

**MORPHOLOGY AND NATURAL ENEMIES OF OF *TINOCALLIS*  
*KAHAWALUOKALANI* (KIRKALDY) (HOMOPTERA: APHIDIDAE) FROM  
PUNJAB, PAKISTAN**

**Imran Bodlah, Muhammad Naeem and Tasleem Akhter**

*Department of Entomology, Pir Mehr Ali Shah Arid Agriculture University, Rawalpindi, Pakistan*

**ABSTRACT**

*Tinocallis kahawaluokalani* (Kirkaldy) (Homoptera: Aphididae) is recorded from Pothohar tract of Punjab Province of Pakistan from different localities on *Lagerstroemia indica* L. A taxonomic note along with necessary measurements is discussed. Drawings of important characters are given. Its host range, world distribution and distribution in Pakistan have been given. Information regarding the natural enemies of this aphid pest has also been given.

**Keywords:** *Tinocallis kahawaluokalani*, Morphology, Natural enemies, Pakistan

**INTRODUCTION**

Aphids (Homoptera, Aphididae) are one of the major pests in ornamental plants (Arruda et al., 1996; Clements et al., 2000). They may cause damage to plants directly by sucking their sap, and indirectly by injecting toxic salivary secretions, transmitting pathogens, attracting ants and favoring the development of sooty-mold (Lara 1992, Zucchi et al., 1993). *Tinocallis kahawaluokalani* cause an unsightly gray to black film to cover the tree and objects below the tree, thus, detracting from its ornamental qualities (Doughty et al., 1992).

It has been reported from North America (Richards 1967, Smith and Parron 1978), Hawaii (Zimmerman 1948), Thailand (Banziger and Hengsawad 1985), China, Taiwan, Japan (Zimmerman 1948, Richards 1967) and India (Agarwala et al.1989). Currently, it has been reported from various other countries like Argentina (Alfonsina, 2008), Brazil (Lúcia et al., 2002), Mexico (Trejo-Loyo et al., 2004) and Greece ( Tsitsipis et al., 2007).

A lot of work in addition to its occurrence in the world has been done up till now like unsuccessful search for parasites (Mizell et al., 2002) and control of this pest by various techniques (Pettis et al., 2005 and Doughty et al.,1992). But to low level of basic research in Pakistan in relation to insect pests of ornamental plants specially, this species was not recorded yet. During our surveys in 2007-2009, we collected many samples of this pest from *Lagerstroemia indica*.

Aphids were collected either by removing them with an ordinary camel-hair brush or by jarring the plants on white paper sheets from Crape myrtle. Specimens were collected from, Islamabad, Rawalpindi, and Taxilla during 2009. The large sized adults were then killed, preserved in 70 percent alcohol in vials and properly labeled. Slides were made for identification by standard method (Blackman and Eastop 1984).

Aphids were observed under Swift sm-80 binocular microscope. The illustrations were prepared using a Nikon microscope (SMS-1500, with 30x 1-11.25x magnification). The measurements of taxonomically important parts of identified specimens were taken with an ocular and stage micrometer. The specimens were identified up to specific level by using the keys of Blackman & Eastop (1984).

**RESULTS AND DISCUSSION**

*Tinocallis kahawaluokalani* (Kirkaldy)  
(Homoptera: Aphididae) (Fig. 1-5)

*Myzocallis kahawaluokalani* Kirkaldy, 1907.  
Pro. Hawaii ent. Soc. 1:101.

Fig. (1)

*Taxonomic note*

*Alate*

Body broad, elongated, pale to bright yellow, with dark sclerotic rows of pigmented tubercles bearing capitate hairs. Head is narrower than thorax. Head and thorax devoid of spinal tubercles. Eyes pinkish in color; transverse eye length is twice the width. Head and prothorax covered with dark longitudinal strips and pterothorax with dark brown strips. Antennal

\*Corresponding author: e-mail: imranbodlah@gmail.com

tubercles are not well developed. Antennae 0.53 times as long as body, scape pedicle and proximal end of each antennal segment are darker in coloration, remainder of the antennae light yellowish. Antennal segment 3 about 1.5 times longer than 4 and 5 and about 1.4 times than 6<sup>th</sup> segment. In the case of apterae, antennal segment 3 about similar in length to lost segment and about 1.3 times the remaining segments. Terminal process as long as base of the last antennal segment.

Spinal tubercles on tergite 2 are large, about 0.14-0.15 in height, medially fused to form a dark sclerotic transverse band. Spinal tubercles on tergite 2 are united over more than half of their length. Wing that are held roof like over the body, are strongly pigmented, dark over stigmal and costal areas and at base. Tips of veins pigmented.

Ultimate rostral segment almost equal to segment 2 of hind tarsus and with 6-8 hairs not even reaching the for coxae. Abdomen with paired spinal process on anterior tergites with

well developed lateral tubercles (.04-.08 mm) in length bearing one hair each. Siphunculi darker, small, smooth and about equal in length and width. Cauda knobbed with 8-9 hairs.

*Alate*

Length of body 1.65, width 0.79; antennal segments III: IV: V: VI 0.31: 0.21: 0.21:0.22; ultimate rostral segment. 0.07 Siphunculi 0.03; cauda 0.09.

*Aptera*

Length of body 1.62, width 0.85; antennal segments III: IV: V: VI 0.20: 0.15: 0.15:0.20; ultimate rostral segment 0.060; cauda 0.07.

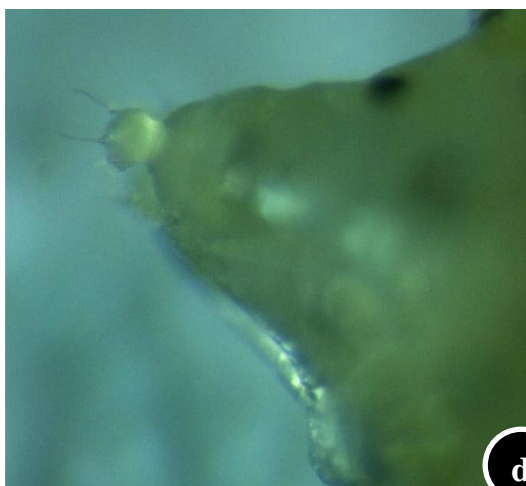
*Nymph*

Pale to bright yellow in coloration with black spike or hair like projections on their abdomen. They lack black spots and two large black tubercles on the dorsal surface of the abdomen

*Material examined*

Rawalpindi, 28.06.09, 14 alate and 12 aptera; Islamabad, 04.07.09, 3 alate and 1 aptera; Taxilla, 21-7-09, 5 alate and 2 aptera.





Morphology of *Tinocallis kahawaluokalani* Figure 1.a: Spinal tubercles on tergite 2; b: Dorsal view of alate showing forewing;c: Forewing venation; d: Cauda; e: Dorsal view of aptera

### REMARKS

Extensive survey during year 2007-08 on searches for parasitic Hymenoptera of crape myrtle aphid was also done. We found no parasitic Hymenoptera. A parasite-free situation is unusual among the foliar-feeding Aphididae. Cameroon, Jamaica, Malaysia, Mexico, People's Republic of China, Philippines, Puerto Rico, Thailand and United States have been surveyed; no parasitic Hymenoptera was found (Mizell et al., 2002). Our results were also same for this species of aphids in Pakistan. Only various lady bird beetles and *Chrysop* sp. were found as natural enemies of this aphid during our surveys.

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