

POPULATION FLUCTUATION OF THREE SAP SUCKING INSECTS ON CANTALOUPE SUMMER PLANTATIONS

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Abstract

The population fluctuation of three major sap sucking insect pests thrips, *Thrips tabaci* Lind. (Thripidae: Thysanoptera) aphids, *Aphis gossypii* Glov. (Aphididae : Homoptera) and whitefly, *Bemisia tabaci* Genn. (Aleyrodidae: Homoptera) on cantaloupe summer plantations was studied at El-Manawat village, Giza Governorate during 1995 and 1996 seasons. Cantaloupe plants are subject to infestation with the three pests from germination till harvest (May-July).

Thrips and aphid infestations were noticeably high from early May until mid-June, then relatively lower until harvest by late July. Whitefly infestation increased progressively from mid-June till the end of July. Three peaks of thrips were recorded by late May-early June, the 2nd half of June and the 2nd- 3rd week of July. Two peaks of aphid infestation took place during the 4th week of May and the 3rd week of July. Whitefly peaks occurred during the 4th week of May, 3rd week of June and 3rd week of July.

INTRODUCTION

Cantaloupe *Cucumis melo* L. (Fam. Cucurbitaceae) is becoming a commonly grown vegetable crop in Egypt. As other cucurbits, it is subject to the attacks of a variety of economically important insect pests among which are the three sap suckers: thrips, *Thrips tabaci* Lind., (Thripidae:Thysanoptera); aphids, *Aphis gossypii* Glov. (Aphididae:Homoptera) and the whitefly, *Bemisia tabaci* Genn. (Aleyrodidae:Homoptera). Bashir and Abdelhadi (1986) in the Sudan and Ogur *et al.* (1989) in Turkey mentioned that thrips, aphids and whitefly are serious pests on cucurbit crops. This group of sap sucking insects may cause serious damage to their host plants either directly by feeding on plant sap or indirectly through transmitting the causative agents of several plant diseases (Greber *et al.* 1991, and Metwally *et al.*1994).

Giza governorate is one of the cantaloupe growing areas, where approximately 15.000 feddans are planted with this crop as a summer crop. Observations indicate that thrips, aphids and whitefly represent a real threat to cantaloupe plantations in

Giza Governorate. As a contribution to the knowledge on the status of the three above-mentioned sap suckers on cantaloupe plantations, the present investigation was aimed. It concentrated, therefore, on their population fluctuation on cantaloupe summer plantations in Giza Governorate during two successive seasons. It is hoped that achieved information may support planning for the management of such group of destructive pests.

MATERIALS AND METHODS

Work was carried out on summer plantations of cantaloupe at El-Manawat village, Giza Governorate, during the two successive years 1995 and 1996. For each year, an area of about 1/4 feddan was seeded with cantaloupe during the 3rd week of April in rows 80 cm apart with 40 cm distance between hills. The experimental area received usual agricultural practices and no chemical control was applied until harvest by the end of July.

Immediately after the emergence of true leaves, approximately two weeks after seeding, a random sample of 25 leaves was taken weekly. Leaves were placed in paper bags of suitable size, and transferred to the laboratory for examination visually first then under a stereomicroscope. Counts of the existing individuals of thrips (larvae and adults), aphids (nymphs, apterus and alate forms) and whitefly (nymphs only) were undertaken.

RESULTS AND DISCUSSION

Fig. 1 shows the population fluctuation of thrips, aphids and whitefly on cantaloupe summer plantations at El-Manawat village, Giza Governorate, during 1995 and 1996 seasons.

Thrips: For both years of investigation, cantaloupe plants were subject to thrips damage from immediately after germination until harvest. Population level and trend were nearly similar in 1995 and 1996. Infestation started early in May and increased progressively to distinct peaks of 59.9 and 46.9 individuals/leaf during the 1st week of June, 1995 and the last week of May, 1996. This peak was followed by two weeks of population oscillation until a second relatively smaller peak of 15.6 and 13.0 individuals/leaf in 1995 and 1996, respectively, during the 2nd half of June. After some other oscillations, a third peak was recorded throughout the 2nd -3rd week of July (21.4 and 18.6 individuals/leaf in 1995 and 1996, respectively).

