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EVALUATION OF SOME COWPEA GENOTYPES TO INFESTATION OF CERTAIN PIERCING SUCKING INSECTS AND COTTON LEAFWORM IN KAFR EL-SHEIKH REGION

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ABSTRACT

The study was conducted at the experimental farm of the Faculty of Agriculture, Kafr El-Sheikh. Experiments were carried out on different genotypes of cowpea in two summer plantations, being 2001 and 2002.

Results showed one to three peaks of *A. craccivora, B. tabaci, Empoasca* spp., *N. viridula* and *S. littoralis* were recorded on the different genotypes of cowpea during July, August and September in the two successive seasons. The genotype (It 92 KD-357-2) harboured the highest population of beneficial arthropods and had the least infestation with *A.craccivora* and *S. littoralis* in both seasons. Statistical analysis indicates highly significant positive correlation ($r = 0.45$) between *Chrysoperla carnea* and *B. tabaci* (adult) populations while it was insignificant between *C. carnea* and the remaining insect species in 2001 season. In 2002 season significant negative correlation ($r = -0.38$) between *C. carnea* and *A. craccivora* was recorded while it was insignificant between the predator and the remaining insects.

Results indicated that (It 95 K-2011-11) and (It 82-E-16) genotypes were less infested with the cowpea aphid, *Aphis craccivora* Koch., while (It Brown) genotype was more favourable to infestation. The genotypes (It 83_s-911) and (It 86D-880) attracted high numbers of the adults of cotton whitefly, *Bemisia tabaci* (Genn.), but (It 98 K-573-3) and Azmerly were the least infested one. Genotypes (It 95m-120) and (It 86 F-2062-5) harbored the least numbers of jassids; *Empoasca* spp., while (It Brown) and (It 85k-105-2) genotypes were the most susceptible to infestation with the green stink bug; *Nezara viridula* (L.). The highest numbers of cotton leafworm; *Spodoptera littoralis* (Boisd.) were recorded on (It 84D-448), while (It 95K-1088-4) genotype had the lowest infestation rates.

INTRODUCTION

Cowpea *Vigna unguiculata* (L.) is one of the major legumenous crops in the A.R. of Egypt as a protein rich food. During its growing stages, cowpea plants are subjected to attack by several pest species such as *Aphis craccivora* Koch., *Bemisia tabaci* (Genn.), *Empoasca* spp., *Nezara viridula* (L.) and *Spodoptera littoralis* (Boisd.) which cause severe damage in quantity and quality of the yield. Several studies on these insect pests were reported by Saleh *et al.*, 1972; Rahman, 1977; Helaly *et al.*, 1982-83; Macfoy and Dabrowski (1984); Hassan *et al.* (1985); Metwally, 1989; Gharib and Aly, 1991; Pai and Dhuri, 1991; El-Sayed, 1993; Hamouda, 1993, Abdel-Alim, 1994, Iskander *et al.*, 1998 and Helal *et al.* (2003). Certain natural enemies are associated with these pests in the agroecosystem.

The present investigation aims to evaluate some cowpea genotypes to susceptibility to *A. craccivora, B. tabaci, Empoasca* spp., *N. viridula* and *S. littoralis.* The population fluctuations of the tested insects and relation to beneficial arthropods have were studied.

MATERIALS AND METHODS

The study was conducted at the experimental farm of the Faculty of Agriculture, Kafr El-Sheikh, Egypt. Experiments carried out in two summer plantations 2001 and 2002. Thirty three genotypes of cowpea were cultivated and among of them three local varieties namely: It Brown, It 86F-2062-5, 95K-It 56-3, It 95m-120, Azmerly, It 83D-442, It TVU-12349, It 84D-448, It 95-48, It 87D-376-4, It 95m-278, It 93 K-693-2, It E-Brown, It 82D-889, It 85F-3139, It 98K-573-3, It 92KD-357-2, It 86F-2014-1, It 85F-1380, It 83_s-911, It 86D-880, It 95K-207-21, Cream-7, It 85K-105-2, Fetriat, It 85_s-872, 90K-284-2, It 95K-526-2, It 93K-513-2, It 95K-1088-4, It 82-E-16, 86F-2089-5, It 95K-2011-11.

