.0	**7.4±27.0**
Total±SE	**25.5±0.04**	**23.7±0.18**	**22.9±0.11**	**22.9±0.11**	**29.8±0.19**	

Means followed by the different letters for each insect pest in a column are significantly different at 5% level of probability.

Discussion

These results are agreement with those of **Abdel-Salam *et al.* (2013)** mentioned that, *Icerya purchasi* Mask. attractive to mandarin trees as a host plant during the two years of study. Also, *Maconellicoccus hirsutus* (Green) attractive to hibiscus plants as a host plant during the two years. On the other hand, *Planococcus citri* (Risso) attractive to two host plants and guava trees was more favorable host plants followed by mandarin trees during the two successive years with significantly differences. Meanwhile, *Icerya aegyptiaca* Douglas attractive to three host plants and more favorable was the ficus trees. *Icerya seychellarum* Westwoodrecorded the highest attractiveness on guava trees followed by persimmon, ficus and mandarin during the first year and on persimmon trees followed by guava, ficus and in the last category mandarin trees during the second year of the study. Also, **Abdel-Mageed (2005)** mentioned that, *R. cardinalis* females exhibited high preferability to ficus leaves extract followed by guava and kaki extracts she added that, *I. seychellarum* on ortho plants not attacked by the predator females.

These results are agreement with those of **Abdel-Salam et al. (2013)** mentioned that, *Rodolia cardinalis* Mulsant recorded the highest attractiveness to ficus and guava trees, *Nephus includens* Kirsch found the highest attractive to guava and hibiscus plants and the lowest attractive to mandarin trees and *Chrysoperla carnea* (Steph). showed the highest attractive to guava trees. While *Scymnus coccivora* (Aiyar) recorded only on hibiscus plants associated with the pink hibiscus mealybug *M. hirsutus* during the two successive years of study. Also, **Awmack & Leather (2002)** mentioned that, responses of herbivorous insects to changes in host plant quality vary within feeder guilds. Host plant quality also affects insect reproductive strategies: egg size and quality, resource allocation to eggs, and choice of oviposition sites may be affected by plant quality, as can resorption of eggs or embryos on poor-quality hosts.

Conclusion

1- Ficus nitida attacked by the main insect pests *P. citri*, *I. aegyptiaca*, *I. purchasi* and *I. seychellarum.* Also, by *C. ficus*, *A. aurantii*, *M. personata* and *C. floridensis* .

2-The highest average number recorded by *P. citri* followed by *C. ficus* during the two years of the study.

3- The predator *R. cardinalis* recorded the highest average number on ficus nitida during the two years of the study.

4- Ficus benjamina attacked by the main insect pests *I. aegyptiaca*, *I. purchasi* and *I. seychellarum.* Also, by *A. aurantii*, *S. oleae* and *P. psidii*.

5- The highest average number recorded by *I. aegyptiaca* followed by *S. oleae* during the two years of the study.

6- The predator *R. cardinalis* recorded the highest average number on ficus benjamina during the two years of the study.

7- Hibiscus rosae attacked by the main insect pests *M.hirsutus.* Also, by *E.insulana* and *N. viridula*.

8- The highest average number recorded by *M.hirsutus* followed by *N. viridula* during the two years of the study.

9- The predator *R. cardinalis* recorded the highest average number on hibiscus rosae during the two years of the study.
10- Acalypha marginata attacked by the main insect pests *I. aegyptiaca* and *I. seychellarum.*
11- The highest average number recorded by *I. aegyptiaca* during the two years of the study.
12- The predator *C. septempunctata* recorded the highest average number on acalypha marginata during the two years of the study.
13- Acalypha wilkesiana attacked by the main insect pests *I. aegyptiaca* and *I. seychellarum.*
14- The highest average number recorded by *I. aegyptiaca* during the two years of the study.
15-The predator *C. septempunctata* recorded the highest average number on acalypha wilkesiana during the two years of the study.

Acknowledgement: Authors would like to thank the staff members of Plant Protection department-Faculty of Agriculture Damietta University.
Funding: This research not received external funding.
Conflicts of interest: The authors declared no conflict of interest.

