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## First report of oleander aphid *Aphis nerii* Boyer de Fonscolombe (Hemiptera: Aphididae) on milkweed (*Calotropis gigantea* (L.) W. T. Aiton: Apocynaceae) from Punjab, India

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### Abstract

Study was conducted on wild grown milkweed (*Calotropis gigantea* (L.) W. T. Aiton) during 2016 in various localities of Punjab, India. Infestation of *Aphis nerii* Boyer de Fonscolombe was recorded on *C. gigantea*. Discoloured spot on leaves and sooty mould development on honeydew was observed on *C. gigantea*. Body of this aphid is yellowish to dark yellow in colour with uniquely black legs, antennae, siphunculi and cauda. Earlier, *Aphis nerii* was not reported from Punjab. So, the present study is the first report of *Aphis nerii* on any crop from Punjab, India.

**Keywords:** *Aphis nerii*, milkweed, *Calotropis gigantea*, sooty mould, honeydew

### Introduction

Aphids are considered as the major pests of various crops of economical importance. Due to their high reproductive potential and short life cycle they cause severe damage to their host plant [1]. They feed on the cell sap which causes severe damage to the vigour of host which directly results in the loss of farmer's economy. By their feeding they injects toxins with saliva into the plant which causes blighting of buds, dimpling of fruits, leaf curling and discoloured spots appearance on foliage [2]. The losses caused by their feeding depend upon infestation at various development stages and severity of damage.

In India, agriculture is currently suffering an annual loss of about Rs. 8, 63, 884 million due to insect pests [3]. Aphid damage causes 10-90% yield loss on various crops of economic importance [4]. Kamel [5] concluded that aphid occupied the top position among the sucking pests in North-East India whereas moderate infestation was reported from South, West and Central part of the country. Their feeding under surface of leaf and ability to hide in cracks and crevices of host protect them from different control tactics.

Wild grown *Calotropis gigantea* (L.) W. T. Aiton is commonly known as milkweed or Ak [Hindi] and belongs to family Apocynaceae [6]. This plant is native to India and grows wild up to the height of 900 m all over the country [7]. Traditionally this weed is used in the treatment of fever and many abnormalities in humans [6]. *C. gigantea* has been reported to exhibit medicinal as well as insect repellent properties especially against *Culex gelidus* and *Culex tritaeniorhynchus* species of mosquitoes which serve as vectors for Japanese encephalitis. The aqueous extract of leaves have exhibits significant larvicidal, repellent and ovicidal activity [7]. Presence of these properties makes the plant resistant to different pests thereby only some specialized pests attack this weed. One of them is *Aphis nerii* Boyer de Fonscolombe. This aphid is commonly known as oleander aphid or milkweed aphid and feed on various plants of family Apocynaceae and Asclepiadaceae [8, 9].

*Aphis nerii* is cosmopolitan in its distribution and reported from different parts of world [10]. According to Blackman and Eastop [11] this aphid is distributed in tropical and subtropical regions of the world. Evans and Halbert [12] reported its infestation on various plants of Family Asclepiadaceae and Verbenaceae from Honduras. This aphid species was reported to infest more than 50 plants species [13].

Tsitsipis *et al.* [14] reported the distribution of *A. nerii* on different crops in Greece, Distribution of this species on different plants of family Asclepiaceae *viz.* *Calotropis procera*, *Nerium*

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*oleander* and *Pergularia tomentosa* was reported from Algeria [15]. Lebbal and Laamari [16] recorded the infestation of *A. nerii* on sweet lime and concluded that the infestation was less dominant than the other recorded species. Ali *et al.* [17, 18] reported this species on *Calotropis procera*, *Periploca graeca* L. and *Pilea serpyllacea* from Iraq. This species was also recorded on *Nerium oleander*, *Cyperus rotundus*, *Euphorbia sp.* and *Citrus aurantium* from Tunisia [19].

*A. nerii* along with *S. kahawaluokalani*, *E. tiliae*, *C. elaeagni*, *C. cedri* species was reported on Crape myrtle *L. indica*, Linden *T. tomentosa*, Russian olive *E. angustifolia*, Oleander *N. oleander*, Lebanon cedar *C. libani* from Tekirdag region of Turkey [20]. Mushtaq *et al.* [21] reported *Aphis nerii* on Brassica, wheat, vegetables, fodder crops from Faisalabad, Pakistan and reported that this species was restricted to winter season with 5% distribution among all the collected aphid species. Incidence of *A. nerii* on four milkweed species and associated predators was reported by [22].

