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On the distribution of the western flower thrips *Frankliniella occidentalis* (Pergande, 1895) (Thysanoptera: Thripidae) in Armenia

О распространении западного цветочного трипса *Frankliniella occidentalis* (Pergande, 1895) (Thysanoptera: Thripidae) в Армении

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Key words: *Frankliniella occidentalis*, Armenia, distribution, greenhouses, quarantine pest.

Ключевые слова: *Frankliniella occidentalis*, Армения, распространение, теплицы, карантинный вредитель.

Abstract. This paper presents data on the distribution of the invasive western flower thrips *Frankliniella occidentalis* (Pergande, 1895) in Armenia. This species was recently reported from this country, however, without locality data. According to our research, *F. occidentalis* is widespread in greenhouses in the Ararat Valley, which is the country's largest greenhouse cultivation zone. This species is most likely introduced to Armenia with plant material, in particular, strawberry and rose seedlings imported from Europe.

Резюме. В статье представлены данные о распространении инвазивного западного цветочного трипса *Frankliniella occidentalis* (Pergande, 1895) в Армении. Вид был недавно обнаружен в стране, однако данные о его местонахождении отсутствуют. Согласно исследованиям, *F. occidentalis* широко распространён в теплицах Араратской долины, крупнейшей в стране зоны тепличного земледелия. Вероятнее всего, этот вид занесён в Армению с посадочным материалом, в частности, с саженцами клубники и роз, импортируемыми из Европы.

Introduction

Frankliniella occidentalis (Pergande, 1895) (Thysanoptera: Thripidae), the western flower thrips, is a highly polyphagous species reported on more than 500 plant species within 50 families [Mantel, van de Vrie, 1988; Moritz et al., 2004]. Economic damage results directly through tissue damagae from feeding and oviposition, and indirectly through transmission of pathogenic plant viruses [Nagata et al., 2004].

Over the last few decades, the western flower thrips has spread from western North America and became one of the major worldwide pests of agricultural and horticultural crops [Kirk, 2002]. The first record of established western flower thrips in Europe was from the Netherlands in 1983, in greenhouse of African violet [Mantel, van de Vrie, 1988]. In northern Europe the western flower thrips is restricted to greenhouses, in southern Europe it has established in fields as well [Brødsgaard, 1987]. After invasion to Europe, the western flower thrips reached Israel in 1987 [Argaman et al., 1989]. Now it is considered a quarantine pest by the European Plant Protection Organization [EPPO, 2023].

From Armenia *F. occidentalis* was recently reported by M.H. Ghazaryan [2021] without any locality data. In addition, the species has been repeatedly found in exported fruit, vegetable and flower products originating from Armenia (mint, strawberry, cauliflower, roses, etc.) on the border of Russia [A quarantine.., 2025; In cabbage.., 2025; 900 luxurious gerberas.., 2025]. Thus, the species can be considered as established in Armenia, at least in greenhouses, but there is still no data on its distribution in the country. In this paper we provide data on distribution of *F. occidentalis* in Armenia.

Materials and methods

During this study a number of greenhouses in Armenia were sampled for thrips. We separated Armenia into two categories for our work: geographic zones and climate zones. Based on previous reports from border controls, where infected plant material has been found, we made the first decision to visit greenhouses that grow cut flowers and berry fruits. With an average temperature ranging from –4 °C to +25 °C and a lowland elevation of 800–1000 meters above sea level, the Ararat valley in Armenia offers favorable growing conditions for a wide range of crops. Access to greenhouses for thrips sample collection, data on seedling origin, and classification of cultured plants were the main considerations when selecting localities.

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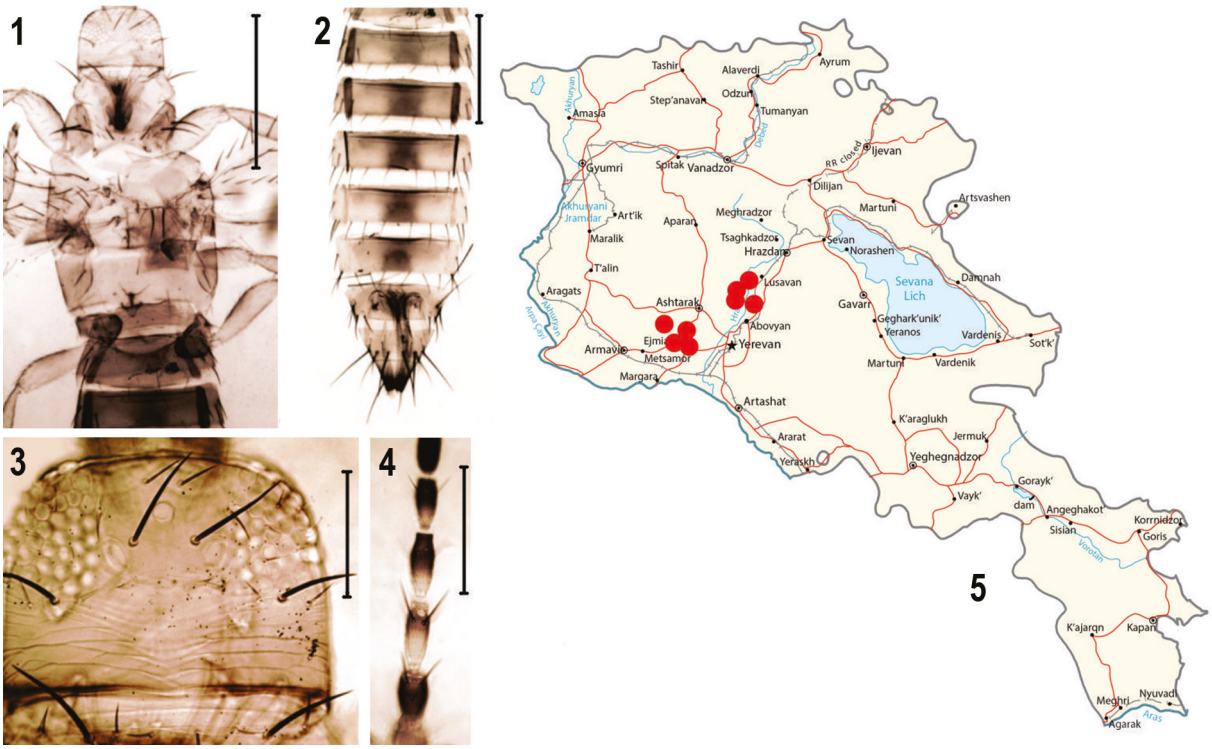

