

# THRIPS SPECIES (INSECTA: THYSANOPTERA) OF ORNAMENTAL PLANTS FROM THE PARKS AND GREENHOUSES OF ADP PITESTI

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## Abstract

The observations carried-out in 2008/2010 to ornamental plants from parks and greenhouses of ADP Pitesti relieve 12 species of thrips. One species of them, *Frankliniella occidentalis* was identified in greenhouses on *Rosa* sp., *Dianthus* sp. and *Zantedeschia* sp. In parks, the thrips species belong to 12 species, dominated by *Frankliniella intonsa*. All of them are polyphagous and divided in two trophic levels: primary and secondary consumers. The thrips species are mentioned for the first time in Romania on this host plant. In greenhouses are necessary intensive chemical treatments and methods of cultural hygiene to limit the *F. occidentalis* populations.

Keywords: thrips, specific diversity, geographical distribution

## 1. INTRODUCTION

Thrips are tiny insects, widespread throughout the world. Their habitats range through forest, grassland, scrub, desert, most cultivated crops and garden, and they include phytophagous and carnivorous species (Lewis, 1973). Of the approximately 5,000 species known, only a few hundred are crop pests. Thus, many species have now spread from their original natural habitats and hosts to favourable new environments where they often reproduce rapidly to develop intense damaging or transmitting viruses to plants (Mound et Teulon, 1995). In this paper, we aimed to identify the thrips species that lives on ornamental plants from parks and greenhouses of ADP Pitesti.

## 2. MATERIAL AND METHODS

The observations were carried-out on ornamental plants from parks and green houses of ADP Pitesti. In greenhouses, the samples were collected from flowers of *Zantedeschia aethiopica*, *Dianthus caryophyllus* and *Rosa* sp. during May-July 2008. Other samples were collected from flowers of *Rosa* sp., during May-September 2010 in two parks from the Pitești center, both sites under the administration of ADP Pitești. Each sample comprised 10 flowers, taken ten samples at two weeks on each host.

The thrips species was identified with the follow keys of determination: Knechtel (1951), Schliephacke et Koch (1980), van Strassen (2003).

## 3. RESULTS AND DISCUSSIONS

The investigations on Thysanoptera fauna in the two sites relieve 12 species (Table 1).

### a. Specific diversity

#### *Thrips species in greenhouses of ADP Pitesti*

The studies relieve one single thrips species in this habitat, *Frankliniella occidentalis* PERGANDE 1895 from Thripidae family.

Western flower thrip or WFT, the abbreviation known by specialists, is a polyphagous pest with a wide host range. This species is native to North America but has spread to other continents including Europe, Australia, and South America via transport of infested plant material (Kirk et Terry, 2003). It feed upon over 500 different species of host plants, including a large number of

fruit, vegetable, and ornamental crops. It is one of the most important vectors for plants viruses such as Tomato Spotted Wilt Tospovirus (TSWV), Tobacco Streak Ilarvirus (TSV) and Impatiens Necrotic Spot Tospovirus (INSV) (Whitfield et al., 2005; Morse et Hoddle, 2006). First appearance in Europe was believed to be before 1983 (Mantel et de Vrie, 1988) and in Romania after 1990 (Vasiliu-Oromulu, 1993).

This species eliminated from greenhouses another thrips species, as *Heliothrips haemorrhoidalis* (Heeger), *Thrips dianthi* (Priesner), *Parthenothrips dracaenae* (Heeger), *Hercinothrips* (*Heliothrips*) *feromoralis* (Renter), so now there is in the most greenhouses from Romania.

#### *Thrips species in the parks of ADP Pitesti*

In Romania, Vasiliu-Oromulu (2002) noticed four thrips species on a related host, *Rosa canina*: *Frankliniella intonsa*, *Taeniothrips inconsequens*, *Thrips fuscipennis* and *Thrips major*.

The thrips specimens collected on *Rosa* sp. from parks belong to 12 thrips species (Table 1).

#### Family Aeolothripidae

##### *Aeolothrips intermedius* BAGNALL, 1934

This Palaearctic species is habitually floricolous, mesophilous. It is common in many biocenoses of cultivated and wild plants where, in the flowers, larvae exhibit primarily predatory behaviour while the adults are fed also on pollen (Marullo, 2004). The adults, with 1.3-1.6 mm size, have the characteristic striped wings typical of the species of this genus (Conti, 2009).

In Romania is common.

##### *Aeolothrips fasciatus* (LINNAEUS, 1758)

It is a Holarctic and mesophilous species, known as predator of another thrips species. Found in the flowers of plants in various families, but with no recorded specificity (Knechtel, 1951).

Therefore predators belonging to this family play an important role in the biocontrol of thrips pests.