The genotypes of cowpea were obtained from the International Institute of Tropical Agricultural (IITA) in Nigeria. The experimental area was designed in a completely randomized block design with four replicates. Each plot was 12 m^2, including 4 rows, each of 4 m length and 75 cm width and two plants per hill with 30 cm apart. Cultural practices were applied according to the common recommendations without pesticidal treatments throughout the experiment. Cowpea genotypes were cultivated on June, 16th adjacent to soybean, cotton and maize fields.

Weekly samples were taken randomly from each genotype when plants were 14 days old and continued till the end of the growing season. Each sample was consisted of 10 seedlings per genotype and where the number of insects were counted from 6 a.m. until 8 a.m. Starting from the fifth week after sowing, samples of 20 leaflets were randomly picked up at weekly intervals from every genotype then transferred to the laboratory in cloth bags to be examined and number of insects was counted and data was expressed as monthly numbers. Statistical analysis of data was carried out according to Duncan's Multiple Range Test (1955).

RESULTS AND DISCUSSION

I. Population fluctuations of certain sucking insects, cotton leafworm and relation to beneficial arthropods on cowpea genotypes:

Results in Figures (1, 2, 3, 4 & 5) indicate weekly changes in the populations of *A. craccivora*, *B. tabaci*, *Empoasca* spp., *N. viridula* and *S. littoralis* on cowpea genotypes during 2001 and 2002 seasons at Kafr El-Sheikh. *A. craccivora* exhibited two peaks on (It Brown) genotype. They were recorded on the 5th of August and September 16th during the first season. These peaks were 45.50 and 41.50 individuals/leaflet. During the second one, two peaks were recorded on the 22nd of July and August 8th and were represented by 25.0 and 6.50 indiv./leaflet (Fig. 1). As indicated in Fig. (2) two peaks were recorded of *B. tabaci* include 18.0 and 15.06 indiv./leaflet during August 26th and September 9th throughout 2001 season while one peak was recorded on the 26th of August and represented by 26.5 individuals/leaflet during 2002 season. Data in Fig. (3) shown that *Empoasca* spp. reached its peaks on the 29th of July and August 12th include 6.30 and

5.0 indiv./leaflet during the first season, respectively while in the second one, two peaks occurred on the 29th of July and the 19th of August with a mean of 9.60 and 5.25 indiv./leaflet, respectively. As clear in Fig. (4), *N. viridula* population peaked on the 16th of September with a mean of 1.15 and 1.05 indiv./leaflet during 2001 and 2002 seasons, respectively. Only one peak for *S. littoralis* (larvae) recorded on the 5th of August and was represented by 10.0 and 3.50 larvae/leaflet in the first and second season, respectively (Fig. 5). Mansour *et al.* (1977) recorded three peaks of *A. craccivora* on cowpea plants during June, August and September. Helaly *et al.* (1982-83) found that *A. craccivora* attained it's maximum during August for Fetriat and Azmerly varieties. Also, they indicated that *Empoasca* spp. peaked early August for the same varieties at summer plantation. On the contrary, El-Sayed (1993) indicated that the population of *B. tabaci* (egg, larvae & pupae) was generally higher on late August than early March plantations of cowpea plants. Also, he showed that *N. viridula* population was markedly low during the early stage of cowpea plant growth that it tended to increase gradually later, he added that flower infestation of cowpea plant with *S. littoralis* was higher in June and July. Abdel-Alim (1994) showed that cowpea plants cultivated during the second week of July, late cultivation were highly infested with *A. craccivora*, *B. tabaci* and *Empoasca* spp. when plant age of cowpea was 98, 70 and 56-84 days, respectively.

