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## Investigations on thrips (Thysanoptera) species occurring in flowers of cherry trees in Kemalpaşa (Izmir) province of western Turkey

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**A b s t r a c t :** The purpose of this study is to determine the species of Thysanoptera occurring in Kemalpaşa province of Izmir, western Turkey at cherry orchards, during the month of April of 2010 and 2011. Studied material were collected from flowers of cherry trees. At the end of this study, 21 species belonging to 3 families of Thysanoptera were determined. The most abundant species in this study were *Thrips tabaci* LINDEMAN, 1889, *T. major* UZEL, 1895, *T. inconsequens* (UZEL, 1895), and *T. angusticeps* UZEL, 1895.

**K e y w o r d s :** Thysanoptera, cherry, Kemalpaşa, Izmir, Turkey.

### Introduction

Cherry is a fruit which has an important place in the Turkish economy. There are 14.740.131 cherry trees in Turkey and annual production is 417.905 tons (ANONYMOUS 2011). Cherries are widely grown in the Mediterranean, Marmara and Aegean regions of Turkey. In the Aegean region Kemalpaşa (Izmir) is the area where they are mostly widespread (ANONYMOUS 2011) and 12 % of the Turkish cherry production is realized in Izmir (ANONYMOUS 2010). According to 2011 data, there are 1.800.000 trees bearing fruit in 85.595 decares of land in the Kemalpaşa province (ANONYMOUS 2011).

There have been many studies (TEZCAN 1995, TEZCAN & CIVELEK 1996, TEZCAN & ONDER 1999, OZDER 1999, CINAR et al. 2004, TEZCAN & GULPERCIN 2005, BOLU et al. 2007, OZDEM et al. 2007, ERTOP & OZPINAR 2011, KAPLAN & TEZCAN 2011, BOZKURT & OZDEM 2013) on the pests and the beneficial species found in cherry orchards in Turkey which is one of the important producer countries. However, apart from LODOS (1993), OZBEK et al. (1996), ULUSOY et al. (1999), TEZCAN et al. (2006) no other study was found which went as far down as the species belonging to Thysanoptera. For the purpose of overcoming this absence, conducting a study in the cherry orchards in Kemalpaşa which is the most prominent cherry producing area of Izmir was deemed necessary. The scope of the study was to determine thrips species during the flowering period.

## Material and Methods

The material of the study consisted of species within the Thysanoptera collected from cherry flowers from the villages of Kemalpaşa province of Izmir which widely grow cherry trees in the months of April of 2010 and 2011.

Studies were conducted in 142 cherry orchards in 24 localities with sizes ranging between 1 to 5 decares. These localities and the number of orchards which were sampled were as follows: Akalan (3), Armutlu (14), Aşağıkızılca (3), Bağyurdu (14), Bayramlı (3), Beşpinar (3), Central province (13), Çambel (3), Çınar (3), Damlacık (3), Kamberler (3), Kurudere (3), Ovacık (3), Ören (20), Örnekköy (8), Sarılar (3), Sinancılar (3), Sütçüler (5), Ulucak (6), Vişneli (5), Yenikurudere (3), Yenmiş (3), Yiğitler (10), Yukarıkızılca (5). - 142 Orchards in total.

In the course of the study, 13 trees were chosen randomly by walking along the diagonals of each orchard. One flower was picked up from the four directions of each tree, totalling 50 flower samples. And, this was repeated three times for the early, mid-season and late maturing varieties. This way it was possible to evaluate thrips from 21 300 flowers each year. The flower samples brought to the laboratory were brushed separately into white dishes using sable brushes. Those thrips which had fallen into dishes were collected back with sable brushes and they were labelled first and then prepared and identified. The confirmation and identification of the samples were done by Prof. Dr. Irfan Tunç (Akdeniz University, Faculty of Agriculture, Department of Plant Protection, Antalya, Turkey).

## Results and Discussion

As a result of this study, a total of 21 species in 3 families were identified. 19 species in 2010 and 14 species in 2011 were identified and they are indicated in Table 1.

While six of these species, namely, *O. ajugae*, *A. collaris*, *T. inconsequens*, *T. meridionalis*, *T. tabaci* and *H. reuteri* were reported from cherry orchards (TUNC 1989a, b; TUNÇ et al. 2012); there is no record regarding the other 15 species (% 71.43) in cherry orchards.

Of the species studied in 2010, *T. tabaci* was the most prevalent one and it was sampled from the 42.96 % of the orchards. It was followed by *T. major*, *T. inconsequens* and *T. meridionalis*. In 2011, *T. tabaci* was again the most prevalent one being sampled from 46.48% of the orchards. It was followed by *T. inconsequens*, *T. angusticeps* and *T. major*. These species are noteworthy by being phytophagous. Additionally, presence of species like *Melanthrips fuscus*, *M. pallidior* and *M. rivnayi* which feed on pollen and species like *Aeolothrips collaris*, *A. fasciatus*, *A. gloriosus*, *A. intermedius*, *Haplothrips aculeatus* and *H. andresi* which are predators (TUNC 1989a, b; TUNÇ et al. 2012) in orchards is important in terms of biological diversity and natural balance.

