

## THE BEHAVIOR OF SOME PLANT SPECIES TO ATTACK OF TWO-SPOTTED SPIDER MITE

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**Key words:** behavior, plant species, pest attacks

### INTRODUCTION

Two-spotted spider mite - *Tetranychus urticae* Koch is a main pest of vegetable crops grown in greenhouses and tunnels (Călin Maria, 2005; Zhang, 2003; Ittai et al., 2017; Simone Dalpe, 2002). It is a polyphagous specie, that is attacking more than 1110 species, in the field, greenhouse and tunnels (Migeon & Dorkeld, 2015 after Ittai and all., 2017). In our country, this pest attacks crops of eggplants, peppers, cucumbers, beans, tomatoes, etc. Pest attack is higher in crops of eggplants and cucumbers and less in other species (Candea, 1984).

The two-spotted spider mite had caused little visible damage to the leaves and induced direct defense responses. According to Merjin and all. 2004, after pest attack the proteinase inhibitor activity had doubled and the transcription of genes involved in jasmonate-, salicylate-, and ethylene-regulated defenses had been activated. On day four, proteinase inhibitor activity and particularly transcript levels of salicylate-regulated genes were still maintained. In addition, genes involved in phospholipid metabolism were up-regulated on day one and those in the secondary metabolism on day four. Although transcriptional up-regulation of the enzymes involved in the biosynthesis of monoterpenes and diterpenes already occurred on day one, a significant increase in the emission of volatile terpenoids was delayed until day four

Our research focused on monitoring the attack of this pest at vegetables and weed species from gardens.

### MATERIAL AND METHODS

During 2015 – 2016 years, tunnels and open field experiments were performed in Vegetable Research-Development Station Bacau - Romania, in order to monitor and evaluate the attack of two-spotted spider mite attack in vegetable crops.

The pest attack was detected and monitored at the following species:

bean - *Phaseolus vulgaris* L., melon – *Cucumis melo* L., pepper – *Capsicum annuum* L.

The observations were accomplished every 10 days during the first decade of May to third decade of September.

The attack estimation was determined using the following indicators:

- Frequency of attack (F%),
- Intensity of attack (I%),
- Degree of attack (DA%).

The results obtained will be used for the control of pests in order to decrease the number of treatments in the conventional agriculture and increase of parasite and predator populations of vegetable pests.

### RESULTS AND DISCUSSIONS

Our observations revealed the identification of two-spotted spider mite attack since first decade of June on pepper, melon and climbing bean.

The attack continued until the maturity seeds of these species (table 1).

Table 1. The frequency, intensity and degree attack of two-spotted spider mite

Month and decade	Attack		
	F%	I %	DA%
1	2	3	4
Pepper in tunnels			
June the first decade	10.3	5.1	0.5
June the second decade	15.3	13.7	2.1
June the third decade	18.6	16.5	3.1
July the first decade	24.2	26.8	6.5
July the second decade	25.0	28.8	7.2
July the third decade	25.0	33.2	8.3
August the first decade	26.4	36.0	9.5
August the second decade	28.9	38.4	11.1
August the third decade	34.1	39.0	13.3
September the first decade	34.1	34.0	11.6
September the second decade	38.4	45.6	17.5
September the third decade	38.4	31.8	12.2
Melon in tunnels			
June the first decade	6.5	1.5	0.1
June the second decade	8.4	8.3	0.7
June the third decade	7.2	16.7	1.2
July the first decade	10.5	20.0	2.1
July the second decade	12.4	24.2	3.0
July the third decade	15.7	24.2	3.8
August the first decade	16.9	25.4	4.3
August the second decade	18.2	40.1	7.3
August the third decade	21.5	52.6	11.3
September the first decade	49.4	61.7	30.5
September the second decade	60.4	67.5	40.8
September the third decade	78.6	78.0	61.3



September - 30.9%. The degree of attack was between 0.5 and 17.5%.

The frequency of two-spotted mite in melon was higher, ranging between 6.5 % and 78.6%. In the July, August and September the F% was the highest – 10.5 – 78.6%.

The intensity of pest attack has grown up in second decade of June at 8.3% and it continued to grow until the third decade of September.

The degree attack had the same upward dynamics: it began at the third decade of August and it was ranged between 11.3 and 61.3%.

The pest attack in climbing bean in open field began in the first decade of June, frequency of attack being 0.1 %. From the first decade of July to third decade of September it had reached a value between 8.7 – 73.2 %. The intensity of the attack in climbing bean was also high in this period, ranging between 26.7 and 100%.

The pest attack in tunnels of climbing bean was high and it began on the third decade of June.

The % of plants without symptoms of attack varied a lot. It can be seen that it begun as it follows: the 1st decade of July at pepper; second decade of August at melon; second decade of July at climbing bean in open field and first decade of July at climbing bean in tunnels. Starting from then, treatments are needed to control of two-spotted spider mite attack.

The climbing bean in tunnel had the highest frequency, intensity and degree attack of pest. The % of climbing bean plants, without attack in open field and tunnels, has declined greatly since July and it remained constant in August and September.

Pepper and melon had the highest number of plants without pest attack.

### ABSTRACT

The two-spotted spider mite frequency attack in pepper ranges degree attack between 10.3 – 38.4%. The intensity of attack was higher in second decade of September - 30.9%. The degree of attack was between 0.5 and 17.5%.

The frequency of two-spotted mite in melon was higher, ranging between 6.5 % and 78.6%. In the July, August and September the F% was the highest – 10.5 – 78.6%.

The intensity of pest attack has grown up in second decade of June at 8.3% and it continued to grow until the third decade of September.

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The climbing bean in tunnel had the highest frequency, intensity and degree attack of pest. The % of climbing bean plants, without attack in open field and tunnels, has declined greatly since July, and it remained constant in August and September.

Pepper and melon had the highest number of plants without pest attack.

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