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POPULATION FLUCTUATION OF THE TWO-SPOTTED SPIDER MITE, *Tetranychus urticae* KOCH ON PEANUT IN A SEMI-ARID NEWLY RECLAIMED LAND AT ASSIUT GOVERNORATE

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Abstract: The population fluctuation of the two-spotted spider mite, *Tetranychus urticae* Koch on peanut, *Arachis hypogeae* L. cv. (Giza 5) was studied in a semi-arid newly reclaimed land (Arab El-Awamer Abnob, Assiut Governorate) during 2006 and 2007 growing seasons. Peanuts plants are subjected to the infestation with different stages of the two-spotted spider mite.

The infestations with different stages of *T. urticae* were noticeably high from early July until the end of August, then relatively decreased until the harvest by early September. The stages of the two-spotted spider mite were traced on peanut during 2006 and 2007 seasons in relation to plant age. It was evident that, the highest average numbers of the two-spotted spider mite stages was (33.50 and 39.75 eggs on 63rd and 98th days of plant age), (31.25 and 37.00 larva on 63rd and 98th days of plant age), (28.75 and 31.50 nymph on 63rd and 98th days of plant age) and (25.50 and 24.50 adult on 63rd and 98th days of plant age) during the two successive seasons 2006 and 2007.

It's also, notice that, the total average numbers of the two-spotted spider mite stages infested peanut was much higher in 2007 than in 2006 and the highest peaks were recorded in July 18 and August 23 (119.00 and 132.75 individuals) throughout the two successive seasons 2006 and 2007. Therefore these periods are considered the best time for mite control on peanut plants. The investigated was left to natural infestation without using any pesticides.

Key words: *Tetranychus urticae* Koch, Peanut.

Introduction

The two-spotted spider mite, *T. urticae* Koch is one of the phytophagous mite cause a considerable injury to agricultural crops, Ali & Aly (1989); Gamieh & El-Basuony (2001); Younes (2005) and Saadon (2007). Nowadays, *T. urticae* Koch has become a serious pest on peanut crop in Egypt, possibly owing to the climatic conditions, favouring population growth and also the extensive usage of pesticides that will kill its natural enemies.

Peanut, *Arachis hypogeae* L. is one of the important oil crops allover the world. It's the amendment crops for the new sandy soil because of its ability to fix the atmospheric nitrogen in the soil. It contains 48-52% oil and about 28% protein. Osman and Abdel-Fattah (1979) mentioned that in newly reclaimed lands in Tahreer province, *T. urticae* Koch attack the peanut crop throughout the growing season resulting in the weak plants causing very low yields. Margoli & Kennedy (1984); Hoda *et al*. (1986); Soliman (1995) and Taha *et al*. (2002) found that peanut plants are highly susceptible to infestation with the two-spotted spider mite, *T. urticae* Koch and accordingly, the yield was affected by this infestation.

The present work aimed to study the population fluctuation of the immature and adult stages of the two-spotted spider mite on peanut in order to determine the best time for the mite control.

Materials and Methods

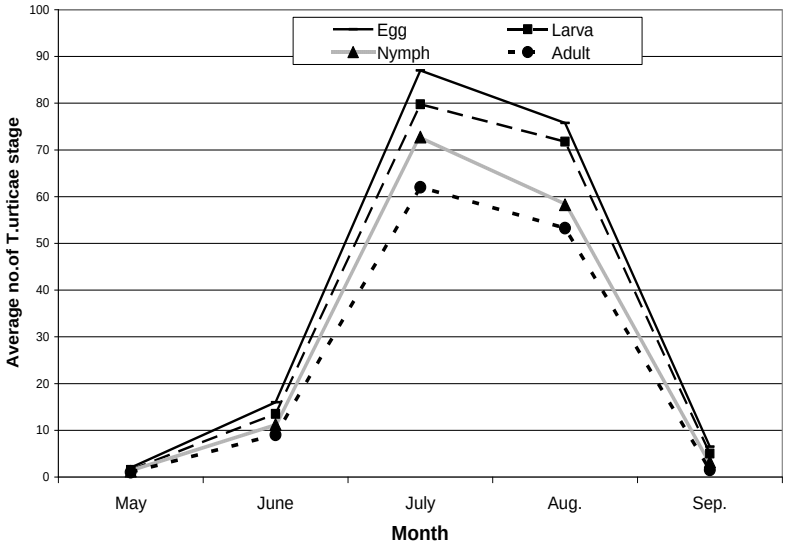
The present work was carried out in a semi-arid newly reclaimed land represented by Arab El-Oamer Abnob-Assiut Gov. This work was done during the two successive seasons, 2006 and 2007.

The investigated area was cultivated with cv. Giza 5, the sowing date of peanut was done throughout the first week of May during the two successive seasons (2006 and 2007).

Weekly randomized samples of 10 leaves (4 replicates) from three different levels of plants (lower, middle and upper) through the two seasons (2006 and 2007), when the plant ages to reached 21 days in age, were examined by counting the mite stages and individuals (egg-larva-nymph and adult) at the lower surface of the leaves using stereo-microscope of 20-100 times magnification force. The normally recommended agricultural practices were followed and no pesticidal treatments were applied during the experimental period.

Data were statistically analyzed according to Snedecor and Cochran (1967) and mean numbers were compared according to Duncan's (1955).