During the study, each year, thrips in a total of 21.300 flowers from 142 orchards were evaluated. Accordingly, in Kemalpaşa, while the percentage of flowers with thrips was 3.29 % in 2010, it was found to be 1.63 % in 2011. When the numerical and percentage status of the collected samples within the total sample was observed *T. tabaci* was the most prominent one with 502 samples (47.99 %). It was followed by *T. inconsequens* with 178 samples (17.02 %) and *T. major* with 150 samples (14.34 %). Of the 142 orchards which were sampled in 2010, 95 (66.90 %) of them and in 2011, 85 (59.86 %)

of them were observed having thrips samples. These findings and observations carried out in the orchards showed that thrips were not found in high intensity in the cherry orchards in Kemalpaşa during flowering period; therefore, did not have a noteworthy effect on an economic level. Whereas in studies conducted across the world it was demonstrated that *T. tabaci*, *T. inconsequens* and *F. occidentalis* were the prevalent species and from time to time they caused damage (RODRIGUEZ et al. 2012, BOOTH 2013).

It is thought that conducting similar studies in the future in the other parts of Turkey will contribute to the increase of accumulation of information in this field.

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### Zusammenfassung

Vorliegende Arbeit behandelt das Vorkommen von Thysanoptera in der Provinz Kemalpaşa im Westen der Türkei im Beobachtungszeitraum April 2010 und 2011. Insgesamt konnten 21 Arten aus drei Familien nachgewiesen werden. Als häufigste Arten stellten sich *Thrips tabaci* LINDEMAN, 1889, *T. major* UZEL, 1895, *T. inconsequens* (UZEL, 1895) und *T. angusticeps* UZEL, 1895 heraus.

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**Table 1:** List of species according to the families they belong to and to the years they are sampled in.

Taxa	Number of orchards occurring thrips specimens		Number of collected specimens		Rate of collected specimens (%)	
	2010	2011	2010	2011	2010	2011
<b>Aeolothripidae</b>						
<i>Aeolothrips collaris</i> PRIESNER, 1919	11	1	14	1	2.00	0.29
<i>Aeolothrips fasciatus</i> (LINNAEUS, 1758)	1	0	1	0	0.14	0.00
<i>Aeolothrips gloriosus</i> BAGNALL, 1914	2	0	2	0	0.29	0.00
<i>Aeolothrips intermedius</i> BAGNALL, 1934	8	9	8	12	1.14	3.48
<i>Melanthrips fuscus</i> (SULZER, 1776)	0	1	0	1	0.00	0.29
<i>Melanthrips pallidior</i> PRIESNER, 1919	4	0	5	0	0.71	0.00
<i>Melanthrips rivnayi</i> PRIESNER, 1936	3	0	3	0	0.43	0.00
<b>Thripidae</b>						
<i>Frankliniella occidentalis</i> (PERGANDE, 1895)	1	6	1	7	0.14	2.03
<i>Oxythrips ajugae</i> UZEL, 1895	9	4	15	6	2.14	1.74
<i>Taeniothrips inconsequens</i> (UZEL, 1895)	45	28	108	70	15.41	20.29
<i>Thrips angusticeps</i> UZEL, 1895	14	15	18	22	2.57	6.38
<i>Thrips major</i> UZEL, 1895	52	11	135	15	19.26	4.35
<i>Thrips meridionalis</i> (PRIESNER, 1926)	24	3	56	3	7.99	0.87
<i>Thrips tabaci</i> LINDEMAN, 1889	61	66	303	199	43.22	57.68
<b>Phlaeothripidae</b>						
<i>Haplothrips aculeatus</i> (FABRICIUS, 1803)	1	3	1	3	0.14	0.87
<i>Haplothrips andresi</i> PRIESNER, 1931	2	0	2	0	0.29	0.00
<i>Haplothrips bolacophilus</i> PRIESNER, 1938	4	3	4	3	0.57	0.87
<i>Haplothrips distinguendus</i> (UZEL, 1895)	2	0	2	0	0.29	0.00
<i>Haplothrips globiceps</i> BAGNALL, 1934	0	1	0	2	0.00	0.57
<i>Haplothrips reuteri</i> (KARNY, 1907)	16	1	21	1	3.00	0.29
<i>Neoheegeria verbasci</i> (OSBORN, 1896)	2	0	2	0	0.29	0.00
<b>Total</b>			<b>701</b>	<b>345</b>	<b>100.00</b>	<b>100.00</b>