POPULATION STUDY OF THE ADULTS OF THE SPIDER MITE, *TETRANYCHUS TELARIUS* L. COMPLEX (ACARINA : TETRANYCHIDAE) INFESTING COTTON PLANTS IN EGYPT

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ABSTRACT

The most strictly result of successive years under study (1971 and 1972) is that the infestation with *Tetranychus telarius* complex in Egyptian Cotton fields began with a gradual increase in numbers during May. Indices of this mite increased progressively with the plant growth until they reached their peaks in August when plants attained their maximum foliage growth. Then, decrease in population occurred suddenly in September where foliage became dry.

RÉSUMÉ

Le résultat le plus intéressant après deux années successives d'étude (1971-1972) est que l'infestation par le complexe *Tetranychus telarius* dans les champs de coton en Égypte, commence au mois de mai avec un accroissement progressif du nombre d'Acariens. Les populations sont les plus fortes au mois d'août lorsque les plantes ont atteint leur croissance maximale. La baisse des effectifs se produit brusquement en septembre lorsque le feuillage des cotonniers sèche.

INTRODUCTION

Tetranychid mites have been known to occur in Egypt long ago. Surveys of the cotton mite fauna in this country were made by different research workers (WILLCOCKS & BAHGAT, 1937, SAYED, 1949, HASSAN & ZAHER, 1956, HASSAN *et al.*, 1959, ABU-EL-NASR, 1960, MOHAMED, 1962, EL-KADY, 1964, ABDEL SHAHIED, 1967 and ATTIA, 1967).

The objective of the present study was to find out the seasonal variation in the density of *Tetranychus telarius* L. complex infesting cotton plants in a specific area of Egypt. These information can form a basis for the initiation of control measures against this pest.

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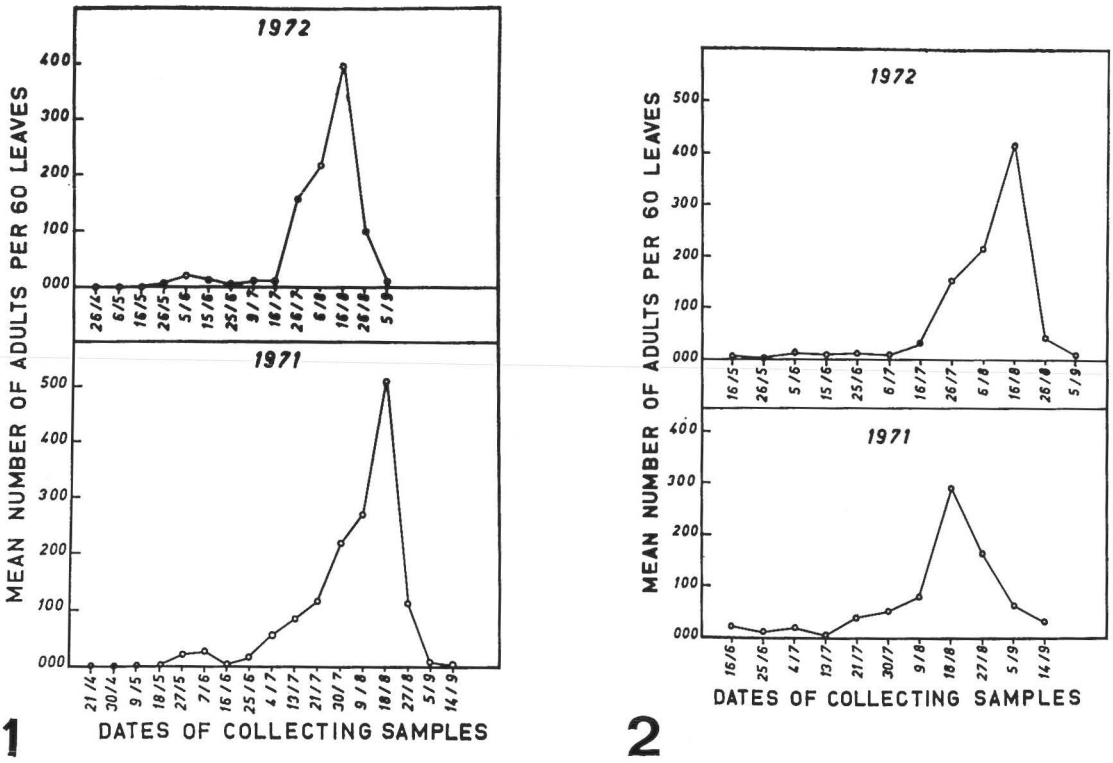

FIGS. 1-2.

