

# The Thrips Fauna on Wheat and on Plants of the Spontaneous Flora in the Bordering Belt Surrounding It

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We investigated the thrips fauna on wheat and we discovered 15 species. The most numerous was wheat thrips *Haplothrips tritici* Kurdjumov.

In the same time we investigated the thrips fauna on the plants of the spontaneous flora in the bordering belt surrounding wheat. We collected thrips on 23 plants of the spontaneous flora. A total of 649 thrips specimens have been collected and 32 thrips species were identified. The most numerous species was the Onion thrips *Thrips tabaci* Lindeman. For this species low presence was recorded on wheat and grasses, but high presence on the spontaneous plants. The second most numerous species was *Aeolothrips intermedius* Bagnall. We found the specimens of this species in great number on wheat as well as on the spontaneous plants surrounding it.

14 species were common for wheat and the spontaneous plants. *Sorensen's index* of faunistic similarity was 0.6.

Keywords: *Thysanoptera*, wheat, plants of the spontaneous flora.

As it has already been cited in several places, the thrips fauna on the territory of the countries of former Yugoslavia, and nowadays Serbia and Montenegro had been studied more intensively since the 1980s (Andjus, 1997). These studies usually concerned taxonomy and biogeography leading to a better understanding of the structure and characteristics of fauna of these insects. However, studies on Thysanoptera within the scope of applied entomology and plant protection have become more profound only in last several years. These studies were mostly focused on wheat, barley, maize and some other crops (Andjus, 1996, 1999; Andjus et al., 2001).

In this paper, special care is devoted to show the contrasts between the thrips fauna on wheat and on the plants of the spontaneous flora in the vicinity.

During four-year period in May and June, thrips specimens were collected from wheat in the vicinity of Belgrade, using common methods. The same procedure was used simultaneously on the plants of the spontaneous flora in the boundary area nearby the wheat. Besides visual survey, the method of shaking wheat spikes and flowers and leaves of plants of the spontaneous flora was also used both in the field and in the laboratory.

## Results and Discussion

Altogether 240 specimens were collected on wheat. We identified 15 species belonging to the families of *Aeolothripidae*, *Thripidae* and *Phlaeothripidae* (Table 1).

Most of the collected specimens (97) belonged to wheat thrips *Haplothrips tritici* Kurdjumov. In spite of the great abundance of this species, wheat damage was economically unimportant. Considering abundance, the next species was *Aeolothrips intermedius* Bagnall (51 specimens).

On wheat we found representatives of three trophical groups. The most abundant were the phytophagous species (169 specimens), numbering 12 species. Two species were zoophagous while one was phyto-zoophagous (Andjus, 1999).

When studying the thrips on wheat we also did research of insect communities on plants belonging to the spontaneous flora in the vicinity. We identified 649 specimens belonging to 32 species (Table 1). These species belong to the families of *Aeolothripidae*, *Thripidae* and *Phlaeothripidae*.

The most abundant was tobacco thrips *Thrips tabaci* Lindeman (205 specimens). The next one is *Aeolothrips intermedius* Bagnall (119 specimens). The species *Frankliniella intonsa* (Trybom) with its 74 specimens was significant, while the other species were much less represented.

On plants from the spontaneous flora the phytophagous species were the most numerous (485 specimens). These species mostly belong to the family *Thripidae* (21 species) while there were also representatives of five species from the family *Phlaeothripidae*. We found four zoophagous species, all from the genus *Aeolothrips*: *A. albicinctus* Haliday, *A. ericae* Bagnall, *A. fasciatus* (L.) and *A. intermedius* Bagnall. From the group of phyto-zoophagous species we collected only three: *Bolothrips bicolor* (Heeger), *Haplothrips aculeatus* (Fabricius) and *H. kurdjumovi* Karny, all with a very low abundance (Table 1).

It is interesting to note that two recorded primarily phytophagous species *Haplothrips tritici* Kurdjumovi and *Thrips tabaci* Lindeman under special circumstances feed additionally on food of animal origin (Lewis, 1973).

Thrips were collected on 23 plant species from the spontaneous flora (Table 2). These species belong to the following families: *Poaceae*, *Fabaceae*, *Brassicaceae*, *Asteraceae*, *Ranunculaceae*, *Scrophulariaceae*, *Lamiaceae*, *Caryophyllaceae* and *Papaveraceae*. The most abundant community of thrips was on plants from the family *Brassicaceae*, while the highest number of species was recorded on plants from the family *Poaceae* (Table 3). When collecting plants of this family that it was done in the association of *Bromo-Hordeetum Murini* as described by Jovanovic (1994).