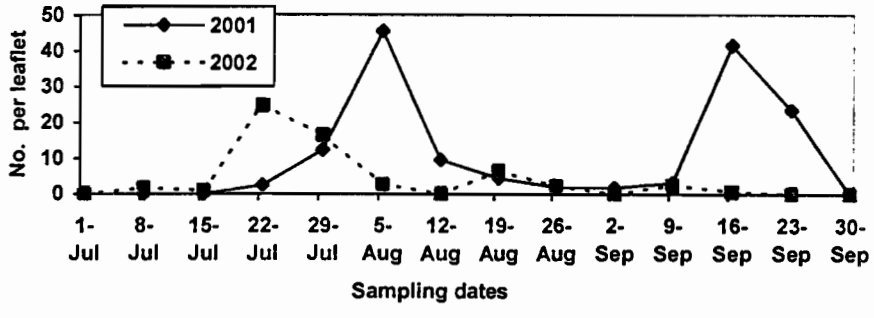

Fig. (1): Population fluctuations of *A. craccivora* on cowpea genotype (lt Brown) during 2001 and 2002 seasons at Kafr El-Sheikh region.

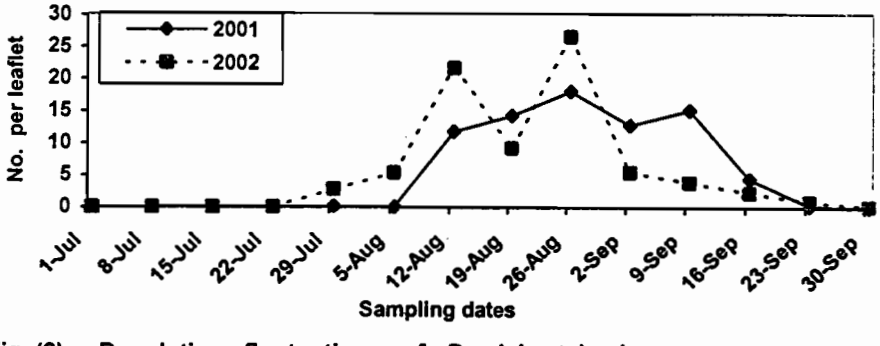

Fig. (2): Population fluctuations of *Bemisia tabaci* on cowpea genotype (lt 83$_s$-911) during 2001 and 2002 seasons at Kafr El-Sheikh region.

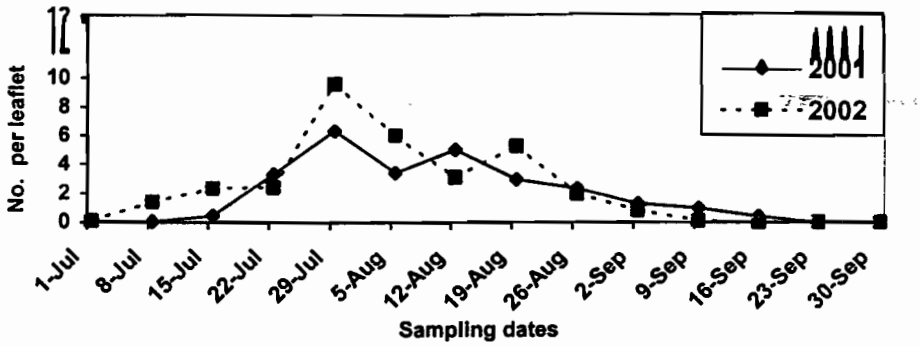

Fig. (3): Population fluctuations of *Empoasca* sp. on cowpea genotype (It 82D-889) during 2001 and 2002 seasons at Kafr El-Sheikh region.

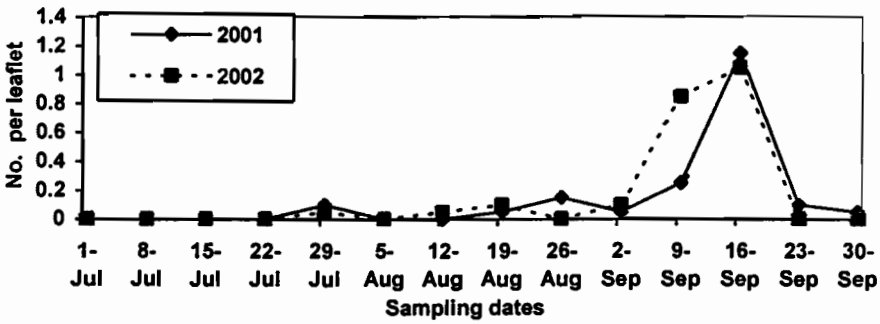

Fig. (4): Population fluctuations of *Nezara viridula* on cowpea genotype (It Brown) during 2001 and 2002 seasons at Kafr El-Sheikh region.

