

**SUSCEPTIBILITY OF CERTAIN COMMONLY CULTIVATED
SQUASH AND CUCUMBER CULTIVARS TO *BEMISIA
TABACI* (GENN.) (HOMOPTERA : ALEYRODIDAE)
IN BENI - SUEF GOVERNORATE**

M.Z. DAWOOD

Plant Protection Research Institute, Agricultural Research Centre, Dokki, Giza.

(Manuscript received 13 January 1998)

Abstract

The susceptibility of commonly cultivated 3 squash cultivars (Eskandarani, zucchini and Arlika) and 3 cucumber cultivars (Alegi, sliberti and Sweet Kransh) to infestation with *Bemisia tabacia* (Genn.) (Homoptera : Aleyrodidae) was evaluated in Beni-Suef Governorate during Nili plantations 1996&1997 .

The differences between the mean numbers of adults/leaf and juveniles (egg, larvae and pupae) / square inch on squash and cucumber cultivars were significant, during both seasons. Squash hybrids of (*Zucchini* and *Arlika*) were the least susceptible, while *Eskandarani* variety was more susceptible. For cucumber cultivars, *Sliberti* hybrid was the least susceptible followed by *Sweet Kransh* than *Alegi* was being the most susceptible.

INTRODUCTION

In Egypt, cucurbitaceous vegetable plants represent a daily food meal. Cucumber and squash are the dominant cultivated cucurbits. The whitefly *Bemisia tabaci* (Genn.) (Homoptera: Alyrodidae) is a destructive insect pests on cucurbits (Shaheen et al, 1973; Dawood, 1978 and El-Mersawi, 1987). Nili plantations are more affected by this pest (El-Nahal et al, 1978; Dawood and Assem, 1979). Injuries of *B. tabaci* to cucurbits are not only due to their sap sucking, but also a result of plasmolysis.

The present work aims to evaluate the susceptibility of certain common cultivars of squash (*Cucurbita pepo*) and cucumber (*Cucumis sativum*) to infestation with *Bemisia tabaci* (Genn.) at Beni-Suef Governorate.

MATERIALS AND METHODS

Six cucurbits cultivars were evaluated for their susceptibility to infestation with *Bemisia tabaci* (Genn.), namely: *Eskandarani*, *Zucchini* hybrid and *Arlika* for

squash, and Aligi, Sliberti and Sweet Kransh for cucumber. Experimental plots were arranged in a complete randomized block design with 4 replicates. Plot area was 525 square meters. Cultivars were seeded on the 3rd of September 1996 and 1997 (Nili plantation) at Beni-Suef Governorate (Sids). All agricultural practices were carried out as usual, and no insect control measures were applied. Evaluation of susceptibility to *B. tabaci* was based on both mean number of adults /leaf, and mean number of different juveniles (egg, larvae & pupae) / square inch of leaf surfaces area. Adults were directly counted on the plant early in the morning on 50 random leaves/plot representing the terminal, middle and basal section of the plant. Sample size for counting juveniles was conducted on 50 leaves randomly taken from terminal, middle and basal plant regions. In the laboratory, one square inch from every leaf was examined and the number of juveniles was counted. Samples were taken at weekly intervals, started after 15 days from complete germination until the end of the season, (8 samples).

RESULTS AND DISCUSSION

Table 1 shows the mean numbers of *Bemisia tabaci* adults/leaf and juveniles/square inch during 1996 and 1997, Nili seasons for the tested squash and cucumber cultivars. Differences between these means were statistically significant. In 1996 season, tested cultivars could be arranged descendingly according to their susceptibility to infestation with adults as follows: a) for squash: Zucchini hybrid (119.8), Eskandarani (116.5) and Arlika hybrid (81.3), b) for cucumber; Aligi (153.8), sweet Kransh (119.3) and Sliberti (72.5).

As for juveniles population, differences between the tested cultivars were statistically significant. Egg population means on squash cultivars were 118.8, 89.3 and 66.5/square inch for Eskandarani, Zucchini hybrid and Arlika hybrid, respectively, while the corresponding means were 29.3, 18.5, and 11.8 for larvae and 17.4, 10.3, and 4.5, respectively for pupae. Differences between the 3 tested squash cultivars with respect to egg, larval or pupal population were significant. Population means on cucumber cultivars were 88.8, 24.3 and 13.2 / square inch on Alegi, Sweet Kransh and Sliberti, respectively for eggs, 19.3, 13.5, and 4.5, respectively for larvae and 9.8, 8.8 and 2.1, respectively for pupae.

In 1997 season, the same trend of susceptibility to adults and juveniles was observed. Squash cultivars could be arranged according to the mean number of adults/leaf as follow: Eskandarani (163.8) Zucchini (122.3) and arlika (80.0). The

mean numbers of juveniles/square inch were 119.8, 84.3 & 61.5 for eggs, 28.8, 17.8 & 11.3 for larvae and 16.5, 10.0 & 4.3 for pupae, respectively. On cucumber, the corresponding means of adults were 156.3, 118.5, and 73.8 on Alegi, Sweet Kranch and Sliberti, respectively. Corresponding Juvenile population means were 86.5, 23.5 & 10.3 for eggs, 18.5, 14.0 & 3.5 for larvae and 9.8, 8.5 and 2.0 for pupae.

Generally speaking, there were noticeable differences between the tested squash or cucumber cultivars with respect to their susceptibility to infestation with *B. tabaci*. Such differences were significant with regard to the mean number of adults/leaf. The abundance of adults on squash hybrids Zucchini and Arlika was relatively less than on Eskandarani cultivar. In the case of cucumber, Sliberti cultivar received the lowest adults population followed by Sweet Kransh then Alegi cultivars. Similar findings were recorded by El-Nahal et al, 1978.