The above results indicate that, at Giza region, cantaloupe summer plantations are subject to thrips infestation all the season round with a large peak between late May and early June and two relatively smaller peaks during the 2nd half of June and the 2nd-3rd week of July. These results agree with the findings of Kardou and Al-Faisal (1986) who reported that, in Iraq, thrips population increased markedly on cucumber by late May, and Grassely *et al.* (1987) who mentioned that thrips became an important pest on cucumber and other cucurbit crops in France.

Aphids: As in the case of thrips, the population level and trend of aphid infestation on cantaloupe summer plantations were almost similar in 1995 and 1996. During the two years, aphids prevailed all the season round except for the relatively hot weather period (mid-June to early July). For both years, plants received the first aphid infestation shortly after germination and infestation rate increased rapidly thereafter until a high peak of 71.5 and 58.9 individuals/leaf was reached during the last week of May in 1995 and 1996, respectively. This peak was followed by a sharp decline of population until aphids almost disappeared during the 2nd half of July. Aphids appeared again in July and a second peak (22.5 and 27.5 individuals / leaf for 1995 and 1996, respectively) was reached on the 20th of that month.

Results emphasize that, at Giza region, cantaloupe summer plantations harbour aphid infestation throughout two main periods; one between late May and early June and the other during the 2nd half of July. The first aphid attack is comparatively stronger and rather serious than the second one. Several authors contributed to the population fluctuation of *Aphis gossypii* on cucurbit crops. Karelin (1980) in USSR and Rizk *et al.* (1981) in Iraq mentioned that aphids attack cucurbits along the year and are dominant pests in spring. Attia and El-Hamaky (1987) stated that, in Egypt, *Aphis gossypii* is the most injurious aphid species on cucurbits. They added that, although aphids occur throughout the whole year, summer plantations suffer rather rather markedly from their attacks.

Whitefly: The population trend of whitefly infestation was more or less similar in 1995 and 1996. However, the population level appeared to be comparatively higher in the latter year. As a general observation, whitefly nymphs occurred on cantaloupe plants throughout the whole growing season from May until July. Infestation level was relatively low in May (1.0-10.4 and 4.6-36.8 nymphs/leaf in 1995 and 1996, respectively). The first peak of nymph population took place during the last week of May (21.2 and 36.8 nymphs/leaf in 1995 and 1996, respectively). This peak was followed by a short period of decline, then nymph population increased, second high peak reached on

the 22nd of June (39.1 and 59.7 nymphs/leaf for 1995 and 1996, respectively) In 1995, whitefly nymph population decreased between late June and early July then a third peak of 55.2 nymphs/leaf was recorded around the middle of same month. In 1996, on the other hand, whitefly population remained relatively high after the second peak and oscillated throughout the rest of June and the 1st half of July until a third peak of 78.0 nymphs/leaf reached during the 3rd week of July. For both years, the population of nymphs decreased gradually thereafter until harvest. Results show that cantaloupe summer plantations suffer whitefly attacks from germination until harvest. However, three periods of maximum population of nymphs are of possible occurrence by late May, the 3rd week of June and the 3rd week of July. Increase of whitefly population goes parallel to the increase of plant age. The occurrence of the whitefly, *Bemisia tabaci* on the cucurbit summer plantations was studied by several investigators (Ohnesorge, 1981 in Jordan; El-Serwiy *et al.*, 1984, in Iraq; Butler *et al.*, 1985, in U.S.A.). Ogur *et al.* (1989) reported that, in Turkey, the high level of whitefly population during summer may be attributed to the fact that it prefers warmer weather.

