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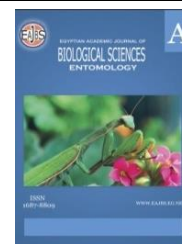
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**First Records of *Wahlgreniella nervata* (Gillette, 1908) (Hemiptera : Aphididae) on Bell Pepper In The Region of Staoueli (Algeria)**

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**ABSTRACT**

The study is carried out within the framework of a research work on the bio-aggressors of pepper (Estefan variety) under shelter-greenhouse at the level of the station of the Technical Institute of the Maraichères and Industrial Cultures (ITCMI) during the year 2021. This research station is in the commune of Staoueli (36°45'21.66"N; 2°53'02.13"E) which is 22 km west of the capital (Algiers) at an altitude of 36 meters. The results of the trapping with the help of yellow traps placed inside the greenhouse shelters, thirteen species of aphids were encountered and identified, they are *Acyrtosiphon pisum*, *Aphis craccivora*, *A. fabae*, *A. gossypii*, *A. nasturtii*, *Aulacorthum solani*, *Brachycaudus helichrysi*, *Brevicoryne brassicae*, *Hyperomyzus lactucae*, *Lipaphis erysimi*, *Macrosiphum euphorbiae*, *Myzus (Nectarosiphon) persicae*, and *Uroleucon sonchi*. Among all collected aphid specimens, there was *Wahlgreniella nervata* (Gillette, 1908) (Hemiptera: Sternorrhyncha: Aphididae: Aphidini: Macrosiphini) it is reported for the first time in Algeria. of the species is based on the morphological criteria described in this study.

**INTRODUCTION**

Aphids colonize most plants and constitute one of the most harmful groups of insects in temperate regions where they cause considerable and often-substantial direct and indirect damage (Dedryver, 2007). The damage is caused by toxicosis or host weakness. Because of the economic importance of aphids, numerous studies have been conducted on the Algerian aphidofauna, which has allowed them to be partially known (Remaudière & Leclant, 1974; Blackman & Eastop, 1994; 2000; 2006; Saharaoui, 1999; Laamari & Akkal, 2002; Laamari *et al.*, 2010; 2013; Benoufella- Kitous *et al.*, 2019).

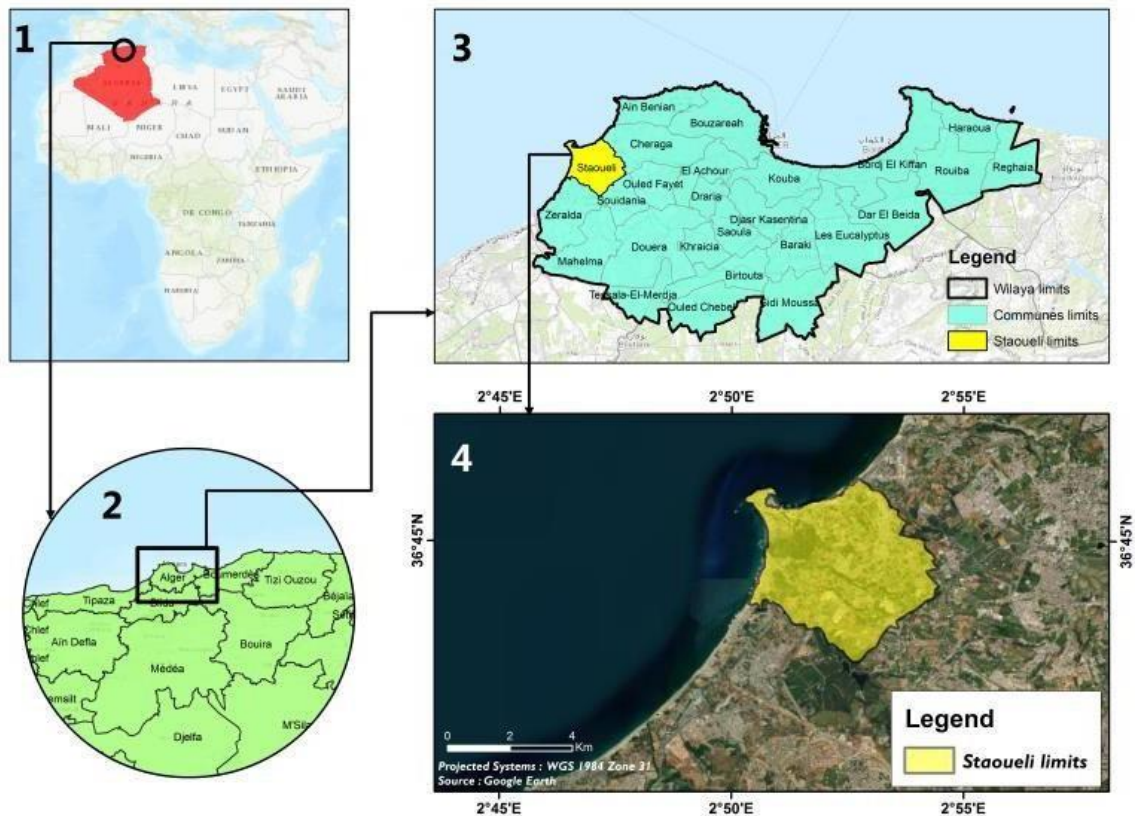
The inventory established by Laamari *et al.* (2010; 2013) lists 120 species in Algeria divided into six subfamilies and 61 genera, 72% of which are considered as crop pests. Of the 28 subfamilies identified (total 4700 species) in the world (Remaudière and

