

**SURVEY AND RELATIVE ABUNDANCE OF SOME
HOMOPTEROUS SPECIES ATTRACTED TO A STICKY
YELLOW TRAP IN THE BOTANICAL GARDEN AT
ASWAN PROVINCE, EGYPT.**

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ABSTRACT

The standard yellow sticky traps were used as a tool for monitoring the flying homopterous insects which prevailed in the botanical garden at Aswan province during two successive years (July, 1997 to June, 1999).

Survey was carried out on insect species belong to three different families (Jassidae, Aleyrodidae and Aphididae). The present study included the following:-

1- Consideration of the dominant degrees of insect species indicated that is species of family Aleyrodidae were the most dominate (99.144% and 98.966%), as compared with 0.754% and 0.924% for Aphididae species and 0.102% and 0.110% for Jassidae species through the successive years of investigation, respectively.

2- Consideration of number and timing of peaks of the trapped insects. In the first year two peaks of insect population were recorded, on the other hand only one peak was recorded in the second year.

INTRODUCTION

The botanical garden of Aswan contains a numerous variety of plants including fruits, oil and wood trees, as well as certain medicinal and odoriferous plants. There is also a collection of very rare species of the palm trees.

There are numerous publications dealing with survey and population studies of insect species infesting tropical and sub – tropical plants in the world (Kolkalia and Soliman, 1954; Rajagobal *et al.*, (1987); Thakur and Sachan, (1987); yang, (1989); Ali and El - Nasr, (1992) and Khoualidia *et al.*, (1993). Meanwhile, little work had been carried out to study the survey and abundance of insects in the Aswan botanical garden.

The present study aimed to survey the homopterous insects which attracted to a sticky yellow trap during two successive years.

MATERIAL AND METHODS

Fifteen sites representing the area of the botanical garden were selected to conduct the sticky traps operation. In each site, two sticky traps were used, the first was oriented toward the North direction, and the second was oriented toward the west direction. The sticky traps used in the present study were the same described previously by Abou- Ghadir and Al - Beshr (1992).

It is ready - made from yellow rectangular plastic plate (30x20cm), hang vertically to a pole at a height of 50 cm, above the ground. The two sticky traps of each site were affixed at 20m interval from each other to cover randomly the whole garden areas. One side from each plate, which oriented toward the North or West direction, was coated with a thin layer of motor oil, as an adhesive material just before hanging on the pole. The sticky traps were removed at weekly intervals for collecting, counting and identifying insect species. Each trap was separately kept in polyethylene bag until it was thoroughly investigated in the laboratory. New plastic plates were hanged instead of the removal ones to continue the experiment until its termination. Then the insect species caught in each direction were estimated. Thus, data of the seasonal population densities of the insect species obtained from the 30 traps, which distributed in the 15 sites all over the botanical garden were fulfilled the purposes of the present study.

To facilitate comparison within each year and from one year to another as well as among months, data of each insect refer to each family was converted and expressed in terms of percent of individual numbers from their over all year grand total. This was done by pooling the collecting individuals over the inspected period of each month and relating the monthly sum to the overall year grand numbers through the months of the catching periods.

RESULTS AND DISCUSSION

The relative abundance of certain insect species belonging to three families of Order Homoptera in two directions and its percents from the overall year grand total, recovered by using yellow sticky traps during two years of investigation (1997 - 1999) are presented in Tables 1 and 2 .

In (1997- 1998), the first symptoms of infestation were detected during the three successive months of July, August and September. From our results it is clear that the monthly sums constituted 6.494, 6.452 and 5.347%, respectively. The data given in Table (1) indicate that the seasonal variation in the populations' density of Jassidae, Aleyrodidae and Aphididae fluctuated from one month to another.

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Table (1): Relative abundance of certain insect species belonging to families of order Homoptera and its percentages to the overall year grand total, recovered by using yellow sticky traps, Botanical Garden, Aswan, 1997-1998.