References

Abdel-Mageed, Sanaa A.M. (2005) Influence of certain natural enemies on some mealybug populations. M. Sc. Thesis, Fac. Agric., Mansoura Univ. pp. 140.
Abdel-Salam, A. H.; AA Ghanim, A. A.; Elkady, H. A.; El-Nagar, M. E. & Awadalla, H. S. (2013). Effect of different host plants on the attractiveness the mealybug species and their associated predators at Mansoura district. Journal of Plant Protection and Pathology, 4(3): 287-292.
Afroze, S. & Johri, J. K. (2004). Insect pests of some economically important ornamental plants. Journal of Entomological Research, 28(2): 137-145.
Ahmed, K. S. & Majeed, M. Z. (2016). Integrated pest management tactics and predatory coccinellids: A review. 4(1):591-600.
Awmack, C. S. & Leather, S. R. (2002). Host plant quality and fecundity in herbivorous insects. Annual review of entomology, 47(1): 817-844.
Ballal, C. R. & Verghese, A. (2015). Role of parasitoids and predators in the management of insect pests. New Horizons in Insect Science: Towards Sustainable Pest Management, 81(3): 307-326.
Chekuri, S.; Lingfa, L.; Panjala, S.; Bindu, K. S. & Anupalli, R. R. (2020). Acalypha indica L.-an important medicinal plant: a brief review of its pharmacological properties and restorative potential. European J Med Plants, 31(11): 1-10.
Culik, M. P.; Fornazier, M. J.; dos Santos Martins, D.; Zanuncio, J. S.; Ventura, J. A.; Peronti, A. L. B. & Zanuncio, J. C. (2013). The invasive mealybug Maconellicoccus hirsutus: lessons for its current range expansion in South America and invasive pest management in general. Journal of Pest Science, 86(3): 387-398.
Francini, A.; Romano, D.; Toscano, S. & Ferrante, A. (2022). The contribution of ornamental plants to urban ecosystem services. Earth, 3(4): 1258-1274.
Hosseini, R. & Hajizadeh, J. (2011). Molecular identification of three of the most important mealybug species (Hemiptera: Sternorrhyncha: Coccoidea: Pseudococcidae) on ornamental plants in Guilan province, Iran. Zootaxa, 3009(1): 46-54.
Johari, A.; Zebua, K. B. & Natalia, D. (2021). The morphology and abundance of longtailed mealybug (Pseudococcus longispinus) on ornamental plant, Aglaonema spp. in Jambi city, Indonesia. Journal of Entomological Research, 45(suppl): 851-855.
Khan, M.; Lanjar, A. G.; Chang, B. H.; Bukero, A.; Rajput, A.; Magsi, F. H. & Chang, A. H. (2019). Insect Pests Associated With Ornamental Plants: Insect Pests of Ornamental Plants. Biological Sciences PJSIR, 62(3): 188-194.
Khan, M. M. H. (2020). Host Plants of Mealybugs With Their Damage Extent on Some Selected Plants. Journal of the Asiatic Society of Bangladesh, Science, 46(2): 201-207.
Kingsley, O. & Marshall, A. A. (2014). Medicinal potential of Acalypha wilkesiana leaves. Advances in Research, 2(11): 655-665.
Mari, J. M.; Nizamani, S. M. & Lohar, M. K. (2007). Population fluctuation of longtailed mealybug on different ornamental plants. In International Conference on Quality Management in Supply Chains of Ornamentals 755 (pp. 99-104).
Pal, S. & Sarkar, I. (2009). Pests infesting ornamental plants in hilly region of West Bengal. The Journal of Plant Protection Sciences, 1(1): 98-101.
Pencheva, A. & Yovkova, M. (2016). New data on alien insect pests of ornamental plants in Bulgaria. Forestry ideas, 22(3): 17-33.
Perdikis, D.; Fantinou, A. & Lykouressis, D. (2011). Enhancing pest control in annual crops by conservation of predatory Heteroptera. Biological Control, 59(1): 13-21.
Rusch, A.; Valantin-Morison, M.; Sarthou, J. P. & Roger-Estrade, J. (2010). Biological control of insect pests in agroecosystems: effects

of crop management, farming systems, and seminatural habitats at the landscape scale: a review. Advances in agronomy, 109(7): 219-259.
Schmidt, M. H.; Lauer, A.; Purtauf, T.; Thies, C.; Schaefer, M. & Tscharntke, T. (2003). Relative importance of predators and parasitoids for cereal aphid control. Proceedings of the Royal Society of London. Series B: Biological Sciences, 270(1527): 1905-1909.
Ülgentürk, S. & Çanakçioğlu, H. (2004). Scale insect pests on ornamental plants in urban habitats in Turkey. Journal of Pest Science, 77(7): 79-84.
Yerjanovich, Y. B. & Mamadiyoroglu, A. A. (2021). Principles of Using Ornamental Plants in the Interior. European journal of innovation in non formal education, 1(2): 79-81.