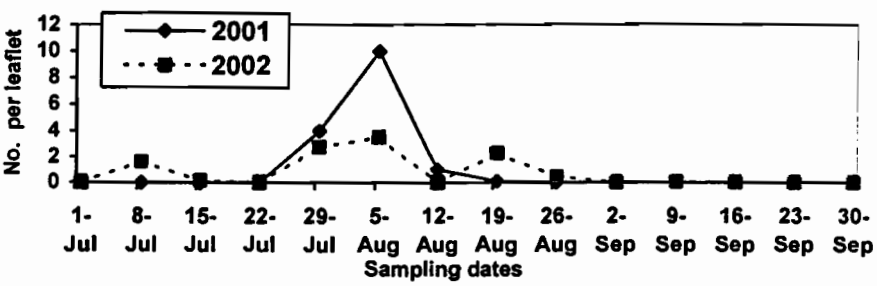

Fig. (5): Population fluctuations of *Spodoptera littoralis* on cowpea genotype (It 84D-448) during 2001 and 2002 seasons at Kafr El-Sheikh region.

As shown in Table (1), statistical analysis indicate highly significant positive correlation (r = 0.45) between both *C. carnea* and *B. tabaci* adults population while it was insignificant between that predator and the remaining insects in 2001 season. In 2002 season, significant negative correlation (r = -0.38) between *C. carnea* and *A. craccivora* while it was insignificant between

that predator and the remaining insects. As for *Scymnus* spp., relationship between it and the five tested insect populations was insignificant for the two seasons. Results agree with those of El-Mezayyen and Abou-Attia (1996) who found highly significant correlation between both *C. carnea* and whitefly population in 1994 while it was insignificant one in 1995 on cotton plants at Kafr El-Sheikh. Salem *et al.* (1993) who found that simple correlation values between aphid and *C. carnea* and *C. undecimpunctata* population were significant positive on the tested cotton varieties at Kafr El-Sheikh. Such results are of great importance in developing an integrated crop management system.

Table (1): Values of simple correlation (r) between populations of the five tested insects and each of *C. carnea* and *Scymnus* spp. on cowpea genotypes during 2001 and 2002 seasons at Kafr El-Sheikh.

Species	*Aphis craccivora*		*Bemisia tabaci*		*Empoasca* spp.		*Nezara viridula*		*Spodoptera littoralis*	
	2001	2002	2001	2002	2001	2002	2001	2002	2001	2002
C. carnea	-0.01	-0.38*	0.45**	-0.16	0.32	-002	-0.01	-0.05	-0.23	-0.03
Scymnus spp.	0.12	-0.08	-0.10	-0.07	-0.02	0.27	-0.05	0.01	-0.16	-0.14

* Significant (P < 0.05)
** Highly significant (P < 0.01)

II. Susceptibility of cowpea genotypes to insect infestation:

a. A. craccivora infestation:

Data in Table (2) show the mean numbers of aphids counted on 33 genotypes of cowpea in two summer plantations of 2001 and 2002. Statistical analysis revealed highly significant differences among (It Brown) and the other tested genotypes concerning aphid populations. The genotypes (It 95 K-2011-11) and (It 82-E-16) were the less susceptible genotypes to *A. craccivora* infestation with harbouring 0.02 and 0.08 individuals/leaflet, respectively. On the contrary, (It Brown) genotype was the most susceptible, harbouring with highest population of aphids (10.79 & 7.45 aphid indi./leaflet in the first and second season, respectively). Results are in agreement with those reported by Helaly *et al.* (1982-83); Macfoy and Dabrowski (1984); Metwally (1989) and Faris and Mohamed (1992) who found that cowpea genotypes varied in susceptibility to infestation with *A. craccivora*.

