

FIRST REPORT OF THE INFESTATION OF *Azadirachta indica* A. Juss BY *Aonidiella orientalis* (Newstead) (Hemiptera: Diaspididae) IN BRAZIL

PRIMEIRO RELATO DE INFESTAÇÃO DA *Azadirachta indica* A. Juss POR *Aonidiella orientalis* (Newstead) (Hemiptera: Diaspididae) NO BRAZIL

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ABSTRACT: The infestation of *Azadirachta indica* A. Juss. (Meliaceae) by scale insects of the species *Aonidiella orientalis* (Newstead) (Hemiptera: Diaspididae) is reported for the first time. Leaves and twigs exhibiting signs of wilting were collected from the basal-interior parts of the canopy of neem trees that had been planted in the city of Limoeiro do Norte, located in the northeastern state of Ceará, Brazil. The identity of the oriental scale insect *A. orientalis* was confirmed by microscopic examination. The insect pest has not been observed previously in the northern states of Brazil, hence the present report is significant in that it focuses attention on the mobility of *A. orientalis* and on its potential to infest other plant species in that region.

KEYWORDS: Ceará. Meliaceae. Neem. Oriental scale insect.

Neem (*Azadirachta indica* A. Juss.; family Meliaceae) is a fast-growing evergreen tree that is native to the Indo-Pakistan subcontinent. That species has received considerable research attention worldwide by virtue of its powerful insecticidal properties that have been attributed to the active tetranortriterpenoid constituent azadirachtin (SCHMUTTERER, 1990; MOSSINI; KEMMELMEIER, 2005; NEVES; CARPANEZZI, 2008; SILVA et al., 2009; MATIAS et al., 2011). The neem tree was introduced into Brazil in 1986 for various commercial purposes including fruit production, urban landscaping and as a source of natural insecticide (MARTINEZ, 2002; NEVES; CARPANEZZI, 2008). Currently, powdered leaves, fruits and seeds of neem, along with the oils and aqueous extracts derived therefrom, are employed in the control of agricultural pests (PRATES et al., 2003; BOEKE et al., 2004; GARCIA et al., 2006; GONÇALVES; BLEICHER, 2006; BLEICHER et al., 2007; TRINDADE et al., 2007; BERNARDI et al., 2010; CONCESCHI et al., 2011) and insect vectors of human diseases (OKUMU et al., 2007).

Paradoxically, despite its insecticidal constituents, *A. indica* can be attacked by insects in all stages of plant development (SOUZA et al., 2009a,b). In Brazil, there are reports of neem plantations having been attacked by leaf-cutting ants of the genera *Atta* and *Acromyrmex* (Hymenoptera: Formicidae) (NEVES;

CARPANEZZI, 2008; SOUZA et al., 2009a), the shot-hole-borer *Apate terebrans* (Pallas) (Coleoptera: Bostrychidae) (SOUZA et al., 2009b), the brown burrower bug *Scaptocoris castanea* Perty (Hemiptera: Cydnidae) (MATIAS et al., 2011), and the beetles *Xylosandrus compactus* (Eichhoff), *Cryptocarenus diadematus* Eggers and *Hypothenemus* sp. (PENTEADO et al., 2011). In the present paper, we report for the first time the infestation of neem trees by the highly polyphagous oriental scale insect *Aonidiella orientalis* (Newstead) (Hemiptera: Diaspididae), and provide evidence of the dissemination of the insect to new areas.

Neem trees have been employed to enhance the urban landscape in the city of Limoeiro do Norte (05°08'57,4" S and 38°06'00,3" W) located in the semi-arid region of the state of Ceará, Brazil. Leaves and twigs of 20 neem trees that exhibited signs of wilting at the basal-interior part of the canopy were collected from 10 different points during July and August 2011. The collected material was transferred to paper bags (20 x 35 cm) and transported to the Laboratory of Applied Entomology at the Universidade Federal Rural do Semi-Árido (UFERSA; Mossoró, Rio Grande do Norte, Brazil) for analysis. A considerable number of oriental scale insects were detected on both leaves and twigs (Figure 1), with an average of 15 insects per leaf sample analysed.

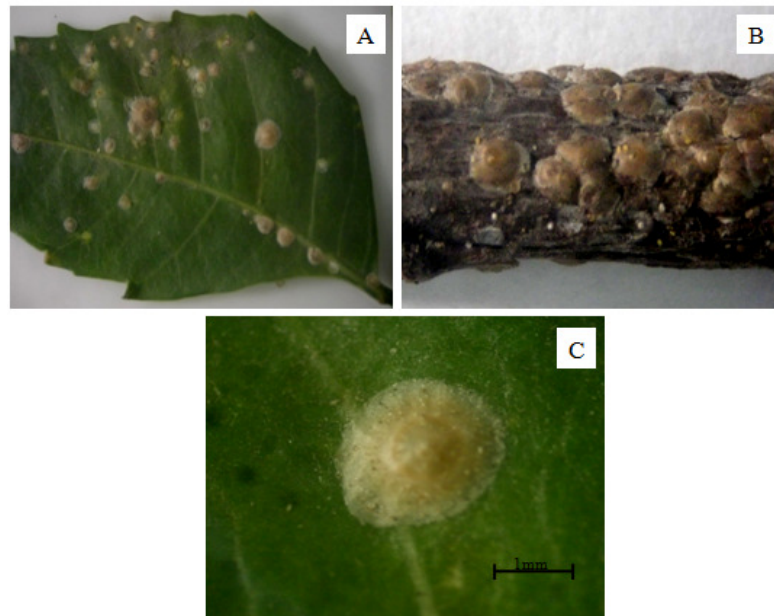


Figure 1. Tissues of *Azadirachta indica* infested by *Aonidiella orientalis* showing: (A) leaf infested with nymphs and adults; (B) twig infested with nymphs and adults; and (C) an enlarged image of the scale of the adult female.