Remaudiere, 1997; Fraval, 2006; Turpeau-Ait Ighil *et al.*, 2011), 450 species have been identified on cultivated plants (Blackman and Eastop, 2000). In Algeria, according to Laamari *et al.* (2010) and Aroun (2015), Rosaceae, Asteraceae, Poaceae and Solanaceae are the most infested host plant

*W. nervata* is an american species, introduced to Europe and first reported in England in 1973 on roses (Barjadze *et al.*, 2011). In North America, the species is apparently heteroecious, with host alternation between primary host roses and secondary host Ericaceae (*Arbutus*, *Arctostaphylos*, *Pieris*). European populations appear to be anholocyclic on roses.

## MATERIALS AND METHODS

Within the framework of a study carried out during the spring and summer season of the year 2021, on the bio-ecology of aphids of vegetable crops in the experimental station of the Technical Institute of Vegetable and Industrial Crops of Staoueli (ITCMI), we have highlighted the presence of *W. nervata*. This region is located on the vast plain of the Algerian Sahel ( $36^{\circ}45'21''\text{N}$ ;  $2^{\circ}53'25''\text{E}$ ) at an altitude of 36 m (Fig.1).



**Fig. 1.** The geographic location of the study area Staoueli (Algeria).

In an Estefan bell pepper greenhouse, six yellow plates and six alternating Barber pots are placed between the ridges (Fig. 2). The distance between the plates of the same ridge is 4m; between the plates of different ridges is 2m. All aphid individuals collected are counted and stored in pillboxes containing 70° alcohol for identification in the laboratory



**Fig. 2.** Trap arrangement in the bell pepper greenhouse.

## RESULTS AND DISCUSSION

During the processing of the samples, of the aphid species identified (Table 1), three individuals belonging to *W. nervata* were isolated.