تأثير العوائل النباتية المختلفة على الآفات الحشرية الرئيسية التى تهاجم نباتات الزينة والمفترسات المرتبطة بها فى منطقة دمياط

حافظ عبدالرحمن القاضى *, سمير صالح عوض الله **, طارق السيد عطا *ونورهان عصام صديق*.
***قسم وقاية النبات- كلية الزراعة- جامعة دمياط.**
****قسم الحشرات الاقتصادية- كلية الزراعة- جامعة المنصورة.**

*أجريت الدراسة الحالية بالمزرعة التجريبية التابعة لكلية الزراعة جامعة دمياط وعدة مناطق بمحافظة دمياط لتقييم الكثافة العددية للآفات الحشرية الرئيسية التى تهاجم نباتات الزينة والمفترسات المرتبطة بها خلال العامين المتتاليين ٢٠٢١/٢٢ و٢٠٢٢/ ٢٣. أوضحت النتائج التى تم الحصول عليها أن بق الموالح الدقيقى ينجذب لأشجار الفيكس نتدا كعائل نباتى خلال سنتى الدراسة. كما أن البق الدقيقى المصرى ينجذب لأربع عوائل نباتية وكانت أشجارالفيكس نتدا أكثر تفضيلا له يليه أشجارالفيكس بنجامينا خلال السنتين المتتاليتين مع وجود اختلافات معنوية. بينما البق الدقيقى الأسترالى ينجذب لاثنين من العوائل النباتية وكانت أشجار الفيكس نتدا الأكثر تفضيلا له يليه أشجارالفيكس بنجامينا. علاوة على ذلك، ينجذب بق السيشيلارم لأربعة عوائل نباتية وكانت أشجار الفيكس نتدا الأكثر تفضيلا له. بينما بق الهيبسكس الدقيقى يهاجم نبات الهيبسكس فقط. كما أن الحشرة القشرية السوداء تهاجم عائل نباتى واحد وهو أشجار الفيكس نتدا. و الحشرة القشرية الحمراء أيضا تنجذب لاثنين من العوائل النباتية وكانت أشجار الفيكس نتدا الأكثر تفضيلا له يليه أشجارالفيكس بنجامينا. وفى الوقت نفسه، تنجذب حشرتا البرسوناتا القشرية والموالح الشمعية لأشجار الفيكس نتدا كعائل نباتى خلال سنتى الدراسة. كما أن حشرتا الزيتون الشمعية والجوافة الرخوة ينجذبان لأشجار الفيكس بنجامينا كعائل نباتى خلال سنتى الدراسة. بينما حشرة البقة الخضراء ويرقات دودة اللوز الشوكية ينجذبان لنباتات الهيبسكس كعائل نباتى خلال سنتى الدراسة.
* بالنسبة الى المفترسات الحشرية أظهرت النتائج أن المفترس أبو العيد فيداليا سجل أعلى جذبا على ثلاثة عوائل نباتية وكانت أشجار الفيكس نتدا أكثر تفضيلا له يليه أشجار الفيكس بنجامينا ثم نباتات الهيبسكس. كما أن مفترس أبو العيد ١١ نقطة سجل أعلى جذبا على ثلاثة عوائل نباتية وكانت أشجار الفيكس نتدا الأكثر تفضيلا له يليه نباتات الأكاليفا الخضراء ثم الأكاليفا الحمراء. وفى الوقت نفسه، كان مفترس الأوريس سجل أعلى جذبا على خمسة عوائل نباتية وكانت أشجار الفيكس نتدا الأكثر تفضيلا له يليه الفيكس بنجامينا، نباتات الهيبسكس ثم الأكاليفا الخضراء والأكاليفا الحمراء. كما أن مفترس الاسكمنس البنى سجل أعلى جذبا على اثنين من العوائل النباتية وكانت أشجار الفيكس بنجامينا الأكثر تفضيلا له يليه نباتات الهيبسكس. وأيضا سجل مفترس أبو العبد الأسود أعلى جذبا على اثنين من العوائل النباتية وكانت نباتات الأكاليفا الخضراء الأكثر تفضيلا له يليه الأكاليفا الحمراء. بينما سجلت ذبابة السيرفس أعلى جذبا على نباتات الأكاليفا الحمراء فقط كعائل نباتى خلال سنتى الدراسة.

الكلمات المفتاحية: نباتات الزينة – أنواع البق الدقيقى – الحشرات القشرية – المفترسات الحشرية