

SURVEY OF MITES INHABITING CUCURBITACEOUS AND LEGUMINOUS VEGETABLES IN KALIOBIA AND GIZA GOVERNORATES

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(Manuscript received 14 November, 1996)

Abstract

Samples of cucumber, squash, kidney-bean and broad bean plants from different localities of Kaliobia and Giza governorates were collected weekly and examined for mites throughout one year. The collected phytophagous mite species were; *Tetranychus urticae* Koch, *Brevipalpus californicus* (Banks), *Tydeus californica* and *Tyrophagus putrescentiae* Schrank. The tetranychid mite, *T.urticae* was the most dominant phytophagous species found on the crops. On kidney-bean, the highest infestation was recorded in September and November (88 and 114 individuals/leaf, respectively), while on cucumber, the highest infestation occurred during May, June and July, where the average number of mites were (38, 176.3 and 50.7 individuals/leaf, respectively).

The predaceous mites surveyed were *Euseius scutalis* (Athias-Henriot) (= *A.gossipi* El-Badry), *Amblyseius swirskii* (Athias-Henriot), *Agistemus vulgaris* Gonia and *Raphignathus* sp. *E.scutalis* was the most abundant predaceous mites on cucumber and kidney bean.

INTRODUCTION

Vegetables are considered one of the most important crops cultivated in Egypt. From these vegetable, leguminous and cucurbitaceous plants are considered the most abundant and wide spread all over Egypt. Usually, these crops shelter several mite species, of which some are phytophagous and highly reduce quantitatively and qualitatively the yield all over the world (Abdel-Salam *et al.*, 1980). The two spotted spider mite, *Tetranychus urticae* Koch is the most injurious phytophagous mite on leguminous and cucurbitaceous plants in both open fields and plastic houses. Other associated mites are predators feed on the phytophagous mite eggs or their postembryonic stages (Shehata, 1967 and Wahab *et al.*, 1974). The present study aimed to survey the most common phytophagous and predaceous mites associated with four vegetable crops, with special stress on the most common one, *T.urticae* all over the year on Kaliobia and Giza Governorates.

MATERIALS AND METHODS

During the present study, cucumber, *Cucumis sativus* L., squash, *Cucurbita pepo* L. (Family Cucurbitaceae) and bean, *Phaseolus vulgaris* L., broad bean, *Vicia faba* L. (Family Fabaceae) were chosen as representing two different vegetable families to survey the phytophagous and predaceous mite species inhabiting these vegetables at Kaliobia and Giza Governorates during one complete season (1993).

Weekly samples, each of 10 leaves of each cucurbit and legums plants were collected. Each sample was examined for the phytophagous and predaceous mites with the aid of a dissecting microscope. All mite species were mounted in Hoyer's medium for identification. Number of the two spotted spider mite, *Tetranychus urticae* Koch (the most common phytophagous mites) on the previous vegetable crops during the present study was counted and the percentage of infested leaves and the average number for infested leaves were calculated.

RESULTS AND DISCUSSION

Vegetables in Egypt were found harbouring several mite species belonging to sixteen families and 4 suborders: Gamasida, Actinedida, Acaridida and Oribatida (Abdel-Salam *et al.*, 1980). During the present study, two phytophagous, four predaceous, one fungivorous mite species and one of miscellaneous feeding habit were found on 4 different vegetables: *Cucumis sativus* L., *Phaseolus vulgaris* L., *Vicia faba* L. and *Cucurbita pepo* L. These mites belong to three suborders and seven families as follows:

Suborder: Gamasida

Family: Phytoseiidae

Euseius scutalis (Athias-Henriot) (= *Amblyseius gossipi* El-Badry)
(predator) *A. Swirskii* (Athias-Henriot) (Predator)

Suborder: Actinedida

Family: Tetranychidae

Tetranychus urticae Koch (phytophagous)

Family: Tenuipalpidae

Brevipalpus californicus Banks (phytophagous)

Family: Tydeidae

Tydeus californica (miscellaneous)

Family: Stigmaeidae

Agistemus vulgaris Gomma (predator)

Family: Raphignathidae

Raphignathus sp. (immature stages) (predator)

Suborder: Acaridida

Family: Acaridae

Tyrophagus putrescentiae Schrank (fungivorous)

The forementioned results were in agreement with data of survey recorded by several authors, i.e. Harranger (1964), El-Atrouzy (1968), Guitierrez (1970), Wahab *et al.*, (1974), Abdel-Salam *et al.*, (1980) for phytophagous mites and Wahab *et al.* (1974), Abdel-Salam *et al.*, (1980) for predaceous mites. They recorded that our surveyed mite species were found infesting or inhabiting different vegetables crops.

Regarding that, *T.urticae* was the most common phytophagous mites, its population density was recorded allover the year on the four previously mentioned vegetable crops. Data given in Table 1 indicated that the mites infesting *P.vulgaris* occurred during May, July, September, November and December. The average number of *T.urticae* per infested leaf was 15.2, 23.2, 88, 114 and 11.5, respectively. The infestation was undetectable during June and October. The highest infestation was recorded in September and November. 100% of leaves were infested with mites during September, while this percentages reached its minimum (20%) at December where the mite individuals inhabit the lower leaves as shelters. *T.urticae* was recorded infesting *C.sativus* during three months, i.e., May, June and July. The highest infestation was noticed during June where the average number of mites per infested leaf was 176.3 individuals. The highest percentage of infested *P.vulgaris* leaves was observed in September (100%), while the lowest was in December. On *C.sativus*, the highest percentage of infested leaves was in June (76.7%), Table 1. On *Vicia faba*, The highest percentage of infested leaves occurred during April (90%) with the highest number of individuals per one cm² (9.30 individuals), while the least percentage was during December with 16.7% infested leaves .

