SEASONAL ABUNDANCE OF THE TWO-SPOTTED SPIDER MITE, *TETRANYCHUS ARABICUS* ATTIAH AND ITS PREDACEOUS MITE, *PHYTOSEIUS FINITIMUS* RIBAGA ON SULTANI FIG VARIETY IN UPPER EGYPT

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Abstract

The two spotted spider mite, *Tetranychus arabicus* Attiah and its predatory mite, *Phytoseius finitimus* Ribaga were studied on sultani fig variety in sohage Governorate under the prevailing weather condition for two successive years (1995-1996). *T.arabicus* had one annual peak in July 1995 and in June 1996, while the predator mite, *P.finitimus* had one annual peak in August in the two studied years. The average minimum temperature and the mean temperature had a highly significant correlation with *T.arabicus*, while the average maximum temperature had a positive significant correlation in this respect. However, a negative correlation with relative humidity was recorded. *P.finitimus* had a highly positive correlation with *T.arabicus* .

INTRODUCTION

The two-spotted spider mite, *T.arabicus*, has been responsible for considerable damage to quality and quantity of fig yield. In this respect, Rasmy et al. (1971) studied the effect of ecological and chemical factors on mites infesting deciduous fruit trees in Egypt. Also, El-Halawany and Abdel-Samad (1990) studied the population dynamics of the spider mite, *T.arabicus* and its predatory mite *P.finitimus* in fig orchard. Recently, El-Halawany et al. (1986) studied the mites inhabiting deciduous fruit trees in Egypt.

The aim of the present work is to estimate the population dynamic of *T.arabicus* and its correlation with its predators and the weather factors.

MATERIALS AND METHODS

During the two successive years (1995-1996), samples of Sultani variety fig leaves (100 leaves per month) were taken randomly to laboratory in order to count

the two-spotted spider mite and its predatory mite, *P.finitimus*. Monthly average minimum and maximum temperature and relative humidity prevailing in sohag Governorate during the experiment were obtained from the Shandaweel Meteorological Unit. Simple correlation were done between the total number of moving stage of mite and the three weather factors, also with the total count of the predatory mite (steel and Torrie, 1980).

RESULTS AND DISCUSSION

Data in Table 1 show that *T.arabicus* had one annual peak of abundance recorded in July (1801 individuals per 100 leaves) in 1995 at the average minimum temperature of 24.97°C, maximum temperature 47..56°C, mean temperature of 36.11°C and 64.02% R.H. It is of interest to note that during January, February and March months, no leaves on the fig trees were found and thus no mite were recorded. In April, the number of individuals began to appear (50 individuals per 100 leaves) and after that the number was progressively increased to reach its peak at July, then the population density decreased to representing 61 individuals in December.

In 1996, the same results with January, February and March months were recorded. In April, the total count of mite reached 90 individuals. The two-spotted spider mite reached its peak in June recording 1991 individuals/100 leaves.

The prevailing weather conditions during June 1996 revealed the average minimum temperature 23.1°C, average maximum temperature 41.8°C, mean temperature 32.42°C and R.H. 66.78%. After that, the total count was progressively decreased by elapsing of time to reach 61 individuals in December. These results are in agreement with El-Halawany and Abdel-Samad (1990) who stated that *T.arabicus* had one peak at June and July months. There were a highly significant correlation between total count of spider mite and average of minimum and mean of temperature, significant positive correlation with the average maximum temperature, but there was a negative correlation with relative humidity. The obtained results are agreed with those of Feese and Wilde (1977), who stated that mites developed most rapidly when temperature was high, the effects of relative humidity were significant but minimal.

The predaceous mite, *P.finitimus* had also one peak at August (160 and 740 individuals) during two successive years at average minimum temperature of 21.84°C, average maximum temperature 43..26°C, mean temperature 32.53°C and

Table 1. The relation between seasonal abundance of *Tetranychus arabicus* and its predatory mite *Phytoseius finitimus* under the prevailing weather factors, at Sohag Governorate.

	Monthly total of		Monthly record of			
	T.arabicus	*P.finitimus*	Min.temp.	Max.temp.	Mean^{o}C	R.H.%
Jan., 1995	0	0	3.06	26.39	14.72	70.46
Feb.	0	0	3.28	21.64	12.46	67.94
Mar.	0	0	4.87	25.71	15.69	66.17
Apr.	50	0	14.47	38.30	26.39	57.24
May	212	17	20.58	44.61	32.60	58.37
June	1710	125	24.33	49.37	36.85	60.07
July	1801	145	24.97	47.56	36.11	64.02
Aug.	1403	160	21.84	43.26	32.55	68.47
Sept.	917	77	20.37	40.27	30.32	68.00
Oct.	910	42	18.39	37.10	27.74	62.89
Nov.	614	37	5.80	26.53	16.16	69.17
Dec.	109	19	5.50	26.52	15.98	74.27
Jan., 1995	0	0	4.51	77.13	15.82	70.73
Feb.	0	0	5.29	28.79	17.04	72.68
Mar.	0	0	6.13	29.73	17.93	65.12
Apr.	90	0	16.3	40.12	28.21	55.24
May	837	117	22.13	41.90	3.01	52.10
June	1991	610	23.10	41.80	32.42	66.78
July	1840	730	23.90	42.40	33.10	66.02
Aug.	1101	740	23.48	41.33	32.42	70.12
Sept.	713	401	18.43	37.73	28.08	65.62
Oct.	113	70	13.73	34.77	24.25	70.19
Nov.	110	30	14.50	28.30	21.40	72.70
Dec.	61	4	10.35	5.78	18.07	72.19
Correlation Coefficient	"r"	0.69266**	0.80499**	0.47033*	0.77589**	-0.18238

68.47% R.H. in 1995; and average miximum temperature 23.48°C, average maximum temperature 41.33°C, mean temperature 32.42°C, and 70.12% R.H in 1996. The annual peak of the predaceous mite appeared one or two months later than the peak of phytophagous mite inducing a gradual decrease in the population density of phytophagous mite. These results are in harmony with those El-Halawany and Abdel-Samad (1990) who stated that *P.finitimus* seemed to be an important factor checking *T.arabicus* .

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التواجد الموسمي للعنكبوت الأحمر العادي والمفترس الأكاروسي *P.finitimus* علي صنف التين السلطاني في مصر العليا

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أجريت الدراسة في محافظة سوهاج علي صنف التين السلطاني والذي تنتشر زراعته بها وذلك لمدة عامين ١٩٩٥ – ١٩٩٦ لتقدير التواجد الموسمي للعنكبوت الأحمر العادي ومفترسه الأكاروسي *P.finitimus* في ظل الظروف الجوية السائدة في محافظة سوهاج.

ولقد أوضحت النتائج المتحصل عليها أن العنكبوت الأحمر العادي وصل لأقصي تعداد له خلال شهر يوليو ١٩٩٥ وشهر يونيو ١٩٩٦، بينما وصل أقصي تعداد للمفترس خلال شهر أغسطس في كلا العامين. لقد وجد أن هناك ارتباط معنوي جدا بين أعداد العنكبوت الأحمر وكل من أعداد المفترس وكذا متوسط الحد الأدني لدرجة الحرارة ومتوسط درجة الحرارة الشهرية بينما كان هناك ارتباط معنوي بين متوسط الحد الأعلي لدرجات الحرارة الشهرية. أما بالنسبة للرطوبة النسبية فكان هناك ارتباط سلبي بينها وبين أعداد العنكبوت الأحمر.