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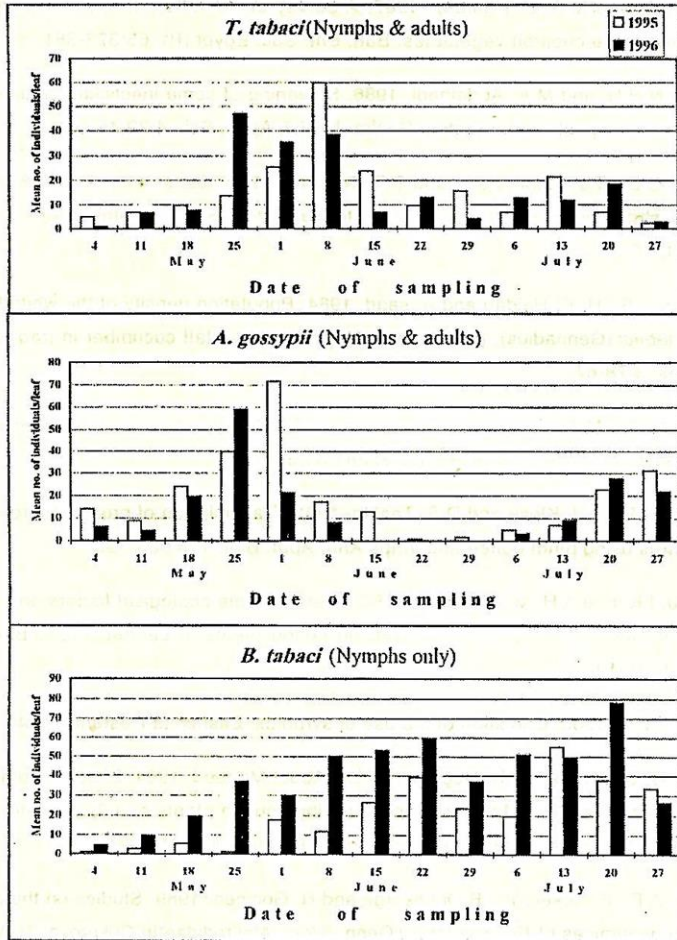


Fig. 1. Population fluctuation of 3 sap sucking insects on cantaloupe summer plantations at El-Manawat village, Giza Governorate in 1995 and 1996.

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تقلبات تعداد ثلاثة حشرات ماصة للعصارة على العراوت الصيفية للكنتالوب

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درست تقلبات تعداد ثلاثة آفات حشرية رئيسية ماصة للعصارة النباتية هي التريس *Thrips tabaci* Lind. والمن. *Aphis gossypii* Glov. والذبابة البيضاء *Bemisia tabaci* Genn. على العراوت الصيفية للكنتالوب بقرية المنوات بمحافظة الجيزة خلال عامى ١٩٩٥ و ١٩٩٦. وجد أن النباتات كانت عرضة للإصابة بالآفات الثلاثة من بدء الإنبات حتى الحصاد (مايو - يوليو).

وقد كانت الإصابة بكل من حشرتى التريس والمن عالية بدرجة ملحوظة بين أوائل مايو ومنتصف يونيو، ثم قلت نسبيا حتى الحصاد فى أواخر يوليو. أما الذبابة البيضاء فقد تزايدت الإصابة بها بشكل مضطرب بين منتصف يونيو ونهاية يوليو. وسجلت ثلاثة قمم لتعداد حشرة التريس بين أواخر مايو وأوائل يونيو، وخلال الأسبوع الثانى من يونيو، وخلال الأسبوعين الثانى والثالث من يوليو. أما حشرة المن فقد كان لها قمتان للتعداد أولاهما خلال الأسبوع الرابع من مايو، والثانية فى الأسبوع الثالث من يوليو. وبالنسبة للذبابة البيضاء لو حظت قمم التعداد خلال الأسابيع الرابع من مايو، والثالث من يونيو، والثالث من يوليو، على التوالى.