

## THRIPIDAE IN POLISH PLUM AND APPLE NURSERIES AND ORCHARDS

Teresa Badowska-Czubik and Remigiusz W. Olszak

Research Institute of Pomology and Floriculture  
Pomologiczna 18, 96-100 Skierniewice, POLAND

(Received November 7, 2005/Accepted December 5, 2005)

### A B S T R A C T

The occurrence of thrips on samples of young shoots collected in 1999-2003 from nurseries, mother plantations and young orchards of plum and apple in south and central part of Poland were investigated.

*Thrips fuscipennis* Hal. was the predominant species in all locations, *Thrips tabaci* Lind. and *Frankliniella intonsa* (Trybom) were most abundant in plum nurseries and apple stoolbeds, *Chirothrips manicatus* Hal. and *Thrips physapus* were found sporadically.

Additionally in 2003-2004, the number of thrips was estimated by using coloured sticky traps in selected plantations of central Poland. It was found that of the three colours tested, thrips number at blue sticky traps was about twice higher than at white traps and three times higher than at yellow sticky traps.

Chemical control of thrips conducted in nursery of plum seedlings (*Prunus cerasifera* var. *divaricata*) showed that among three insecticides applied twice in June, the highest reduction of injuries gave Mospilan 20 SP (acetamipryd) at the dose 0.2 kg/ha. Less effective appeared to be Actara 25 WG (tiametoksam) at the dose 0.2 kg/ha and Calypso 480 SC (tiachlopyrd) at the dose 0.2 l/ha.

**Key words:** thrips, apple, plum, nursery, orchard, coloured sticky table traps

### INTRODUCTION

Injuries to fruit-bearing trees caused by thrips had already been reported in the 1920s (Childs, 1927). Over the last twenty years, thrips have been reported to drastically reduce plant growth (McNally et al., 1985; Marullo, 1991; Brozbar et al., 1995). Thrips damage many different fruit species, including apples, avocados, peaches and nectarines (Terry, 1991; Dennil et al, 1992; Badenhorst, 1993; Jacobs, 1995; Felland et al, 1995; Gargani, 1996).

The aims of this study were:

- 1) to determine the species composition of thrips in nurseries, scion plantations and young commercial orchards;



- 2) to determine whether coloured sticky traps are useful in determining thrip numbers; and
- 3) to evaluate some selective products for controlling thrips.

## MATERIAL AND METHODS

Adult thrips and thrip larvae were collected from young apical twigs of plum and apple trees from May 21 to July 20 every year from 1996 to 2002. The specimens were preserved in 70% ethyl alcohol. Thrips species were identified at the Plant Protection Institute of the Hungarian Academy of Sciences, at the Warsaw Agricultural University, and at the Research Institute of Pomology and Floriculture in Skierniewice, Poland.

White, yellow and blue tables, sticky on both sides, were placed for one or two weeks in plum and sour cherry nurseries, young plum and apple orchards and in apple mother orchard. Trapped thrips were counted under a stereomicroscope.

Two trials on controlling thrips were also conducted. The first trial was conducted on one-year-old plum trees growing in buckets in an insectary. The second trial was conducted in an apple mother plantation.

## RESULTS

The main species encountered on apical plum and apple twigs in nurseries, mother apple plantation and young orchards was the rose thrip (*Thrips fuscipennis*). Onion thrips (*Thrips tabaci*) were also encountered, but at lower levels. Onion thrips and *Frankliniella intonsa* were encountered mainly in plum nurseries and in vegetative apple stock nurseries. *Chirothrips manicatus* and *Thrips physapus* were occasionally encountered (Tab. 1).

Table 1. Quantitative enumeration of thrips species collected in young plum and apple orchards

N <sup>o</sup>	Species	Percentage
1	<i>Thrips fuscipennis</i>	84.7
2	<i>Thrips tabaci</i>	11.4
3	<i>Frankliniella intonsa</i>	2.8
4	<i>Chirothrips manicatus</i>	0.5
5	<i>Thrips physapus</i>	0.5

The population of adult insects was estimated by catching them with coloured sticky tables. Blue sticky tables were most effective, white ones were half as effective, and yellow tables one-third as effective (Tab. 2).