Figs 1–5. Details and d istribution map of *Frankliniella occidentalis* morphology. 1 — anterior portion of body; 2 — abdomen; 3 — head; 4 — antennal segments 1–6. 5 — distribution map of *Frankliniella occidentalis* in Armenia, were red dots indicate the locations of thrips that are described in the text (source of the map: https://gisgeography.com/armenia-map/). Scale bars: 1, 2 — 0.5 mm, 3 — 0.15 mm, 4 — 0.25 mm.

Рис. 1–5. Детали морфологии и карта растпространения *Frankliniella occidentalis*. 1 — передняя часть тела; 2 — брюшко; 3 — голова; 4 — 1–6 членики усиков. 5 — карта распространения *Frankliniella occidentalis* в Армении. Красными точками обозначены места обнаружения трипсов, описанные в тексте (источник карты: https://gisgeography.com/armenia-map/). Масштаб: 1, 2 — 0,5 мм, 3 — 0,15 мм, 4 — 0,25 мм.

Thrips specimens were collected by brushing and shaking off plant leaves and flower petals. Samples were preserved in 70% ethanol as soon as they were removed from the host plants. The specimens were prepared and mounted as outlined in L. Bisevac's [1997] protocol. A total of 65 specimens were gathered from greenhouses in 2023, and additional 35 specimens were collected outdoors. Studies were conducted using a BOECO BM-180 trinocular microscope. Photographs were taken using TOUPcam FMA050 with a fixed microscope adapter. *Frankliniella occidentalis* was identified by the first author using online keys [Thrips.net, 2023; Thrips of the British Isles, 2023].

The specimens are stored in the collections of the Scientific Center of Zoology and Hydroecology of the National Academy of Sciences of the Republic of Armenia.

The present work is registered in ZooBank (www.zoobank.org) under urn:lsid:zoobank.org:pub:CE6F4A2A-8724-46F9-9863-97135DD8116F

Results and discussion

Sixty-two specimens were sampled from 8 localities and identified as *Frankliniella occidentalis* (Figs 1–4). The current known distiribution of western flower thrips in Armenian greenhouses is illustraded in Fig.5 (red dots), and following below are all new records.

Frankliniella occidentalis (Pergande, 1895)

Material. **Armenia, *Kotayk region:*** Kamaris village, 40.2471° N, 44.6869° E; ~1473 m, greenhouse cultivation, strawberry *Fragaria ananasa,* 21.I.2022, M. Tigranyan leg. — 2 specimens; Nor Geghi village, 40.3200° N, 44.5657° E; ~1365 m, greenhose cultivation, rose *Rosa* spp., 10.IX.2023, M. Tigranyan leg. — 20 specimens, 40.3102° N, 44.5445° E; ~1396 m, greenhouse cultivation, strawberry *Fragaria ananasa*, 9.XI.2023, M. Tigranyan leg. — 5 specimens, idem, 40.1836° N, 44.3247° E; ~1374 m, 9.XI.2023, M. Tigranyan leg. — 5 specimens; ***Ararat region:*** Khachpar village, 40.1199° N, 44.3907° E; ~842 m, greenhouse cultivation, strawberry *Fragaria ananasa,* 17.XI.2023, M. Tigranyan leg. — 10 specimens; Hayanist village, 40.1226° N, 44.3771° E; 846 m, 17.11.2023, greenhouse cultivation, strawberry *Fragaria ananasa,* M. Tigranyan leg. — 10 specimens; ***Armavir region:*** Hovtashat village, 40.1061° N, 44.3336° E; ~842 m, greenhouse cultivation, strawberry *Fragaria ananasa,* 17.XI.2023, M. Tigranyan leg. — 5 specimens; Zvartnoc village, 40.1640° N, 44.3205° E, ~883 m, greenhouse cultivation, strawberry *Fragaria ananasa,* 17.XI.2023, M. Tigranyan leg. — 5 speciemens.

Frankliniella occidentalis is reported and listed in all neighbor countries of Armenia, besides Georgia [EPPO, 2023a]. Into Armenia, *F. occidentalis* was most likely intorduced with plant material, which, in our case, were strawberry and rose seedlings imported from Europe (owners and managers of greenhouses, personal communications). This species is considered established in the country's greenhouses and can have a significant negative impact on the greenhouse production of berries, flowers and vegetables in Armenia, as well as on the country's ability to export such products. Evidence

of this is the facts that, on the one hand, the species has been repeatedly registered by quarantine services on the borders of Russia, and on the other hand, the species is rapidly reproducing and spreading in greenhouses, which are confirmed by weekly insect monitoring (greenhouse managers, personal communication).

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