Order	Homoptera						Grand Total	
Family	Jassidae		Aleyrodidae		Aphidididae		%	
Direction Month	West	North	West	North	West	North	West	North
Jul., 1997	0.003	0.002	3.518	2.948	0.011	0.012	3.532	2.962
							6.494	
Aug.	0.003	0.002	3.803	2.623	0.012	0.009	3.818	2.634
							6.452	
Sept.	0.002	0.001	2.994	2.331	0.014	0.005	3.010	2.337
							5.347	
Oct.	0.005	0.003	5.962	2.807	0.021	0.019	5.988	2.829
							8.817	
Nov.	0.013	0.006	3.003	2.106	0.019	0.016	3.035	2.128
							5.163	
Dec.	0.008	0.004	6.211	4.304	0.025	0.030	6.244	4.338
							10.582	
Jan., 1998	0.007	0.004	7.421	4.002	0.067	0.042	7.495	4.048
							11.543	
Feb.	0.008	0.002	4.583	3.354	0.018	0.082	4.969	3.438
							8.407	
Mar.	0.005	0.002	4.524	3.220	0.104	0.074	4.633	3.296
							7.929	
Apr.	0.006	0.004	6.920	5.214	0.036	0.018	6.962	5.236
							12.198	
May.	0.005	0.002	4.866	3.708	0.013	0.007	4.884	3.717
							8.601	
Jun., 1998	0.003	0.002	4.648	3.804	0.007	0.003	4.658	3.809
							8.467	
Grand Total (%)	0.068	0.034	58.723	40.421	0.437	0.317	59.228	40.772
Family (%)	0.102		99.144		0.754			

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Through October, the insect populations grew up to reach a moderate level of abundance (8.817%); then after in November, the population densities decreased to reach its lowest level of abundance (5.163%). From our results it is quite clear that the favors months for the populations growth and activities occurred in the two successive months of December and January and the highest level of abundance where it reached its first peak in January (11.543%). The insect population densities reached its second peak during April 1998, where it reached about 12.198%. On the other hand, the insect populations diminished gradually towards May and June 1998, where it reached to a moderate level of densities (8.601 and 8.467% respectively). Analysis of the data in Table (1) indicated that the highest percentage of the insect populations (59.228%) was achieved by using sticky traps that affixed to face of the west direction. However the lowest ones (40.772%), was recorded by using this type of traps affixed towards North direction.

The underlined figure in Table (1) denote the most of Homopterous insect species caught were belonging to family Aleyrodidae (99.144%), as compared with the other two families Jassidae and Aphididae which constituted about (0.856%). It is clear from the obtained results that the population density of homopterous insects in (1998 – 1999), Table (2) reached its maximum level (12.935%) in October and its moderate levels of abundance through a long period extended from November till February where the relative abundance ranged between 8.464 – 10.301%. On the other hand, the population densities were sharply decreased through May and June, Where it reached its lowest level of abundance (1.738 and 1.400%, respectively).

Results obtained in table(2), also confirmed the above mentioned results of the first year of studies respecting the directions effectiveness , and the highest percentage of the most populations (57.952%) was obtained by this type of traps affixed toward the west directions.

Considering of the most dominates insect species, our results indicated that species of family Aleyrodidae were the most abundant (98.966%) and the other two families constitute only about (1.034%). Similar results were obtained by many investigators (Daoud *et al*, 1999, Emam, 1999 and El-Sayed 2000 who found and reported that white fly adults coughed by the yellow sickly traps in the North direction were more than the south direction. On the other hand, in 1992 Abou-Ghadir and Al-Beshr indicated that the yellow sticky traps must be oriented vertically to face a direction that allows a full illumination to insure that reflection of light upon the plate and subsequently to trap more insects and the West direction is the most illuminated face over the other three direction faces

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Table (2): Relative abundance of certain insect species belonging to families of order Homoptera and its percentages to the overall year grand total, recovered by using yellow sticky traps, Botanical Garden, Aswan, 1998-1999.