#### Family Thripidae

##### *Frankliniella occidentalis* PERGANDE 1895, western flower thrips

Many specimens were collected from plants situated at 500 m widely by greenhouses because in warmer months, they found favourable conditions for life out of greenhouses.

##### *Frankliniella intonsa* (TRYBOM, 1895), flower thrips

*F. intonsa* is a polyphagous and florivorous thrips species. Its natural distribution is the Euro-Siberian, but currently established in North America (U.S. and Canada) (Nakahara and Footitt, 2007). It is common in Romania, living in many flowering plants belonging to different orders and families. We found large populations in the flowers of *Rosa* sp. Besides, *Rosa* species is supposed host-plant for this thrips.

##### *Thrips atratus* HALIDAY, 1836, carnation thrips

Like many others, it is a polyphagous and florivorous thrips species, with Palaearctic distribution. It is associated mainly with flowers of Caryophyllaceae. Knechtel (1951) noticed that is common in Romania.

##### *Thrips physapus* (LINNAEUS, 1758), dandelion thrips

It is a polyphagous, mesophilous and florivorous species with a wide distribution from Europa to Siberia. It is spread in all regions of Romania.

##### *Thrips pillichii* PRIESNER 1924

This thrips is a polyphagous, floricolous, mesophilous species. Its natural distribution is European. It lives in flowers of many family plants, especially Asteraceae. Many specimens live in associations with *Haplothrips angusticornis* (Knechtel, 1951).

##### *Thrips validus* UZEL 1895

This thrips is spread from Europe to Siberia, living in flowers of many herbaceous species, especially in Asteraceae.

*Trips tabaci* LINDEMAN, 1888, onion thrips

In according with Waterhouse and Norris (1989) (in Leigh, 1993) the affinity of this species for onion may indicate eastern Mediterranean origin, the apparent region of origin for that crop. In last time *T. tabaci* became cosmopolitan, being spread around the world through international commerce. The authors specify that *T. tabaci* is recorded from more than 300 species of host in various geographic regions. This represent from 25 to 44 plant families.

In Romania, *T. tabaci* is the most important pest to tobacco, onion, potato, tomato crops, causing major damages.

Family Phleothripidae

*Haplothrips leucanthemi*

This species is particularly associated with large daisy flowers, such as those of *Chrysanthemum leucanthemum* and *Matricaria* sp. of Asteraceae family. Its natural distribution is the Euro-Siberian area and it is a polyphagous and mesophilous species.

It is spread in all regions of Romania.

The identity of *H. leucanthemi* is a problem that merits further study. There is a form in red clover flowers, *Trifolium pratense*, that is commonly known as *H. niger*, but this is considered to be a parthenogenetic strain of *H. leucanthemi*. This form is widespread across Europe to Iran, and is known from New Zealand and southern Australia, with a few records from Chile and Argentina. So, the distribution of *H. leucanthemi* is doubtful. Area of origin is presumably Northern Europe (Mound et Marullo, 1996; Mound et Minaei, 2007).

*Haplothrips reuteri*

This thrips is considered to be common and widespread from south-eastern Europe to India, poliphagous, floricolous, particularly in flowers of various Asteraceae and Fabaceae (Minaei et Mound, 2008).

*Haplothrips setiger*

This thrips is a polyphagous, floricolous, mesophilous species with a west-Palaeartic distribution. In Romania is widespread, living in flowers of many herbaceous species, especially in Asteraceae (Knechtel, 1951).

**Table 1. The specific diversity of Thysanoptera fauna on ornamental plants, Pitești**

Subordin	Family	Species	Geographical distribution
Terebrantia	Aeolothripidae	<i>Aeolothrips intermedius</i> BAGNALL 1934	PAL
		<i>Aeolothrips fasciatus</i> (LINNAEUS, 1758)	HOL
	Thripidae	<i>Frankliniella intonsa</i> (TRYBOM 1895)	EUS
		<i>Frankliniella occidentalis</i> PERGANDE 1895	HOL
		<i>Thrips atratus</i> , HALIDAY, 1836	PAL
		<i>Thrips physapus</i> LINNAEUS 1758	EUS
		<i>Thrips pillichii</i> PRIESNER 1924	EUR
		<i>Trips tabaci</i> LINDEMAN, 1888	COS
		<i>Thrips validus</i> UZEL 1895	EUS
Tubulifera	Phlaeothripidae	<i>Haplothrips leucanthemi</i> (SCHRANK 1781)	EUS
		<i>Haplothrips reuteri</i> KARNY, 1907	PON-MED
		<i>Haplothrips setiger</i> PRIESNER, 1921	V-PAL

COS=Cosmopolit; EUR=European; HOL=Holarctic; EUS=Euro-Siberian; PAL=Palaeartic; W-EUS=West-Euro-Siberian; PON-MED = Ponto-Mediterranean.