b.B. tabaci infestation:

As shown in Table (2) there were significant differences in the number of *B. tabaci* adults among (It 83_s-911), (It 86D-880) and the other tested genotypes in the two tested seasons. The genotype (It 98 K-573-3) and Azmerly were the least infested with whitefly adults, having 0.18 and 0.21 adults/leaflet in the two tested seasons, respectively. On the other hand, (It 83_s-911) and (It 86D-880) were the most susceptible ones to infestation where 6.06 and 5.48 adult/leaflet were recorded in the two seasons, respectively. Data agree with those of Vetten and Allen (1983) who found that CGM cowpea genotype was susceptible to *B. tabaci* infestation than the resistant ones. Also, Iskander *et al.* (1998) found that H6-16, 38-31-4B and W22-11 were susceptible to *B. tabaci* infestation among the tested cowpea cultivars in Qalubia Governorate, Egypt.

Table (2): Mean numbers of piercing sucking insects per leaflet on different cowpea genotypes during 2001 and 2002 seasons at Kafr El-Sheikh region.

Genotypes	*A. craccivora* (nymphs & adults)		*B. tabaci* (adults)		*Empoasca* spp. (nymphs & adults)		*N. viridula* (nymphs & adults)	
	2001	2002	2001	2002	2001	2002	2001	2002
It Brown	10.79 b	7.45 b	1.67 a	1.98 a	1.30 a	1.64 a	0.13 b	0.15b
It 86F-2062-5	4.54 a	3.61 a	0.24 a	0.39 a	0.22 a	0.58 a	0.0 a	0.0 a
95 K-It 56-3	3.60 a	1.18 a	0.37 a	0.40 a	0.55 a	0.44 a	0.01 a	0.007 a
It 95m-120	3.39 a	2.95 a	0.45 a	0.43 a	0.23 a	0.25 a	0.01 a	0.013 a
Azmerly	3.14 a	2.77 a	0.16 a	0.25 a	0.30 a	0.34 a	0.0 a	0.0 a
It 83D-442	3.07 a	1.49 a	0.35 a	0.39 a	1.75 a	1.61 a	0.02 a	0.02 a
It TVU-12349	3.04 a	2.33 a	0.74 a	1.71 a	0.86 a	0.80 a	0.026 a	0.023 a
It 84D-448	3.03 a	2.84 a	0.63 a	0.44 a	0.39 a	0.39 a	0.023 a	0.03 a
It 95m-48	2.72 a	2.37 a	1.12 a	1.99 a	0.67 a	0.63 a	0.02 a	0.016 a
It 87D-376-4	2.66 a	2.06 a	0.67 a	0.65 a	0.33 a	0.44 a	0.003 a	0.003 a
It 95m-278	2.61 a	1.92 a	2.44 a	1.86 a	1.36 a	1.88 a	0.007 a	0.01 a
It 93K-693-2	2.56 a	2.44 a	0.94 a	0.86 a	0.88 a	0.81 a	0.023 a	0.017 a
It E-Brown	2.50 a	3.01 a	1.88 a	1.90 a	1.25 a	0.96 a	0.03 a	0.02 a
It 82D-889	2.17 a	1.79 a	0.53 a	0.93 a	1.99 b	2.48 b	0.03 a	0.03 a
It 85F-3139	2.01 a	2.19 a	0.51 a	0.64 a	1.20 a	1.30 a	0.02 a	0.017 a
It 98 K-573-3	1.95 a	1.58 a	0.16 a	0.20 a	0.22 a	0.36 a	0.003 a	0.003 a
It 92KD-357-2	1.67 a	1.37 a	1.17 a	1.26 a	1.38 a	1.49 a	0.05 a	0.06 a
It 86F-2014-1	1.48 a	1.41 a	0.34 a	0.35 a	1.02 a	1.01 a	0.05 a	0.04 a
It 85F-1380	1.45 a	2.16 a	0.70 a	1.02 a	1.45 a	1.40 a	0.016 a	0.013 a
It 83_3-911	1.40 a	1.20 a	5.85 b	6.26 b	1.18 a	0.99 a	0.06 a	0.05 a
It 86D-880	1.39 a	1.19 a	5.11 b	5.84 b	0.85 a	0.65 a	0.02 a	0.016 a
It 95K-207-21	1.41 a	0.78 a	0.43 a	0.28 a	0.23 a	034 a	0.0 a	0.0 a
Cream-7	1.30 a	1.11 a	0.53 a	0.62 a	0.34 a	0.46 a	0.0 a	0.003 a
It 85K-105-2	0.58 a	0.36 a	0.55 a	0.58 a	0.91 a	0.61 a	0.11 b	0.10 b
Fetriat	0.50 a	0.25 a	0.38 a	0.51 a	0.25 a	0.38 a	0.003 a	0.03 a
It 85_3-872	0.38 a	0.76 a	1.31 a	1.74 a	1.47 a	1.47 a	0.03 a	0.03 a
90 K-284-2	0.19 a	0.21 a	0.47 a	0.47 a	0.93 a	0.75 a	0.0 a	0.0 a
It 95 K-526-2	0.19 a	0.20 a	0.45 a	0.37 a	0.44 a	0.69 a	0.003 a	0.003 a
It 93 K-513-2	0.17 a	0.26 a	0.33 a	0.73 a	0.38 a	0.27 a	0.0 a	0.0 a
It 95K-1088-4	0.17 a	0.15 a	0.53 a	0.44 a	0.67 a	0.37 a	0.0 a	0.0 a
It 82-E-16	0.10 a	0.05 a	0.31 a	0.38 a	0.24 a	0.32 a	0.0 a	0.0 a
86F-2089-5	0.06 a	0.17 a	1.07 a	1.68 a	1.95 b	2.45 b	0.02 a	0.03 a
It 95K-2011-11	0.01 a	0.03 a	0.42 a	0.37 a	0.22 a	0.31 a	0.0 a	0.0 a