The insects were removed from plant material, transferred to vials containing 70% ethanol and transported to the Entomology Laboratory at the Fundação Estadual de Pesquisa Agropecuária (FEPAGRO, Porto Alegre, Rio Grande do Sul, Brazil) for further identification. Adult females were selected and permanent slides prepared according to Claps; De Haro (1995) with few modifications. Briefly, insects were placed onto a concave ceramic plate, immersed in 10% KOH solution and heated in an oven at 40°C for 30 min. The insects were then washed with distilled water while being pressed with an histological needle in order to clear the body contents. The remaining tissues were treated with Essig's solution

plus acid fuchsin stain and submitted to sequential dehydration with 70 to 96% ethanol and final immersion in clove oil (approximately 2 min in each solution). Tissues were permanently mounted in Canada balsam and examined under the optical microscope. The scale insects were identified as *A. orientalis* on the basis in description of Ferris (1938). This species of scale insect is readily distinguished from others within the genus by the presence of circumgenital scent glands in the pygidium (Figure 2) (MCKENZIE, 1937). Slides comprising six adult female specimens were deposited in the collection of the Museu de Entomologia Ramiro Gomes Costa (FEPAGRO) with identification numbers 2000, 2001 and 2002.

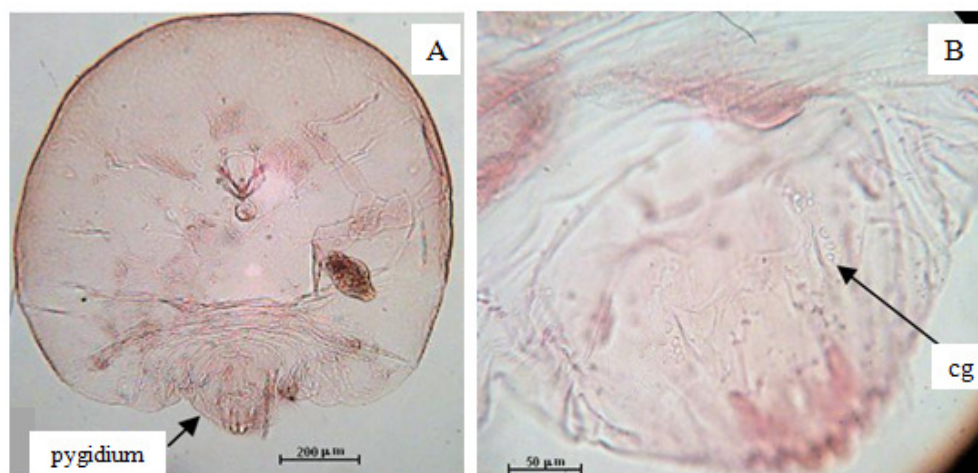


Figure 2. Micrographs of an *Aonidiella orientalis* adult female showing: (A) whole body; and (B) pygidium with circumgenital scent glands (cg).

Aonidiella orientalis is distributed extensively in tropical and subtropical areas worldwide and is reported to infest more than 200 plant species from 75 families (BEN-DOV, 2012). In some countries in Africa (including Kenya and Nigeria) and Asia (Sri Lanka, for example), *A. orientalis* represents the main pest of neem trees (SCHMUTTERER, 1998; LALE, 1998; KIYANTHY; MIKUNTHAN, 2009). In Brazil, infestations of various plant species from the families Cunoniaceae, Myrtaceae, Tiliaceae, Orchidaceae and Podocarpaceae by the oriental

scale insect have been recorded in the southeastern and southern states of Rio de Janeiro, Santa Catarina and Rio Grande do Sul (CLAPS et al., 2001). The evidence presented herein reveals that plants of *A. indica* in the northeastern state of Ceará were infested with *A. orientalis*, a pest that has not been observed previously in this region. This report is important since it focuses attention on the mobility of the oriental scale insect and its potential to infest other plant species in the northeastern region of Brazil.

RESUMO: A infestação de *Azadirachta indica* A. Juss. (Meliaceae) pela cochonilha da espécie *Aonidiella orientalis* (Newstead) (Hemiptera: Diaspididae) é relatada pela primeira vez. Folhas e galhos exibindo sinais de murcha foram obtidos da parte basal interna da copa de árvores que haviam sido plantadas na cidade de Limoeiro do Norte localizada no estado do Ceará, nordeste do Brasil. A identidade dos insetos foi confirmada através de exame microscópico. Visto que esse inseto não havia sido observado antes nos estados do norte do Brasil, o presente artigo é importante, pois desperta a atenção para a mobilidade de *A. orientalis* e seu potencial para infestar outras espécies nesta região.

PALAVRAS-CHAVE: Ceará. Cochonilha-de-carapaça. Meliaceae. Nim.

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