Differences in the mean number of juveniles (eggs, larvae & pupae)/square inch on both squash and cucumber cultivars were almost significant during the two seasons. Juveniles mean numbers on Eskandarani squash cultivar were relatively higher than on Zucchini or Arlika hybrid. Arlika hybrid was the least susceptible to *B. tabaci*. Cucumber cultivar Alegi received the highest juveniles population followed by Sweet Kransh cultivar, while Sliberti cultivar was the least susceptible.

According to Duncan's multiple test, squash cultivars could be arranged into two groups with respect to their susceptibility to infestation with *B. tabaci* as follows: low susceptible group including Zucchini and Arlika hybrid and a high susceptible group including Eskandarani cultivar. Cucumber cultivars were similarly grouped into two groups: low susceptible, including Sliberti cultivar and high susceptible including Sweet Kransh and Alegi cultivars.

Table 1. Mean numbers of *Bemisia tabaci* adults/leaf and the different juveniles (eggs, larvae and pupae)/square inch on 3 squash and 3 cucumber cultivars at Beni-Suef Governorate on Nili plantation during 1996 and 1997 seasons.

Cultivar	Mean no. of adults/ leaf	Mean number / square inch		
		Eggs	Larvae	Pupae
	1996			
Squash cultivars:				
Eskandarani	116.5a	118.8a	29.3a	17.4a
Zucchini Hybrid	119.8a	89.3b	18.5b	10.3b
Arlika Hybrid	81.3a	66.5c	11.8c	4.5c
Cucumber cultivars				
Alegi	153.8a	88.8a	19.3a	9.8a
Sliberti	72.5a	13.2b	4.5b	2.1b
Sweet Kransh	119.3a	24.3b	13.5c	8.8c
L.S.D.	40.3*	20.9*	6.21*	5.6*
		1997		
Squash cultivars	163.8a	119.8a	28.8a	16.5a
Eskandarani	122.3b	84.3b	17.8b	10.0b
Zucchini Hybrid	80.0c	61.5c	11.3c	4.3c
Arlika Hybrid				
Cucumber cultivars				
Alegi	156.3a	86.5a	18.5a	9.8a
Sliberti	73.8b	10.3b	3.5b	2.0b
Sweet Kransh	118.5c	23.5b	14.0c	8.5c
L.S.D.	41.2*	20.4*	6.2*	5.8*

* Values followed by the some letter are not significantly differet at 5% level.

REFERENCES

- 1 . El-Nahal, A.K.M., E.D. Emmar, M.A. Assem and M.Z. Dawood. 1978. Studies on the population densities of *Bemisia tabaci* (Genn.) on some varieties of cucumber, snake cucumber and squash at Demietta and Beni-Suef region. 1st Conf. Plant Prot. Res. Inst. Dokki, Cairo, Egypt., Dec. 13-15, 1980, 1: 291-303.
- 2 . Dawood, M.Z. 1978. Studies on hemipterous insects cucurbitaceous vegetable plants and their role in transmitting plant diseases. Ph. D. Thesis, Fac. Agric., Cairo Univ.
- 3 . Dawood, M.Z. and M.A. Assem. 1979. Survey of Hemipterous insects infesting cucurbits at Demeitta and Beni-Suef regions, 1st Conf. Agric. Res. Center, Giza, May 22-29, 1979, Vol. II (Abstracts).
- 4 . El-Mersawy, H.E. 1987. Studies on the whitefly *Bemisia tabaci* (Genn.) (Homoptera: Aleyrodidae) M.Sc. Thesis, Fac. Agric. Cairo Univ.
- 5 . Shaheen, A.A., A.M. Abo-El-Ezz and M.A. Samhan. 1973. Cucurbits pests at Kom Ombo. Agric. Res. Rev., Cairo, 51: 97-101.

قابلية بعض الأصناف الشائعة من الكوسة والخيار للأصابة بالذبابة البيضاء البيضاء بمحافظة بني سويف

محمد زكي داود

معهد بحوث وقاية النباتات - مركز البحوث الزراعية، الدقى ، الجيزة.

درست قابلية ثلاثة أصناف شائعة من الكوسة (إسكندرانى ، زوكينى ، أورليكا) وثلاثة أصناف شائعة من الخيار (ألجى ، سليبرتى ، سويت كرانشى) للأصابة بالاطوار الكاملة وغير الكاملة للذبابة البيضاء، بمحافظة بني سويف خلال الموسم الصيفى عامى ١٩٩٦ ، ١٩٩٧ م. كانت الاختلافات فى متوسط تعداد الحشرات الكاملة/ ورقة ، والاطوار غير الكاملة / بوصة مربعة من سطح الورقة هي إختلافات معنوية خلال موسمي الدراسة. وكان كل من هجينى الكوسة زوكينى وأرليكا أقل قابلية للأصابة، بينما كان صنف الكوسة الإسكندرانى الأكثر قابلية للأصابة، وتلاه الصنف سويت كرانشى، ثم الصنف ألجى الذي كان أشد الأصناف المختبرة قابلية للأصابة.

وأمكن تقسيم الأصناف والهجن المختبرة لكل من الكوسة والخيار تبعا لقابليتها للأصابة بالذبابة البيضاء الي مجموعتين كالتالى : المجموعة الأقل قابلية للأصابة وهجن الكوسة وتضم الهجين أورليكا والهجين زوكينى، والمجموعة الأكثر قابلية للأصابة وتضم الكوسة الإسكندرانى، وفي حالة أصناف الخيار كان الهجين سليبرتى الأقل إصابة وتلاه الهجين سويت كرانشى، ثم الصنف ألجى الذي كان أكثر الاصناف المختبرة قابلية للأصابة.