**Table 1.** Aphid species identified in the bell pepper greenhouse.

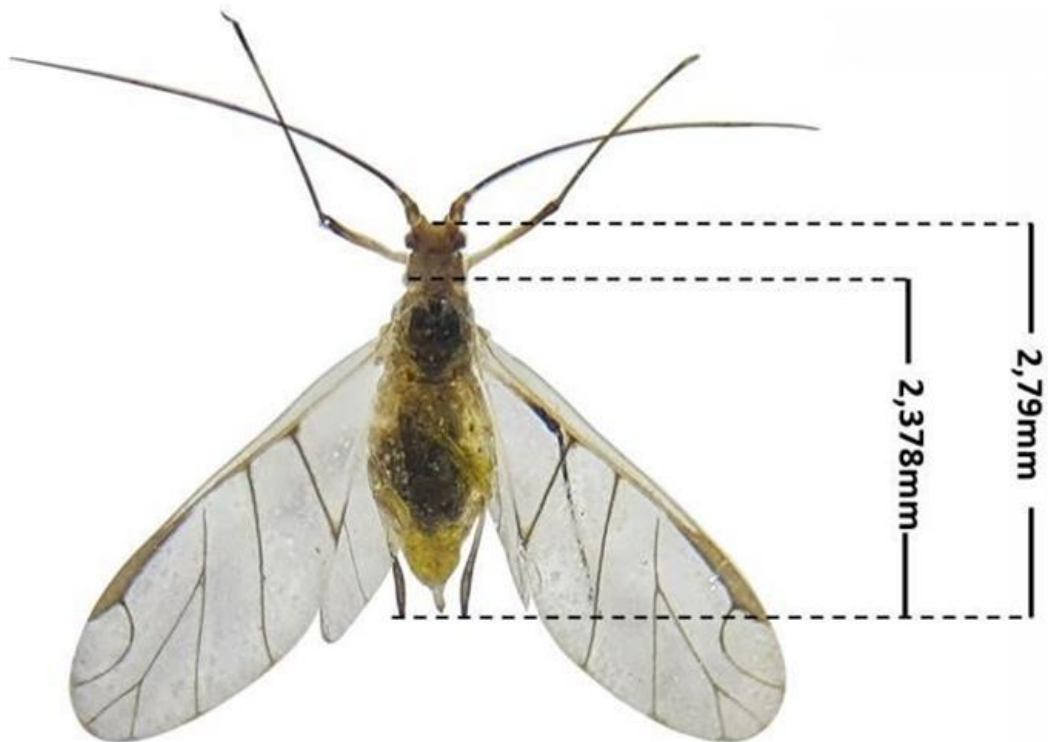
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<i>Acyrtosiphon pisum</i> (Harris, 1776)
<i>Aphis craccivora</i> Koch, 1854
<i>Aphis fabae</i> Scopoli, 1763
<i>Aphis gossypii</i> Glover, 1877
<i>Aphis nasturtii</i> Kaltenbach, 1843
<i>Aulacorthum solani</i> (Kaltenbach, 1843)
<i>Brachycaudus helichrysi</i> (Kaltenbach, 1843)
<i>Brevicoryne brassicae</i> (Linnaeus, 1758)
<i>Hyperomyzus lactucae</i> (Linnaeus, 1758)
<i>Lipaphis erysimi</i> (Kaltenbach, 1843)
<i>Macrosiphum euphorbiae</i> (Tomas, 1878)
<i>Myzus (Nectarosiphon) persicae</i> (Sulzer, 1776)
<i>Uroleucon sonchi</i> (Linnaeus, 1767)
<i>Wahlgreniella nervata</i> (Gillette, 1908)

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This species is recognized as one of the pests of rosaceous plants, of American origin (Gillette *et al.*, 1908). It has been reported in several countries in America such as the United States of America (Gillette *et al.*, 1908), Brazil (Smith & Cermeli, 1979), Chile (Eastop *et al.*, 1997), Mexico (Heie, 1994), Argentina (Nieto Nafria *et al.*, 1994), Peru (Mallqui & Cobian, 2011), and Canada (Heie, 1994). Subsequently, *W. nervata* is introduced in Europe where it is noted for the first time in England in 1973, and later in Belgium (Nieto Nafria *et al.*, 1999). Only later, it was reported in other parts of Europe, including the British Isles, the Canary Islands, Sicily, Spain, mainland, Greece, (Tsitsi-Pis *et al.*, 2007), the Balearic Islands, Corsica, mainland France, and mainland Italy (Coeur d'acier *et al.*, 2010). Barjadze *et al.*, (2011) added new regions including Portugal, Sardinia, and Turkey. Given its invasive behavior, the species has been reported in Israel (Halperin *et al.*, 1988), Burundi, Pakistan (Naumann-Etienne & Remaudière, 1995) and Iran (Rezwani, 2001; Shaharaki *et al.*, 2019). Recently, *W.nervata* is noted in India (Sunil *et al.*, 2014), Saudi Arabia (Hussain *et al.*, 2015), Australia (Brumley, 2020), including Africa (Blackman & Eastop, 2000). This species has never been reported from Algeria.

