

## ASIAN APRICOT APHID, *MYZUS MUMECOLA* (MATSUMURA, 1917) (HEMIPTERA: APHIDIDAE), FOUND IN SERBIA

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### Abstract

Asian apricot aphid, *Myzus mumecola* (Matsumura, 1917) (Hemiptera: Aphididae, Aphidinae) has been found during spring of 2021 in many localities in Serbia (Ljig, Smederevo, Velika Plana, Belgrade and Šid) on cultivated apricot. The species is of Asian origin, a few years ago it was found in Italy and in Hungary. Research of the species indicates that it is rapidly widening its distribution in Europe. Damages made to apricot trees by feeding on leaves at young branches and making red galls are significant. Presence, damage and biology of *M. mumecola* needs to be studied in the future, especially its secondary hosts which are not enough known.

KEY WORDS: fauna, invasive, distribution, pest, virus vector

### Introduction

Apricot (*Prunus armeniaca* L.) is an important fruit in Serbia, annual production counts 24,000 t (Keserović *et al.*, 2010). Apricot is mostly planted in its North part (around Subotica) and Central part (around Belgrade and Čačak). Until now, aphids have not made important damages to apricot breeding even though many of *Prunus* feeding species have been recorded on apricot in Serbia, such as: *Brachycaudus cardui* (L.), *Brachycaudus helichrysi* (Kalt.), *Hyalopterus pruni* (Geoffr.) and *Myzus persicae* (Sulz). (Petrović-Obradović, 2003). Also, some polyphagous aphids, as *Aphis craccivora* Koch., *Aphis gossypii* Glov., *Aphis spiraeicola* Patch, *Macrosiphum euphorbiae* (Thom.) occasionally visit apricot (Jevremović *et al.*, 2016; Vučetić *et al.*, 2010; Blackman & Eastop, 2021).

*Myzus mumecola* (Matsumura, 1917), a known pest of Japanese apricot - *Prunus mume* (Siebold) Siebold & Zucc.), has been recently found in Italy (Panini *et al.*, 2017) and Hungary (Borbély *et al.*, 2021) feeding on

cultivated apricot (*Prunus armeniaca* L.). This was the reason that an intensive study of this aphid started in Serbia in spring of 2021.

Genus *Myzus* is palearctic genera, comprising about 55 species (Blackman & Eastop, 2021; Favret, 2021), many of them are of Asian origin. Among more than 380 aphid species found in Serbia (Petrović-Obradović *et al.*, 2021) there are 11 *Myzus* species: *Myzus ascalonicus* Donc., *Myzus cerasi* (Fabr.), *Myzus certus* (Walk.), *Myzus cymbalariae* Str., *Myzus langei* (Börn.), *Myzus ligustri* (Mosl.), *Myzus linariae* Holm, *Myzus lythri* (Schr.), *Myzus myosotidis* (Börn.), *Myzus persicae* (Sulz.) and *Myzus varians* Dav. (Petrović-Obradović, 2003). Some of the most important pests in plant breeding belong to the *Myzus* genera, such as *M. persicae*, *M. cerasi* and *M. varians*.

## Materials and methods

This research was conducted from April to October 2021 on many localities in Serbia, where apricot is reared. Aphids were collected from infested terminal shoots and leaves of apricots. Aphids were transferred alive to the laboratory. Most of the collected samples were preserved in 70% alcohol, while some were mounted on microscope slides using standard methods (Eastop & van Emden, 1972). Specimens were identified using a stereomicroscope (Leica, Type: DMLS2) and identification keys (Blackman & Eastop, 2021). Samples stored in alcohol-filled tubes and also microscopic slides were deposited in the collection of the University of Belgrade – Faculty of Agriculture.

## Results and Discussion

Abbreviations in the text: al=alatae viviparous parthenogenetic females; apt=apterous viviparous parthenogenetic females.

### Material examined

Aphids have been collected only from cultivated apricot (*Prunus armeniaca*). Localities, dates and found aphid forms are: Ljig, Ivanovci, 03.05.2021, apt, al; Zemun, Dunavski kej, 20.05.2021, apt, al; Zemun, Gornji grad, 25.05.2021, apt, al; Beograd, Radmilovac, 25.05.2021, apt, al; Novi Beograd, Blok 28, 26.05.2021; apt, al; Smederevo, Vodanj, 26.05.2021, apt, al; Beograd, Zaklopača, 26.05.2021, al; Ilinci, Šid, 27.05.2021, al; Velika Plana, Krnjevo, 30.05.2021, al; Ljig, Ivanovci, 07.06.2021, al.