Means with the same letter in the same column are not significantly at ($P < 0.05$) by DMRT.

c. *Empoasca* spp. and *N. viridula* infestation:

Results in Table (2) revealed that (It 95m-120) and (It 86F-2062) had the least numbers of jassids, where only 0.24 and 0.25 indiv./leaflet, respectively in the two tested seasons. On the other hand, (It 82D-889) and (86F-2089-5) were the most susceptible ones to infestation, having 2.24 and 2.20 indiv./leaflet, respectively.

Also, results in Table (2) clearly show that (It Brown) and (It 85K-105-2) were the most susceptible genotypes to infestation with the green stink bug, *N. viridula* having 0.14 and 0.11 indiv./leaflet, respectively in the two tested seasons. It is noticeable that (It 86F-2062-5), Azmerly, (It 95K-207-21), (90 K-284-2), (It 93 K-513-2), (It 95K-1088-4), (It 82-E-16) and (It 95 K-2011-11) genotypes had no *N. viridula* infestation in both seasons. Helaly *et al.* (1982-83) found that no significant differences between Fetriat and Azmerly varieties to infestation with *Empoasca* spp. Gilman *et al.* (1982) found significant differences between 26 cultivars of soybean to infestation with *N. viridula*.

Table (3): Mean numbers of *S. littoralis* (different instars of larvae) per leaflet on different cowpea genotypes during two seasons 2001 and 2002 at Kafr El-Sheikh region.