1) Population means of *T. telarius* complex per 60 × 3 cotton leaves found in location I during the years 1971 and 1972.

2) Population means of *T. telarius* complex per 60 × 3 cotton leaves found in location II during the years 1971 and 1972.

METHODS AND TECHNIQUE

Three field experiments (1/2 — 3/4 feddan each) were carried out during the seasons of 1971 and 1972 at the Ministry of Agriculture Experiment Station of Saft Khalid (Beheira Province). Giza 67 and Giza 68 varieties of cotton were used in 1971 and 1972, respectively. The Complete Randamized Blocks Design was used during the present experiments. Three treatments, each of six replicates × 3 plots, were used. All agricultural practices in these treatments were almost the same. Samples were taken from leaves of each treatment regulary for mite counting at 9 days intervals throughout the period of investigation (from about the end of April to about the end of August). Counting was directly made in the laboratory by using a Stereomicroscope.

RESULTS AND DISCUSSION

Counts based on the mean number of adults of 60 × 3 cotton leaves samples (Table 1) for the years 1971 and 1972. Results are also illustrated by Figures 1, 2 and 3.

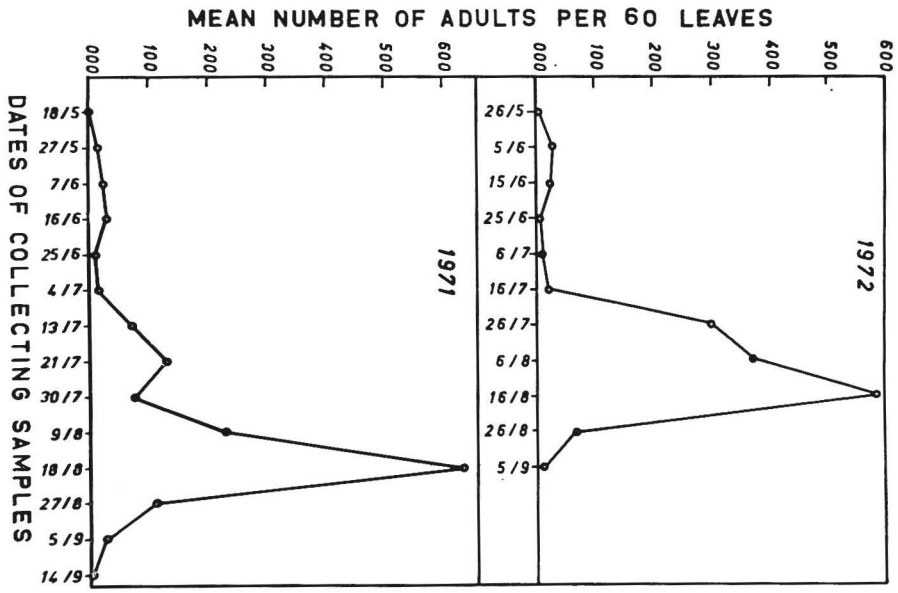

FIG. 3. — Population means of *T. telarius* complex per 60 × 3 cotton leaves in location III during the years 1971 and 1972.