### Morphology

Apterous viviparous females are light green, elongate, about 2.3 to 3.0 mm long. Antennae are long but not exceeding body length (Fig. 1). Head between antennae has tubercles typical for *Myzus* genera (Fig. 1A) and characteristic imbrications of integument (Fig. 1B). Legs are mainly green, dorsal side of abdomen is without sclerotic patterns, but dark green lines are visible at apterous females and larvae. Siphunculi and cauda are pale. Winged viviparous females are darker green, with large sclerotic pattern on dorsal side of abdomen, marginal sclerites being also present and lateral patches present on ventral side (Figs. 2, 3). Siphunculi and cauda of winged females are dusky.

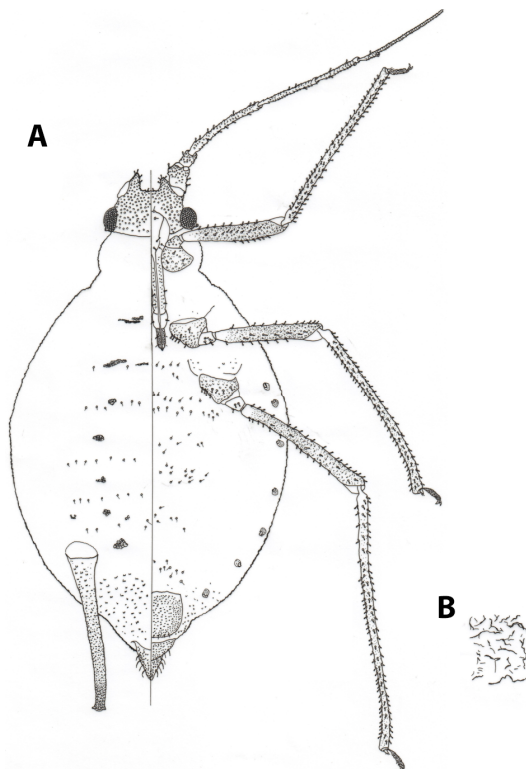


Figure 1. *Myzus mumecola*, apterous viviparous parthenogenetic females, A – left-dorsal side and right-ventral side; B – detail of imbrications of integument.

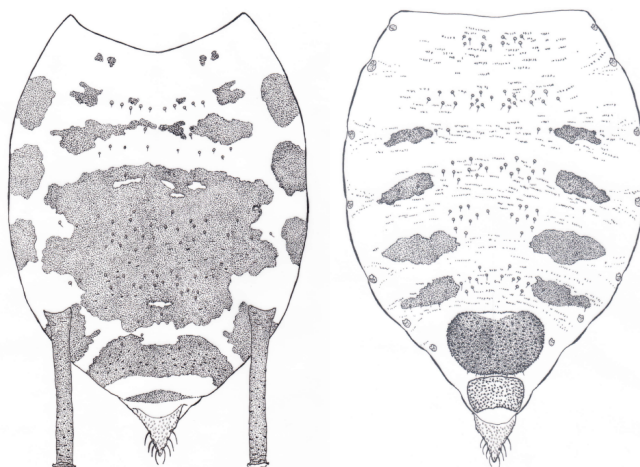


Figure 2. *Myzus mumecola*, abdomen of alata viviparous parthenogenetic female, dorsal side (left) and ventral side (right).

## Taxonomy

Order Hemiptera, family Aphididae, subfamily Aphidinae, genera *Myzus*, subgenera *Myzus*. Synonyms: *Macrosiphum mumecola* Matsumura 1917 and *Myzus umecola* Shinji, 1924. *M. mumecola* is morphologically similar to common *Prunus persicae* feeding species, *M. persicae* from which apterous viviparous females and alatae can be distinguished by shape of siphunculi. In *M. mumecola* siphunculi are tapering from base to flange but they are slightly swollen in *M. persicae*. Also, siphunculi are more than 2.3 times longer than cauda in *M. mumecola*, and less than 2.3 times longer than cauda in *M. persicae* (Blackman and Eastop 2021).



Figure 3. *Myzus mumecola*, colony on apricot leaf (one alatae viviparous parthenogenetic female and larvae of the same).

## Symptoms

Asian apricot aphid is feeding on terminal leaves on very young branches and is making red pseudo-galls (Figs. 4, 5). From April to June, symptoms of infection are visible from long distance as infected leaves are deformed and its color is changed in red (Fig. 6).