### c. Geographical distribution

In keeping with the biogeographical characteristics of the ecosystems they inhabit, Thysanoptera belongs to various types of geographical distribution (zur Strassen, 2003). From that standpoint, in Romania there is a prevalence of the European species, followed by the West-Palaeartic species, and the Euro-Siberian species (Vasiliu-Oromulu, 1998). We can notice a higher proportion of the Euro-Siberian species, a situation encountered, for example, in the vineyard ecosystem (Vasiliu-Oromulu et Bărbuceanu, 2010).

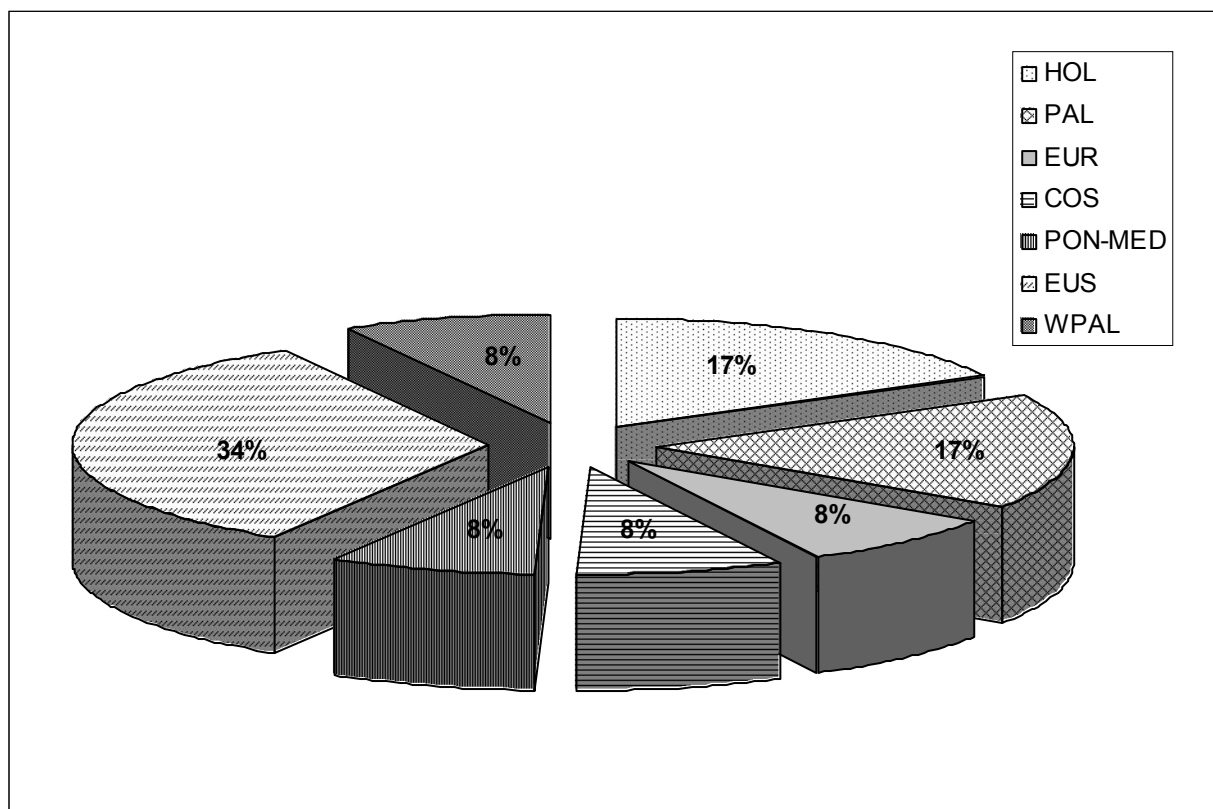


Figure 1. Geographical distribution of the thrips species

## 4. CONCLUSIONS

The collections carried out in May-September 2010 regarding the Thysanoptera fauna on the *Rosa* sp. from two parks and greenhouses in Pitești show a rich specific diversity, consisting in 12 species.

Two of them belong to Aeolothripidae family, seven to Thripidae family, Terebrantia suborder and three species, to Phlaeothripidae family, Tubulifera suborder.

The thrips species are mentioned for the first time in Romania on this host plant.

Only one species, *Frankliniella occidentalis* was identified in greenhouses on *Rosa* sp., *Dianthus* sp. and *Zantedeschia* sp.

The geographical distribution of Thysanoptera indicates a dominance of the Euro-Siberian species.

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