Experiment of 1971 : It was found that the annual peak of the *T. telarius* adult index occurred during the first half of June (June 7 in location I), July 4 in location II and June 16 in location III (Table 1). Then, this peak was followed by a very steep drop of the curve during the second half of June in locations I and III and the first half of July in location II (Figs 1, 2 and 3). A secondary peak was also found during the period from the second half of July until 18th of August in the three locations, followed by steep decrease in the mean numbers of adult mites until the second half of September. The magnitude of the two peaks in 1971 varied from 26.3 in location I to 29.3 and 30.0 in locations II and III, respectively, during June ; and from 506.3 in location I to 290.3 and 636.0 adults in locations II and III, respectively, during August. The numbers of the first peak are 1.8 %, 2.5 % and 2.2 % of the total number of adult mites in the season of investigation for the respective three loctions. However, the numbers of the second peak are 34.9 %, 38.0 % and 45.7 % of the total number of counts in the season of study. The last part of September showed an abrupt drop of all samples which continued to decline to the low point of 14th September in all locations. Here, the cotton was in its mature stage. Also, this latter decrease is probably due to the overwintering of *T. telarius* complex on other host plants instead of cotton crop. Many of the samples were zero and the survey index was too low to show at all on the scale used during the last part of April, followed by a gradual increase in the numbers during the first part of June. The second steep drop of numbers in both locations was found during the second part of June.

The above results indicated that *T. telarius* complex have a good start from the second part of May, reaching its highest rate during the first part of June, then declined durint the first part of July and increased to the second high population during August, then declined again and ended with the maturing of the cotton crop.

TABLE 1. — Population means of *T. telarius* complex per 60 cotton leaves found in the studied locations, I to III, during the years 1971 and 1972.

Date of counting	Population means of *T. telarius* complex [1]					
	1971			1972		
	Locations					
	I	II	III	I	II	III
April 21	0.0	0.0	0.0	0.0	0.0	0.0
» 26	0.0	0.0	0.0	0.0	0.0	0.0
» 30	0.0	0.0	0.0	0.0	0.0	0.0
May 6	—	—	—	0.0	0.0	0.0
» 9	0.0	0.0	0.0	—	—	—
» 16	—	—	—	0.6	2.6	0.0
» 18	0.0	0.0	0.0	—	—	—
» 26	—	—	—	1.53	0.6	3.0
» 27	20.0	0.0	17.6	—	—	—
June 5	—	—	—	18.3	8.0	26.0
» 7	26.3	0.0	23.0	—	—	—
» 15	—	—	—	11.3	5.6	23.6
» 16	5.3	21.3	30.0	—	—	—
» 25	17.0	10.3	11.6	1.6	8.3	4.6
July 4	56.6	19.3	18.0	—	—	—
» 9	—	—	—	8.6	5.0	7.0
» 13	84.3	1.3	72.6	—	—	—
» 16	—	—	—	11.6	27.3	20.6
» 21	116.6	39.0	128.0	—	—	—
» 26	—	—	—	160.0	151.3	297.6
» 30	218.6	48.6	77.3	—	—	—
August 6	—	—	—	218.0	215.0	371.3
» 9	270.3	79.0	229.3	—	—	—
» 16	—	—	—	399.3	414.0	586.3
» 18	506.3	290.3	636.0	—	—	—
» 26	—	—	—	99.6	39.0	70.0
» 27	114.0	162.3	114.3	—	—	—
Sept. 5	9.0	62.6	27.6	5.0	6.3	17.0
» 14	2.3	29.0	5.0	—	—	—

1. Average of 3 replicates, 60 cotton leaves each.

Experiment of 1972 : In this year, the mean population trends in the three locations were generally the same as those recorded for the season of 1971. Also, *T. telarius* complex had a good start from the second part of May, reaching its first high population during the first part of June, then declined and subsequently increased to the second highest population during August, and then declined and ended with the maturing of the cotton crop.

Results of both 1971 and 1972 showed that infestation with *T. telarius* complex in cotton field began in May and increased gradually with the plant growth till its highest peak population in August when plants attained their maximum foliage growth. Then, decrease in population happened suddenly in September when foliage became dry. Boness (cf. CHAUVIN, 1967) stated that the peak population of insects among the plants coincides more or less with the peak of plant growth. He also reported that in an alfalfa field during the spring season (April, May) characterized by the full-development of the vegetation, the collembola and most of the spiders also reach their peaks. Also, the reaching of the *Tetranychus* spp. peaks may be due to the interlock of leaves and stems of cotton plants in July and August. This statement of Boness agrees with that found by ABDEL-SHAHIED *et al.* (1971) who discovered that numbers of the mite *T. cucurbitacearum* Sayed were more numerous on older cotton leaves than on cotton seedlings.

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