2006



2007

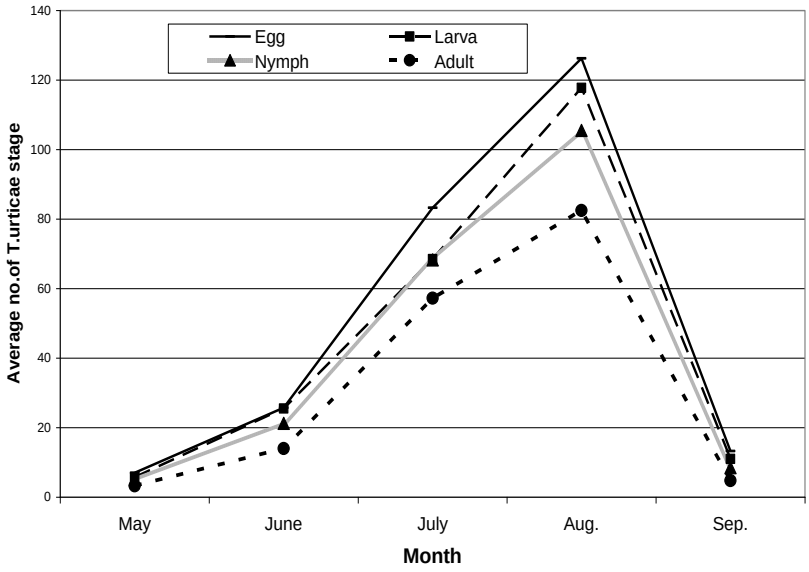


Fig.(1): Monthly fluctuations of the two-spotted spider mite stages on peanut plants during 2006 and 2007 growing seasons in Assiut Governorate.

Results and Discussion

Data in Tables (1 & 2) and Fig. (1) show that the two-spotted spider mite stages (average number of mite/40 leaves) were found on the peanut plants during the two seasons, 2006 and 2007.

The incidence of the egg stage on peanut plants started after 21 days from sowing date until the harvest. The highest average number of egg was (33.50 & 39.75) were recorded on July 18 & August 23 during the two successive seasons (2006 and 2007), respectively.

The population of the larval stage was found to be gradually increased until reached their peaks (31.25 & 37.00) through 63 & 98 days during the two successive seasons, 2006 and 2007.

Data represent the fluctuation of population density on adult stage of *T. urticae* Koch on the peanut plants (25.50 & 24.50) on 63 & 98 days during the two successive seasons, 2006 and 2007.

Also, the monthly highest average numbers of the two-spotted spider mite stages (75.37 & 108.00 individuals) were noticed in July & August (the most favourbale months for mite activity) during the two successive seasons (2006 & 2007). While the monthly lowest average numbers (1.44 & 5.25 individuals) were recorded in June during the two seasons.

The population density of the two-spotted spider mite stages was slightly higher in 2007 than in 2006 may be due to the changes in the climatic factors.

The present findings agree with those obtained by Sawires *et al*. (1987); Ahmed (1988); El-Duweini *et al*. (1989); Mawafy *et al*. (2002) and Abdel-Aziz (2006) on peanut; Abou El-Saad (1998); Salman *et al*. (2002); Sourial *et al*. (2002) and Abou El-Saad (2006) on the other crops.

Therefore, mite control must occur during or before the highly infestation with mites stages during July and August by using a suitable acaricides.

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تقلبات تعداد العنكبوت الأحمر العادى على محصول الفول السودانى المنزرع فى أرض حديثة الاستصلاح فى محافظة أسيوط

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تم دراسة تقلبات تعداد العنكبوت الأحمر العادى على محصول الفول السودانى (صنف جيزه 5) المنزرع فى أرض حديثة الاستصلاح فى منطقة (عرب العوامر – أبنوب – محافظة أسيوط) خلال موسمى الزراعة 2006 ، 2007 وكانت النتائج كالآتى :

1- وجد أن نباتات الفول السودانى تصاب بالأطوار المختلفة للعنكبوت الأحمر العادى وهى (بيضة – يرقة – حورية – حيوان كامل) من بداية الإنبات حتى موسم الحصاد فى الفترة من (مايو حتى سبتمبر) . وأن إصابات الأطوار المختلفة للعنكبوت الأحمر العادى على محصول الفول السودانى تبدأ فى الارتفاع اعتباراً من أول يوليو حتى نهاية أغسطس ثم تبدأ فى الانخفاض تدريجياً حتى أول سبتمبر خلال موسمى الزراعة 2006 ، 2007 .

2- تواجد الأطوار المختلفة للعنكبوت الأحمر العادى على محصول الفول السودانى خلال موسمى الدراسة كان له إرتباط وثيق بعمر النبات ، حيث كان أعلى متوسط تعداد (33.50 – 39.75 بيضة)، (31.25 – 37.00 يرقة) ، (28.75 – 31.50 حورية) و (25.50 – 24.50 حيوان كامل) تم تسجيله عندما كان عمر النبات من (63-98 يوم) خلال الموسمين 2006 ، 2007 .

3- سجل متوسط إجمالى تعداد أطوار العنكبوت ارتفاعاً ملحوظاً خلال موسم 2007 مقارنة بمتوسط التعداد فى 2006 وربما يرجع ذلك إلى اختلاف العوامل الجوية لصالح الكثافة العددية .

4- تركزت زيادة الكثافة خلال شهرى يوليو وأغسطس فى موسمى الدراسة وهذا الوقت يعتبر أنسب وقت لإجراء عمليات المكافحة لهذا النوع من الأكاروسات .