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Table 2. Number of thrips individuals caught into coloured sticky tables

Experimental object*	weekly catch of thrips per 1 sticky table		
	yellow	white	Blue
2003			
1	90	170	275
2	152	207	509
3	128	325	673
4	119	210	336
5	79	121	216
6	30	33	179
<b>Total</b>	<b>598</b>	<b>1066</b>	<b>2188</b>
2004			
1	110	231	321
2	124	266	563
3	81	139	211
<b>Total</b>	<b>315</b>	<b>636</b>	<b>1095</b>

Experimental objects: 1 – plum nursery; 2 – nursery of *Prunus divaricata* seedlings rootstocks; 3 - nursery of *Prunus mahaleb* seedlings rootstocks; 4 – apple orchard; 5 - apple mother orchard; 6 – plum orchard

Table 3. Efficacy of pesticides applied once for controlling thrips on plum trees in insectary conditions

Product and dose per ha	Number of thrips in relation to treatment				
	before	7 days after		21 days after	
		a*	b**	a	B
Mospilan 20 SP – 0.2 kg (acetamipid)	57	3	0	0	6.5
Actara 25 WG – 0.2 kg (thiamethoxan)	28	2	0	3	1.3
Calypso 480 SC – 0.2 l (thiacloprid)	14	0	0	5	7.3

\*per 10 apical leaves      \*\*per sticky table in an apple scion plantation

Table 4. Efficacy of pesticides applied twice in control of thrips in mother apple plantation

Pesticide and dose per ha	Number of injured apices on a 1 to 4 scale*			
	0	1	2	3
Mospilan 20 SP – 0.2 kg (acetamiprid)	24	12	4	0
Actara 25 WG – 0.2 kg (thiamethoxan)	15	18	7	0
Calypso 480 SC – 0.2 l (thiacloprid)	10	21	7	1

\* the injuries were estimated 21 days after the treatment on 40 twigs on the following scale: 0 – lack of injuries; 1 – traces of thrips feeding; 2 – over colouring and necroses; 3 – decay of apices

Of the three selective thrips control products, the most effective was Mospilan 20 SP at 0.2 kg/ha, followed by Actara 25 WG at 0.2 kg/ha and Calypso 480 SC at 0.2 l/ha (Tab. 3 and 4).

## CONCLUSIONS

1. The rosy thrip (*Thrips fuscipennis*) was the most commonly encountered species at all locations.
2. Thrips were preferentially drawn to blue sticky tables.
3. Of the three pesticides tested, Mospilan 480 SC at 0.2kg/ha was the most effective at preventing thrip damage.

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## WCIORNASTKI WYSTĘPUJĄCE W SZKÓLKACH I SADACH ŚLIWOWYCH I JABŁONIOWYCH W POLSCE

Teresa Badowska-Czubik i Remigiusz W. Olszak

### S T R E S Z C Z E N I E

Głównym gatunkiem występującym na pędach wierzchołkowych śliwy i jabłoni zarówno w szkółkach, sadach zraźnikowych, jak i w młodych sadach był wciornastek różówek (rose thrips) *Thrips fuscipennis*. W kilkakrotnie mniejszym nasileniu występował wciornastek tytoniowiec (onion thrips) *Thrips tabaci*. Ten gatunek oraz wciornastek kwiatowiec *Frankliniella intonsa* występowały głównie w szkółkach śliw i matecznikach podkładek wegetatywnych jabłoni. *Chirothrips manicatus* i *Thrips physapus* występowały sporadycznie.

Wielkość populacji owadów dorosłych określano metodą odławiania na barwne tablice lepowe. Najwięcej wciornastków odławiało się na niebieskie tablice lepowe, dwukrotnie mniej na białe i prawie trzykrotnie mniej na żółte. Spośród 3 selektywnych preparatów zastosowanych dwukrotnie do zwalczania wciornastków najlepsze działanie wykazał Mospilan 20 SP w dawce 0,2 kg/ha.

**Słowa kluczowe:** wciornastki, jabłoń, śliwa, szkółka, sad, pułapki lepowe