Genotypes	Seasons								Mean of 2001 and 2002
	2001				2002				
	July	Aug.	Sept.	General mean	July	Aug.	Sept.	General mean	
It Brown	0.09	0.05	0.01	0.05 a	0.03	0.06	0.0	0.03 a	0.04
It 86F-2062-5	0.64	0.65	0.0	0.43 a	0.40	0.52	0.0	0.31 a	0.37
95 K-It 56-3	0.20	0.0	0.0	0.07 a	0.0	0.10	0.0	0.03 a	0.05
It 95m-120	0.33	0.44	0.0	0.26 a	0.29	0.35	0.02	0.21 a	0.24
Azmerly	0.40	1.38	0.0	0.59 a	0.25	1.42	0.0	0.56 a	0.58
It 83D-442	0.03	0.15	0.02	0.07 a	0.06	0.10	0.0	0.05 a	0.06
It TVU-12349	0.16	0.0	0.0	0.05 a	0.09	0.05	0.0	0.04a	0.05
It 84D-448	0.80	2.78	0.0	1.19 b	0.58	1.56	0.01	0.72 b	0.96
It 95m-48	0.03	0.0	0.0	0.01 a	0.0	0.02	0.0	0.01 a	0.01
It 87D-376-4	0.0	0.39	0.0	0.13 a	0.01	0.29	0.0	0.10 a	\0.12
It 95m-278	0.06	0.10	0.04	0.07 a	0.04	0.03	0.01	0.03 a	0.05
It 93K-693-2	0.44	0.29	0.0	0.24 a	0.35	0.38	0.02	0.25 a	0.25
It E-Brown	0.68	0.55	0.0	0.41 a	0.52	0.35	0.02	0.30 a	0.36
It 82D-889	0.15	0.0	0.0	0.05 a	0.12	0.07	0.0	0.06 a	0.06
It 85F-3139	0.17	0.38	0.0	0.18 a	0.15	0.29	0.07	0.17 a	0.18
It 98 K-573-3	0.24	1.38	0.0	0.54 a	0.26	0.63	0.05	0.31 a	0.43
It 92KD-357-2	0.01	0.03	0.01	0.02 a	0.0	0.03	0.0	0.01 a	0.02
It 86F-2014-1	0.31	0.08	0.0	0.13 a	0.25	0.13	0.01	0.13 a	0.13
It 85F-1380	0.23	0.06	0.02	0.10 a	0.10	0.32	0.0	0.14 a	0.12
It 83$_s$-911	0.08	0.01	0.0	0.03 a	0.0	0.07	0.0	0.02 a	0.03
It 86D-880	0.10	0.0	0.0	0.03 a	0.0	0.0	0.0	0.0 a	0.02
It 98K-207-21	0.37	0.63	0.0	0.33 a	0.25	0.84	0.0	0.36 a	0.35
Cream-7	0.35	0.41	0.05	0.27 a	0.13	0.62	0.0	0.25 a	0.26
It 85K-105-2	0.12	0.0	0.0	0.04 a	0.04	0.0	0.0	0.01 a	0.03
Fetriat	0.06	0.06	0.0	0.04 a	0.08	0.03	0.0	0.04 a	0.04
It 85$_s$-872	0.56	0.03	0.01	0.20 a	0.40	0.05	0.03	0.16 a	0.18
90 K-284-2	0.54	0.86	0.0	0.47 a	0.23	0.63	0.0	0.29 a	0.38
It 95 K-526-2	0.16	0.13	0.0	0.10 a	0.09	0.18	0.0	0.09 a	0.10
It 93 K-513-2	0.04	0.09	0.01	0.05 a	0.02	0.05	0.01	0.03	0.04
It 95K-1088-4	0.0	0.0	0.0	0.0 a	0.01	0.0	0.0	0.003 a	0.002
It 82-E-16	0.11	0.53	0.02	0.22 a	0.07	0.24	0.0	0.10 a	0.16
86F-2089-5	0.58	0.19	0.06	0.28 a	0.28	0.25	0.0	0.18 a	0.23
It 95K-2011-11	0.24	0.09	0.0	0.11 a	0.01	0.21	0.0	0.07 a	0.09

Means with the same letter in the same column are not significantly different at ($P < 0.05$) by DMRT.

d. *S. littoralis* infestation:

As indicated in Table (3) (It 84D-448) genotype received the highest rates of infestation with the cotton leafworm larvae, *S. littoralis* recording 1.19 and 0.72 indiv./leaflet in the first and second season, respectively while (It 95K-1088-4) genotype had the lowest rates of infestation, recording 0.0 and 0.003 indiv./leaflet in both seasons, respectively. El-Sayed (1993) stated that the damage caused by the larvae of the cotton leafworm to Cream-7 variety was rather pronounced in spite of the whitefly, aphids and thrips infestations which were more frequent than cotton leafworm.