Damage to apricot: Damages have been noticed at home gardens, where no insecticides were used, and damages have been more severe on early varieties, such as NS39, than late varieties. Until now, in conventional apricot cultivation no significant damages have been noticed. During summer 2021, apricot trees have been partly recovered from the spring infestation. More important damages could be expecting in the future because *M. mumecola* is very effective vector of the Sharka virus (*Plum pox virus*, PPV) (Panini *et al.*, 2017; Borbély *et al.*, 2021).



Figure 4. *Myzus mumecola*, pseudo-galls on tips of branches.



Figure 5. *Myzus mumecola*, aphids on leaves deformities.

## Biology

Until now, life cycle of *M. mumecola* is not clear enough anywhere in the world. It is known that the species is heteroecious everywhere. In Serbia, it is observed that *M. mumecola* is leaving apricot by the end of May or in first part of June. Apart from *Prunus armeniaca* L., it has been found on *Prunus ansu* Kom., *Prunus cornuta* (Royle) Steud. and *Prunus mume* (Sieb) (Holman, 2009). These four *Prunus* are its primary hosts. But secondary hosts in Europe and Asia are still unknown (Borbély *et al.*, 2021). Some apterae have been found on *Lonicera quinquelocularis* Hardv. (Caprifoliaceae) in India and one doubtful sample from *Rubia cordifolia* L. (Rubiaceae) in Kashmir needs to be confirmed (Blackman & Eastop, 2021). Overwintering is probably taking place on apricot, fundatrices have been found in Hungary (Borbély *et al.*, 2021). Only apterous viviparous parthenogenetic females and alatae viviparous parthenogenetic females have been found in Serbia, for the moment. Inspection of apricot in October 2021 have not resulted in finding of

sexuales (males and oviparous females), which are expected to come back to apricot before winter. Further research on biology of *M. mumecola* is necessary.



Figure 6. Appearance of tips of apricot tree infested with *M. mumecola*, at the end of May.

#### Distribution

Asia (Japan, China, Taiwan, East Siberia, East India, North-West Himalaya), Northern Italy (Panini *et al.*, 2017) and Hungary (Borbély *et al.*, 2021).

Natural enemies: Aphis specific predators, Coccinellidae (larvae, pupae and adults) and Syrphidae (larvae) have been found in aphid colonies. Parasitoids have been reared from mummies and identified as *Ephedrus persicae* Froggatt. In total, 3 wasps emerged from mummies, 2 females and 1 male. Species *E. persicae* is a common and often found parasitoid of fruit aphids in Europe and Asia (Žikić *et al.*, 2009).

Together with this finding there is a total of 385 known aphid species in Serbia, 12 of them being placed in genus *Myzus* (Petrović-Obradović *et al.*, 2021).

#### Conclusion

*Myzus mumecola* (Matsumura, 1917) (Hemiptera: Aphididae, Aphidinae) is an invasive species, originating from Asia, found during 2021 in Serbia; previously being detected in Italy and Hungary. Asian apricot aphid has been found on cultivated apricot in home gardens, on many localities in Serbia, which indicates that it is spreading very quickly. It is making colonies on tips of young branches, making deformation of leaves and forming pseudo-galls which quickly turn red. *M. mumecola* has potential to become a serious pest, at least in gardens where insecticides are not regularly used. Since the end of June, aphids have not been found on apricot. Their secondary hosts are unknown. Biology of *M. mumecola* needs to be studied in the future. With this record, there are now 12 *Myzus* species and totally 385 aphid species in Serbia.

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# АЗИЈСКА ВАШ КАЈСИЈЕ, *MYZUS MUMECOLA* (MATSUMURA, 1917) (HEMIPTERA: APHIDIDAE), НАЂЕНА ЈЕ У СРБИЈИ

ОЛИВЕРА ПЕТРОВИЋ-ОБРАДОВИЋ

## Извод

Азијска ваш кајсије, *Myzus tumecola* (Matsumura, 1917) (Hemiptera: Aphididae, Aphidinae), нађена је током 2021. године на више локалитета у Србији (Љиг, Смедерево, Велика Плана, Београд и Шид) на гајеној кајсији. Ова врста је пореклом из Азије а пре неколико година нађена је у Италији и Мађарској. Досадашња истраживања указују на то да се њен ареал распрострањења веома брзо повећава у Европи. На кајсији доводи до штете хранећи се листовима на младим гранчицама, које деформише у виду црвених гала. У наредним годинама треба детаљно проучити присуство, штетност и биологију развића *M. tumecola*. Нарочито треба проучити њене секундарне домаћине који су, за сада, недовољно познати.

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