Order	Homoptera						Grand Total	
Family	Jassidae		Aleyrodidae		Aphididae		%	
Direction	West	North	West	North	West	North	West	North
Month								
Jul., 1998	0.004	0.003	5.427	3.996	0.013	0.012	5.444	4.011
							9.455	
Aug.	0.003	0.002	5.261	3.355	0.010	0.005	5.274	3.362
							8.636	
Sept.	0.002	0.001	4.722	3.841	0.014	0.009	4.738	3.851
							8.586	
Oct.	0.005	0.002	8.310	4.583	0.020	0.015	8.335	4.600
							12.935	
Nov.	0.008	0.016	5.210	3.201	0.015	0.014	5.233	3.231
							8.464	
Dec.	0.002	0.002	5.810	3.959	0.029	0.034	5.841	3.995
							9.836	
Jan., 1999	0.004	0.002	5.731	4.457	0.041	0.030	5.776	4.789
							10.265	
Feb.	0.005	0.006	5.690	4.395	0.113	0.092	5.808	4.493
							10.301	
Mar.	0.008	0.008	5.050	3.556	0.148	0.105	5.06	3.669
							8.875	
Apr.	0.008	0.006	4.956	4.361	0.077	0.098	5.041	4.465
							9.506	
May.	0.007	0.003	0.630	1.081	0.008	0.009	0.645	1.093
							1.738	
Jun., 1999	0.002	0.001	0.601	0.783	0.008	0.005	0.611	0.789
							1.400	
Grand Total (%)	0.058	0.052	57.398	41.568	0.496	0.428	57.952	42.048
Family (%)	0.110		98.966		0.924			

REFERENCES

- Abou Ghadir, M.F., and Al-Beshr, A.A. (1992):** Sticky yellow traps as a monitoring tool for certain insects in cucumber greenhouses. *Assiut J of Agric. Sci.*23: 131-140.
- Ali, A.A., and El-Nasr, Y.E.S. (1992):** New record of green pit scale insect, *Asterolecanium phoenicis* Roa, on date- palm in the Sudan. *FAO Plant Prot. Bull.*, 40 (2): 92-96.
- Daoud, M.A., El-Saadany, G.B., Mairy, F.M.A., Hegazy, G. and Ibrahim, M.Y. (1999):** Ecological studies on cotton whitefly, *Bemisia tabaci* (Genn.) Attacking potato plants. *Adv. Agric. Res.* 4 (1): 543-588.
- El - Sayed, Azza A.A. (2000):** Development of integrated pest management programmed for certain vegetable crops in newly reclaimed land. Ph.D. Thesis. in Agricultural Science (Entomology). Ain Shams Univ. 238 pp.
- Emam, Azza K. (1999):** The effect of squash as a plant trap and yellow sticky traps on the population density of the whiteflies *Bemisia tabaci* tomato fields. *Ann. Agric. Sci. Ain-Shams Univ.*, 44(1): 395-402.
- Khoualidia, O., Rhouma, A., and Himidi, M.S. (1993):** Contribution to the biological study of the white scale, *Parlatoria blanchardii* (Trag.) (Hom., Diaspididae) in Tunisia. *Proc. 3rd Symposium on Date-Palm in K.S.A.*
- Kolkalia, A.M. , and Soliman, A.A. (1954) :** A study of the banana aphid, *Pentalonia nigronervosa* Coq. (Hemiptera: Homoptera: Aphididae). *Bull. Soc. Fonadler Entomol. Le Caire*, 38: 231-250.
- Rajagopal, D., Chakravarthy, A.K., and Gowda, G. (1987):** Role of biotic and abiotic factors in regulating the insect pests of cardamom . *J. of Coffee Resarch*, 17 (1): 399-303.
- Thakur, N.S.A., and Sachan, J.N. (1987):** Insect pest of large cardamom (*Amomum subulatum* Roxburg) in Sikkim. *Bull. Entomol.* 28 (1): 46-58.
- Yang, L.E. (1989) :** Bionomics of *Pentalonia nigronervosa* Coq. *Insect. Knowledge*, 26(3): 145-146.