It could be concluded that (It 95 K-2011-11) and (It 82-E-16) genotypes received the lowest rates of infestation with aphids and the green stink bug. Also, Azmerly variety was the least infested with whitefly and *N.*

viridula, (It 86F-2062-5) genotype had the lowest infestation with Jassids and the green stink bug and (It 95K-1088-4) was the least infested with the cotton leafworm larvae and the green stink bug. On the contrary, (It Brtown) received the highest rates of infestation with aphids and green stink bug, also (It 84D-448) genotype was the most susceptible one to infestation with cotton leafworm. However, plant resistance to insects is generally derived from certain biochemical and/or morphological characteristics of host plants which affect the behaviour and/or the metabolism of insects influencing the relative degrees of damage caused by these insects (Metcalf and Williams, 1975).

Results encourage adopting breeding programmes to produce cowpea varieties less susceptible to pest infestation which will be of value to cowpea growers as an agricultural method in integrated pest management.

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تقييم بعض أصناف اللوبيا للإصابة بالحشرات الثاقبة الماصة ودودة ورق القطن فى منطقة كفرالشيخ

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** قسم الحشرات الإقتصادية ـ كلية الزراعة بكفرالشيخ ـ جامعة طنطا

اجريت هذه الدراسة بمزرعة كلية الزراعة بكفرالشيخ على أصناف مختلفة من اللوبيا فى الموسم الصيفى عام ٢٠٠١ ، ٢٠٠٢م بغرض تقييم حساسية ٣٣ صنفا من اللوبيا للإصابة ببعض الحشرات الثاقبة الماصة ودودة ورق القطن.

أوضحت النتائج تسجيل ذروة واحدة الى ثلاث ذروات لتعداد كل من المن والذبابة البيضاء والجاسيد والبقة الخضراء ودودة ورق القطن خلال شهور يوليو واغسطس وسبتمبر على اصناف اللوبيا المختلفة فى موسمى الدراسة كما وجد أيضا أن الصنف(It 92 KD-357-2) يحمل اكبر تعداد من مفصليات الارجل النافعة واقل إصابة بالمن ودودة ورق القطن خلال موسمى الدراسة. أوضح التحليل الاحصائى ايضا وجود ارتباط موجب عالى المعنوية بين تعداد كل من أسد المن والحشرات الكاملة للذبابة البيضاء بينما كان غير معنوى بين نفس المفترس وباقى الحشرات خلال موسم ٢٠٠١م ، كما وجد إرتباط سالب معنوى بين الكثافة العددية للمفترس أسد المن وحشرة المن. بينما كان غير معنوى بين نفس المفترس وبقية الحشرات الاخرى خلال موسم ٢٠٠٢م.

توصلت الدراسة ايضا إلى أن الاصناف (It 95K-2011-11), (It 82-E-16) هى اكثر الاصناف مقاومة لمن اللوبيا ، بينما كان الصنف (It Brown) اكثر الاصناف قابلية للاصابة بهذه الحشرة وأن الأصناف (It 86D-880), (It 83-911) تحمل اكبر عددا من الاطوار الكاملة للذبابة البيضاء بينما كانت الاصناف(It 98K-573) ، ازميرلى أقل اصابة بهذه الحشرة. أظهرت النتائج أيضا ان الاصناف (It 86F-2062-5), (It 95m-120)اقل اصابة بالجاسيد بينما الأصناف(It Brown), (It 85K-105-2) اكثر قابلية للاصابة بالبقة الخضراء وايضا كان الصنف (It 84D-448)يحمل أكبر عدد من يرقات دودة ورق القطن بينما كان الصنف (It 95K-1088-4) أقل اصابة بهذه الحشرة.