It is recognizable by the shape of the cornicles, pale green to yellow color (Fig.3), having a size between 2.8 and 0.7mm. Very dark wing veins, especially anal and ulnar (Fig.4a). The antennae are filiform, composed of six articles, they are ringed at the joints and measure 2.8 mm (Table 2). The third article is the longest, measures 0.73mm, and contains 18 secondary rhinitis. The antennae are longer than the body (Fig. 4b).

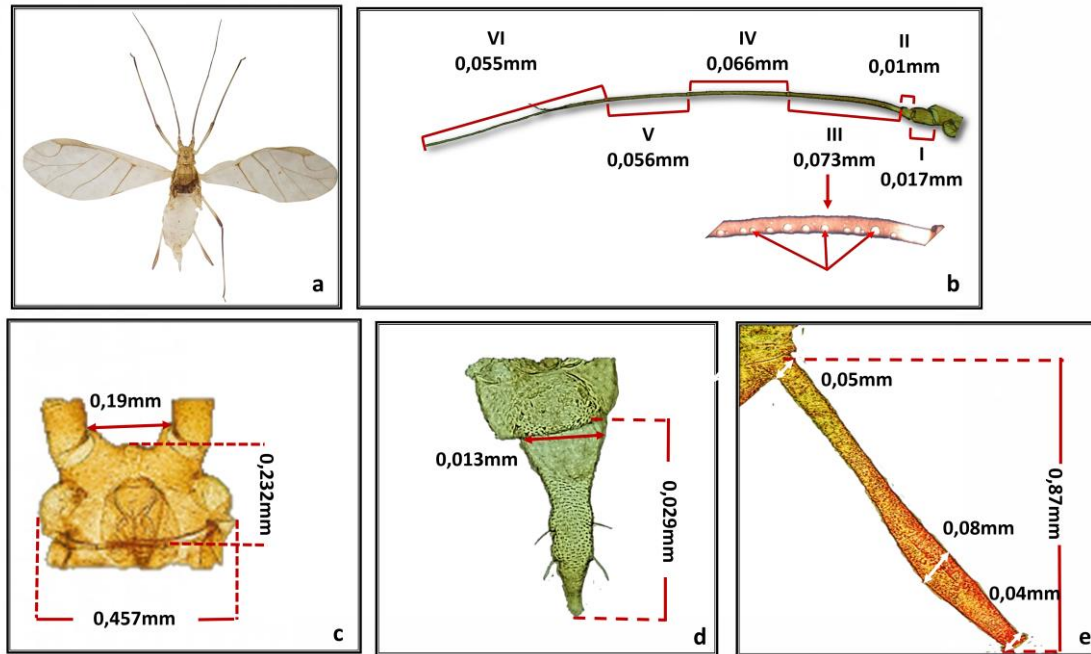


**Fig. 3.** Morphology of *Wahlgreniella nervata* (G×40).

**Table 2.** Measurement of antennal articles of *W. nervata*.

Antenna articles	I	II	III	IV	V	VI
Measurement (mm)	0.168	0.100	0.733	0.662	0.566	0.555

The head is 0.23 mm long and 0.46 mm wide. It is characterized by a frontal sinus with distinct median tubercle (Fig. 4c). The cornicles are elongated and measure 0.87 mm, slightly bulging on the distal half (Fig. 4d). The cauda is digitiform, long and thick, with five hairs (Fig. 4e). These descriptive results confirm the observations noted by Heie (1986), Eastop *et al.* (1997), and Sunil *et al.* (2014).



**Fig. 4:** Identification criteria for the aphid *W. nervata*. a-Winged adult (G×40), b-Antenna (G×100), c-Head (G×100) d-Cornicule(G×100), e-Cauda (G×100).

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