When comparing the results on wheat and plants from the spontaneous flora, we may note that on wheat the most numerous was the wheat thrips *Haplothrips tritici* Kurdjumov. This species is considered to be oligophagous – it is attached to wheat and other species of cultivated grasses. At the same time, the representatives of this species are scarce on weed plants. Actually, only four specimens of this species were recorded both in plants of the spontaneous flora and grasses (fam. *Poaceae*).

Table 1

Thrips species on wheat and plants of the spontaneous flora

	On wheat	On sp. flora	Summ	Trophic status
1. <i>Aeolothrips albicinctus</i> Haliday		3	3	zoophagous, graminicolous
2. <i>Aeolothrips ericae</i> Bagnall		5	5	zoophagous, floricolous
3. <i>Aeolothrips fasciatus</i> (L.)	4	13	17	zoophagous, floricolous
4. <i>Aeolothrips intermedius</i> Bagnall	51	119	170	zoophagous, floricolous
5. <i>Melanthrips fuscus</i> Sulzer		4	4	zoophagous, floricolous
6. <i>Aptinothrips elegans</i> Priesner		4	4	phytophagous, graminicolous
7. <i>Aptinothrips rufus</i> Haliday	1	16	17	phytophagous, graminicolous
8. <i>Anaphothrips obscurus</i> (Müller)	5	6	11	phytophagous, graminicolous
9. <i>Chirothrips aculeatus</i> Bagnall		2	2	phytophagous, graminicolous
10. <i>Chirothrips manicatus</i> (Haliday)		5	5	phytophagous, graminicolous
11. <i>Dendrothrips ornatus</i> (Jablonowski)		1	1	phytophagous, foliicolous
12. <i>Frankliniella intonsa</i> (Trybom)	22	74	96	phytophagous, floricolous
13. <i>Frankliniella pallida</i> (Uzel)	3	8	11	phytophagous, floricolous
14. <i>Frankliniella tenuicornis</i> (Uzel)	4	2	6	phytophagous, graminicolous
15. <i>Limothrips angulicornis</i> Jablonowski		35	35	phytophagous, graminicolous
16. <i>Limothrips denticornis</i> (Haliday)	6	3	9	phytophagous, graminicolous
17. <i>Odontothrips loti</i> (Haliday)		2	2	phytophagous, floricolous
18. <i>Rubiothrips vitalbae</i> (Bagnall)		3	3	phytophagous, foliicolous
19. <i>Taeniothrips atratus</i> Haliday		31	31	phytophagous, graminicolous
20. <i>Taeniothrips vulgatissimus</i> Haliday		1	1	phytophagous, graminicolous
21. <i>Thrips flavus</i> Schrank		14	14	phytophagous, floricolous
22. <i>Thrips major</i> Uzel	2		2	phytophagous, floricolous
23. <i>Thrips physapus</i> L.	2	12	14	phytophagous, floricolous
24. <i>Thrips tabaci</i> Lindeman	1	205	206	phytophagous, flori-foliicolous
25. <i>Thrips trehernei</i> Priesner		8	8	phytophagous, floricolous
26. <i>Thrips validus</i> Uzel	1	13	14	phytophagous, floricolous
27. <i>Bolothrips bicolor</i> (Heeger)		10	10	phyto-zoophagous, graminicolous
28. <i>Haplothrips aculeatus</i> (Fabricius)	17	13	30	phyto-zoophagous, graminicolous
29. <i>Haplothrips kurdjumovi</i> Karny		1	1	phyto-zoophagous, arboricolous
30. <i>Haplothrips niger</i> (Osborn)		13	13	phytophagous, floricolous
31. <i>Haplothrips reuteri</i> Karny		5	5	phytophagous, floricolous
32. <i>Haplothrips setiger</i> Priesner	24	14	38	phytophagous, floricolous
33. <i>Haplothrips tritici</i> Kurdjumov	97	4	101	phytophagous, graminicolous
<b>Total</b>	<b>240</b>	<b>649</b>	<b>889</b>	

On the other hand, the most numerous species on plants from the spontaneous flora, *Thrips tabaci* Lindeman, is floricolous and extremely polyphagous, and common on flowers on many plants. During our studies, out of the 23 surveyed spontaneously growing plant species, we found *T. tabaci* on 14 plant species. The great abundance of tobacco thrips was very noticeable on weed flowers in the vicinity of wheat, but abundance on wheat was