In India, distribution of this species was reported on *Calotropis procera* from Barhi, Hazaribagh (Bihar), *Nerium odorum*, Canara forest, Hazaribagh (Bihar), *Calotropis sp.* from Rautara, 24 Parganas; *Inula cuspidata*, Solan, Himachal Pradesh [23]. This species was also reported from Mashobra, Himachal Pradesh on unidentified plant [24]. Rani and Sridhar [25] reported infestation of *Aphis nerii* on blood flower, *Asclepias currasavica* L. *Cerciapis emblica* Patel and Kulakarni, Amla and *Phyllanthus niruri* L. from Bangalore. *Aphis nerii* was reported on *Calotropis sp.*, *Platycodon sp.* and *Asclepias curassavica* from Uttar Pradesh [26]. This aphid species along with *Aphis gossypii* (Glover) was reported from almost all parts of India infesting 569 plant species [27]. Feeding of tender leave and flower by nymphal stage of this pest was reported by Saikia *et al.* [6] (2015) from Assam region of India.

But there was no report regarding the infestation of *Aphis nerii* on any crop from Punjab region of India. So, the present study was the first report of *Aphis nerii* infestation from this region.

## 2. Materials and methods

The present study was conducted during 2016 in different agricultural land and road side in Punjab, India. Infestation

was observed on wild growing *C. gigantea* from Barnala, Mansa, Muktsar and Faridkot area. Aphids were collected with the help of camel-hair brush and preserved in 70% ethanol. Leaf samples were also detached from the plant and placed in the polyethylene bag tied with rubber band and brought to the laboratory of insect taxonomy, PAU, Ludhiana. Specimens were boiled in 10% KOH for 5-10 minutes, washed in water and boiled again in chloral phenol solution for 10 minutes. Specimens were mounted in Berlese's medium [28] and identified by following the keys given by Gosh [24].

Voucher specimens have been deposited in the National Insect Museum Department of Entomology, Punjab Agricultural University, Ludhiana.

## 3. Results

In the present study infestation of oleander aphid *Aphis nerii* Boyer de Fonscolombe was recorded on milkweed, *C. gigantea* [L.] W. T. Aiton along the road side and barren land adjoining to agricultural field in Barnala, Mansa, Muktsar and Faridkot area of Punjab in the month of February and March. Heavy infestations in colonies were observed on *C. gigantea*. Apterous and alate of aphid were observed in colonies on this shrub (Fig. 1)

**3.1 Nature of damage:** It was observed that feeding of *A. nerii* on these plants causes discoloured spots on foliage and stem. Sooty mould was developed on honeydew secreted by the colony members. Terminal parts of the plants were deformed (Fig.1).

**3.2 Morphological characters:** The aphid having yellowish body with uniquely black legs, antennae, siphunculi and cauda (Fig.1).

**3.3 Taxonomical characters:** Siphunculi 1.9-2.8 mm long with 1.0-1.8 mm wide; about double the length of cauda with 10-12 hairs; First segment of hind tarsus with 5 hairs; second tarsal segment with both dorsal and ventral secondary hairs; body yellowish to dark yellow in colour. Rostrum reaches upto the hind coxae.



(a)



(b)



**Fig 1:** Infestation of oleander aphid (*Aphis nerii*) on milkweed (*Calotropis gigantean*)

#### 4. Discussion

Earlier, this species was reported on *Calotropis procera*, *Nerium odorum*, *Calotropis* sp. and *Inula cuspidate* [23]. Gosh [23] concluded that this species was distributed all over India. But in his study none of the locality from Punjab was mentioned. There was a little difference in the length and breadth of siphunculi as these were little larger in this species rather reported by Gosh [23]. This species was also reported by Gosh [24] from Mashobra, Himachal Pradesh on unidentified plant.

Saikia *et al.* [7] also reported the infestation of *C. gigantean* from Assam, Kataria and Kumar [27] reported this species on different cereals, vegetables, ornamental plants and weeds from Vadodara, Gujarat. This species was reported as specialist pest of milkweed [29]. Mitra and Gosh [28] reported infestation of this species on two new host plants from Calcutta, West Bengal. Feeding of this aphid causes deformation of tender leaves and yellowing and dropping of mature leaves [25]. This species was reported to infest *Nerium oleander*, *Cyperus rotundus*, *Euphorbia* sp., *Citrus aurantium* from Tunisia [30].

#### 5. Conclusion

The present investigation was the first report of *A. nerii* on any crop from Punjab, India. Infestation of this aphid was recorded on wild grown milkweed at Barnala, Mansa, Muktsar and Faridkot area of Punjab.

#### 6. Acknowledgement

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