

**TINOCALLIS KAHAWALUOKALANI (KIRKALDY, 1907) (HEMIPTERA,
APHIDIDAE) – A NEW INVASIVE SPECIES IN BULGARIA**

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SHORT REVIEW ARTICLE

Tinocallis kahawaluokalani (Kirkaldy, 1907) (Crape myrtle aphid) belongs to the family Aphididae, subfamily Drepanosiphinae, tribus Phyllaphidini. Synonyms of the species are *Monellia lagerstroemiae* Takahashi, 1920; *Sarucallis lythrae* Shinji, 1922, *Sarucallis kahawaluokalani* (Kirkaldy, 1907). *Tinocallis kahawaluokalani* was detected for the first time in Bulgaria in a greenhouse in Ravda (located nearby Black Sea) at the end of May and early in June in 2009, on rooted cuttings from *Lagerstroemia indica* (L.) Pers. (Lythraceae). The cuttings were collected from plants grown in green areas in Ravda and Bourgas. Dense colonies of larvae, nymphae and winged females have been registered on the hind side of infested leaves located mainly on the top part of the plants. 238 plants were been infested, which is more than 80% of all *Lagerstroemia* rooted plants. The damage was detected on leaves, such as yellowing and premature leaf loss from plant. The same species was also found next year at the same location at the beginning of June.

Winged viviparous females reach lengths from 1.02 to 1.8 mm. They are pale yellow with dark brown markings on the head and prothorax. The antennae are 6-segmented, the processus terminalis is less than

1.5 times as long as the base of the sixth antennal segment. Paired tubercles on the tergum of the first and second abdominal segments and dark veins on the forewings are very distinctively marked (Fig. 1) and easily identified.

Tinocallis kahawaluokalani is a monoecious and holocyclic species, producing oviparous female and alate males in autumn (Blackman & Eastop, 1994). Its native origin are the temperate regions of Asia – Japan, Korea, Formosa, China, and the Philippines. It is also distributed in Hawaii, North America (Higuchi, 1972), Honduras (Evans and Halbert 2007) and Europe. For the first time in Europe, it was reported in Italy by Patti (1984) and later in France (Leclant and Renoust, 1986), Spain (Mier Durante et al., 1995), Germany (Thieme and Eggers-Schumacher, 2003) Greece (Tsisipis et al., 2007) and Montenegro (Petrović-Obradović et al., 2010).

Tinocallis kahawaluokalani often infests plants in ornamental nurseries and landscapes on underside of leaves and is particularly attracted to a new growth. It causes an unattractive aesthetic appearance of its host due to the sooty mold on the honeydew, and can also cause the leaves of the infested plants to fall-off (Alverson & Allen 1992). Further-



Fig.1 *Tinocallis kahawaluokalani* – a viviparous female (Orig.)

more, when present in great numbers, this pest can also cause physical damage to the leaves and young shoots (Doughty et al., 1992), and can even lead to death of its host (Patti, 1984).

Host plants of the species are *Lagerstroemia* spp., *Lawsonia alba* (Blackman & Eastop, 1994), *Eugenia uniflora* (Zemora, 2009), *Phyllostachys mannii* (?) (Holman, 2009) and *Punica granatum* L. in the Philippines (Mizell and Knox 1993). All of these plants possess good ornamental qualities and are used in Bulgaria for landscaping.

Lagerstroemia indica is an exotic plant introduced from Asia and often used for exterior landscaping in Bulgaria, especially in regions with a mild climate (nearby Black Sea – Varna, Bourgas and others, and in the southern part of the country – Plovdiv, Sandanski, Petrich and also some others). Also similar is the distribution of *Punica granatum* L. that is native to Persia, but is widely cultivated throughout the

Mediterranean region, as well as in other warm regions on the planet.

Phyllostachys mannii is native to Asia and so far it has not been particularly popular in Bulgarian landscaping, but it is used in botanical collections together with the other two host plants of this aphid species - *Eugenia uniflora* which is native to tropical America and *Lawsonia alba* – which is native to tropical and subtropical regions of Africa, Southern Asia, and northern Australia.

All of the host plants have high ornamental qualities and are used for different purposes in landscaping in order to create a more favorable and pleasant human environment. Therefore, it is very important for the host plants to be in good physiological health and to be clean from pests and disease.

The newly established *Tinocallis kahawaluokalani* in Bulgaria could represent a serious problem for in-

terior and exterior landscaping and nursery production, including greenhouses. This species frequently decreases the quality of ornamental plants and leads to economic losses, making it necessary to study its pest-risk assessment. Although there are not many host plant species, the risk posed by this pest species could be very high because of its high reproductive potential, easy distribution and its comparatively hidden life style. In conclusion, the potential risk of a rapid spread of *Tinocallis kahawaluokalani* in Bulgaria is high.

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