**Table 2**  
Records of thrips species on plants from certain families

	Poaceae	Fabaceae	Brassicaceae	Asteraceae	Ranunculaceae	Scrophulariaceae	Lamiaceae	Caryophyllaceae	Papaveraceae	Sum
1. <i>Aeolothrips albicinctus</i>	3									3
2. <i>Aeolothrips ericae</i>		1		4						5
3. <i>Aeolothrips fasciatus</i>	4	3	4		2					13
4. <i>Aeolothrips intermedius</i>	24	4	53	3	6	17	10	1	1	119
5. <i>Melanthothrips fuscus</i>			4							4
6. <i>Anaphothrips obscurus</i>	6									6
7. <i>Aptinothrips elegans</i>	4									4
8. <i>Aptinothrips rufus</i>	8	3	2					3		16
9. <i>Chirothrips atratus</i>	1					1				2
10. <i>Chirothrips manicatus</i>	4		1							5
11. <i>Dendrothrips ornatus</i>		1								1
12. <i>Frankliniella intonsa</i>	9	50	9	2		3	1			74
13. <i>Frankliniella pallida</i>		5	3							8
14. <i>Frankliniella tenuicornis</i>		2								2
15. <i>Limothrips angulicornis</i>	35									35
16. <i>Limothrips denticornis</i>	3									3
17. <i>Odontothrips loti</i>		2								2
18. <i>Rubiothrips vitalbae</i>					3					3
19. <i>Taeniothrips atratus</i>	2			1	2		17	9		31
20. <i>Taeniothrips vulgatissimus</i>		1								1
21. <i>Thrips flavus</i>				9	5					14
22. <i>Thrips physapus</i>		1		9					2	12
23. <i>Thrips tabaci</i>	5	11	130	9		7	29	12	2	205
24. <i>Thrips trehernei</i>	2		2	4						8
25. <i>Thrips validus</i>		3					10			13

Table 2 (cont.)

	Poaceae	Fabaceae	Brassicaceae	Asteraceae	Ranunculaceae	Scrophulariaceae	Lamiaceae	Caryophyllaceae	Papaveraceae	Sum
26. <i>Bolothrips bicolor</i>	10									10
27. <i>Haplothrips aculeatus</i>	9	2	1					1		13
28. <i>Haplothrips kurdjumovi</i>		1								1
29. <i>Haplothrips niger</i>	1	8	2		1	1				13
30. <i>Haplothrips reuteri</i>				5						5
31. <i>Haplothrips setiger</i>		3		9	1	1				14
32. <i>Haplothrips tritici</i>	4									4
<b>Total</b>	<b>134</b>	<b>101</b>	<b>211</b>	<b>55</b>	<b>20</b>	<b>30</b>	<b>67</b>	<b>26</b>	<b>5</b>	<b>649</b>

**Table 3**

Records of thrips on certain plant families

	No. of specimens	No. of species
<i>Poaceae</i>	134	18
<i>Fabaceae</i>	101	17
<i>Brassicaceae</i>	211	11
<i>Asteraceae</i>	55	10
<i>Ranunculaceae</i>	20	7
<i>Scrophulariaceae</i>	30	6
<i>Lamiaceae</i>	67	5
<i>Caryophyllaceae</i>	26	4
<i>Papaveraceae</i>	5	3
<b>Total</b>	<b>649</b>	

minute – only one specimen was found in that crop. This species also had low abundance in grassland associations, since only five specimens were found on plants from the family *Poaceae*. Morison and Tanasijevic (1966), during years of studying the various crops in many localities of the former Yugoslavia found only eight specimens on wheat.

In the same time, the predatory species *Aeolothrips intermedius* Bagnall is extremely common both on wheat and the plants in the spontaneous flora in its vicinity. It is important as a predator on phytophagous thrips and aphids (Dyadechko, 1977). It finds abundant animal food both on wheat and weeds. Out of 23 surveyed plant species around the wheat, this species was found on 14 plant species. It is obvious that the plants of the spontaneous flora near the wheat fields serve as a host for a numerous population of this predatory species. Therefore, it is necessary to study its potential role in biological control (Table 4).

14 species of thrips are common for wheat and plants of the spontaneous flora around it. This number is significant when calculating indices of faunistic similarity between wheat and plants of the spontaneous flora around it. The Sorensen's index of faunistic similarity is 0.6 (Table 4), meaning that there is a close faunistic similarity between these groups of plants. It is quite obvious that plants of the spontaneous flora are important for maintaining the thrips fauna in wheat fields.

**Table 4**

Index of faunistic similarity between wheat and surrounding plants of the spontaneous flora

	1	2
1	15	14
2	0.6	32

1 – Wheat, 2 – plants of the spontaneous flora, 15 – number of thrips species on wheat, 32 – number of thrips species on the spontaneous flora, 14 – number of common species, 0.6 – index of faunistic similarity.

## Literature

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