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Rapid communication

Nesidiocoris tenuis (Reuter) (Heteroptera: Miridae), a predatory species of the tomato leafminer, *Tuta absoluta* (Meyrick) (Lepidoptera: Gelechiidae) in Iran

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Abstract: The tomato leafminer, *Tuta absoluta* (Meyrick), is a major worldwide pest of tomato crops, both in the greenhouse and in open field cultivations. Since this pest's new introduction in Iran, it has caused extensive damage. Chemicals have mainly been used to control this pest. The purpose of our research was to identify the indigenous predators of the tomato leafminer, associated with tomato in the Borazjan region of the Bushehr province, Iran. From March to May 2014, infested tomato leaves were collected from protected tomato crops. A predator species from the family Miridae was found, reared, and identified as *Nesidiocoris tenuis* (Reuter 1895). This species is reported for the first time on tomato leafminer in Iran. Identification of important natural enemies provides a scientific basis for including these predators in the biological programs against this pest.

Key words: *Nesidiocoris tenuis*, predator, tomato, *Tuta absoluta*

Introduction

Tuta absoluta (Meyrick) (Lepidoptera: Gelechiidae) is an important tomato pest native to South America (Luna *et al.* 2011; Guedes and Picanço 2012). Since its initial discovery in Iran (Baniameri and Cheraghian 2011, 2012), this pest has caused significant damage to tomato crops, both in greenhouses and in the open field (Sohrabi *et al.* 2014). Throughout Iran, tomato producers routinely use insecticides of different groups against *T. absoluta*. But the insecticides may cause adverse environmental effects. Biological control is a promising alternative and is one of the main methods since it saves the natural enemies. Therefore, we aimed to conduct a survey of indigenous predators attacking *T. absoluta* in the Borazjan region of the Bushehr province, Iran.

Materials and Methods

Samplings were conducted in six heavily, leafminer-infested, tomato fields in the Bondarooz, Borazjan region, the Bushehr province (Southern Iran) from March to the end of May 2014. Geographical coordinates for study sites were as followed:

site 1: 29°12'47.4'' N, 51°13'56'' E, elev. 90 m;
site 2: 29°12'54.1'' N, 51°13'57.1'' E, elev. 99 m;
site 3: 29°13'12.2'' N, 51°13'19.2'' E, elev. 75 m;
site 4: 29°13'35.1'' N, 51°13'4'' E, elev. 106 m;
site 5: 29°13'52.9'' N, 51°12'35.8'' E, elev. 76 m;
site 6: 29°14'7.7'' N, 51°12'38.5'' E, elev. 75 m.

The plant samples were transferred to the laboratory and examined leaf by leaf for predators. The specimens were collected using an aspirator and kept in a small vial containing 70% alcohol and sent to the second author to confirm the preliminary identification. The specimens are deposited in the insect collection of the Natural Museum of Guilan University, Guilan, Iran.

Results and Discussion

One species belonging to the Miridae family was found in association with *T. absoluta* and identified as *Nesidiocoris tenuis* (Reuter 1895) (Hemiptera: Miridae) (Fig. 1). The important diagnostic characters of this species are as follows:

Body size 3–3.3 mm. Pale whitish green. Ocular index: 1.3–1.5. Left paramer very slender, strongly curved sickle-shaped. Middle of the first segment, and base of the second segment of antenna – black. A dark ring at the apex of the 2nd antennal segment, 3rd and 4th segment – brown. At the rear edge of the corium there was a small dark brown spot and at the tip of the cuneus there was a small dark brown spot. Membrane – gray, veins – brown. Base of the tibia (knee) narrowly black (Hosseini 2013).

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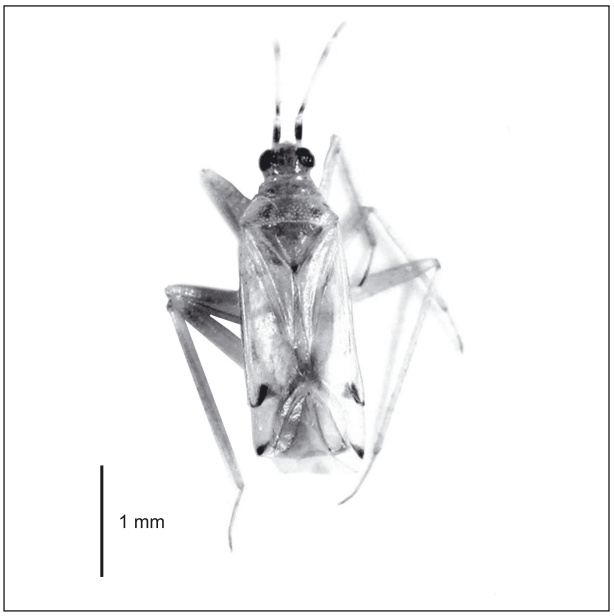

Fig. 1. The adult predator *Nesidiocoris tenuis* (Hemiptera: Miridae)

This species has been reported from Mediterranean countries to Europe, North Africa, Middle East, Japan, Australia, Pacific Islands, North America, Cuba, Venezuela (Kerzhner and Josifov 1999; Zappala *et al*. 2013), and Iran (Linnavuori 2007). *Nesidiocoris tenuis* is known to contribute to the control of such pests as whiteflies, thrips, lepidopteran, and several other pest species in greenhouses (Marcos and Rejesus 1992; Carnero *et al*. 2000; Calvo *et al*. 2009; Hughes *et al*. 2009). This predator has a low damage potential on tomato plants. This is true even when this predator occurs at high densities (Perdikis *et al*. 2009). The tomato leafminer, *T. absoluta*, has been recorded as prey for *N. tenuis* in many countries (Urbaneja *et al*. 2009; Molla *et al*. 2011; El-Arnaouty and Kortam 2012; Al-Jboory *et al*. 2012). This is the first record of *N. tenuis* on *T. absoluta* from Iran. Its effectiveness in the biological or integrated control programmes of *T. absoluta* remains to be evaluated.

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