In case of *Cucurbita pepo*, the highest percentage of infested leaves was during June (80%) average mean number of 2.13 individuals/cm², while the least percentage occurred during December (25%) with the least average number of infested leaves (3 individuals/leaf) and 0.02 individuals/cm² of leaf surface.

Table 1. Average number of *Tetranychus urticae* infesting *Phaseolus vulgaris*, *Cucumis sativus* and *Cucurbita pepo*.

Date of infestation	No. of leaf sample	% of infested leaves	Average area (cm ²) of infested leaves	Average no. of <i>T.urticae</i> on infested leaf	Avg. no of <i>T.urticae</i> on one cm ²
<i>Phaseolus vulgaris</i>					
May	10	50.0	24.00	15.2	0.60
July	10	50.0	19.45	23.2	0.60
September	10	10.0	26.63	88.0	1.10
November	10	50.0	24.89	114.0	1.20
December	10	20.0	8.58	11.5	0.30
<i>Vicia faba</i>					
December	10	16.7	1.39	35.0	2.80
January	10	50.0	2.65	57.0	3.60
February	10	25.0	2.70	47.0	2.10
March	10	35.0	5.49	77.0	2.34
April	10	90.0	8.10	366.0	9.30
<i>Cucumis sativus</i>					
May	10	71.4	16.72	38.0	0.30
June	10	76.7	25.47	176.3	2.31
July	10	65.0	15.42	50.7	0.80
<i>Cucurbita pepo</i>					
May	10	55.7	34.31	135.0	0.60
June	10	80.0	6.88	131.6	2.13
July	10	66.7	72.16	3.5	0.02

REFERENCES

- 1 . Abdel-Salam, A.L., A. M. Metwally, A.A. Yousef, N.A. El-Boghdady and M.F.A. Hegab. 1980. Mites associated with vegetable plants in Egypt. Proc. 1st Conf., Plant Prot. Res. Inst., Cairo, Egypt, 3 : 61-79.
- 2 . El-Atrouzy, N.A. 1968. Ecological studies on mites associated with truck crop. M.Sc. Thesis, Fac. Agric., Cairo Univ., 126 pp.
- 3 . Guitierrez, J. 1970. A note on some phytophagous mites from the Island of Reunion with the description of a new species of the genus *Eutetranychus*. *Acarologia*, 10 (3) : 443-445.
- 4 . Harranger, J. 1964. Some pests of market garden produce grown in glasshouses. *Phytoma*, 16 (154) : 13-25.
- 5 . Shehata, K.K. 1967. Survey and biological studies on mites of family Phytoseiidae and its economic importance. Ph.D. Thesis, Fac. Agric., Cairo Univ., 218 pp.
- 6 . Wahab, A.E.A., A.A. Yousef and H.M. Hemaeda. 1974. Mites associated with vegetable and ornamental plants in Lower Egypt (Acarina : Parasitiformes, Acariformes). *Bull. Soc. Ent. Egypte*, 43 : 359-366 .

حصار للأكاروسات المتواجدة على نباتات الخضر التابعة للعائلة القرعية والبقولية بمحافظة القليوبية والجيزة

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تم أخذ عينات دورية أسبوعيا من على نباتات الخيار ، الكوسة (العائلة القرعية) الفاصوليا والفول (العائلة البقولية) من أماكن متفرقة مختلفة من محافظتى القليوبية والجيزة وتم فحصها للتعرف على أنواع الحلم المصاحبة لها لمدة سنة كاملة.

وكانت أنواع الأكاروسات النباتية المصاحبة لهذه المحاصيل هى :

Tetranychus urticae Koch, *Brevipalpus californicus* (Banks), *Tyrophagus putrescentiae* Schrank وكان أكثر هذه الأنواع تواجدا وأعلها أصابة هو العنكبوت الأحمر العادى *T.urticae* على جميع المحاصيل، وقد وجدت أعلى أصابة على الفاصوليا خلال شهرى سبتمبر ونوفمبر بمتوسط ٨٨ ، ١١٤ فرد /ورقة على التوالي ، بينما على الخيار حدثت أعلى أصابة خلال أشهر مايو ، يونيو ، يوليو بمتوسط ٣٨ ، ١٧٦،٣ ، ٥٠،٧ فرد /ورقة على التوالي.

أما بالنسبة للأكاروسات المفترسة فقد وجدت الأنواع :

Euseius scutalis (Athias-Henriot) (= *Amblyseius gossipi* El-Badry), *Amblyseius swirskii* (Athias-Henriot), *Agistemus vulgaris* Gomaa, *Raphignathus* sp.

حيث كانت أكثر الأنواع المفترسة انتشارا على كل من الفاصوليا والخيار.