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First report of *Saissetia miranda* (Cockerell & Parrott) (Hemiptera: Coccidae) in Brazil: occurrence on mahogany seedlings

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The Brazilian mahogany tree, *Swietenia macrophylla* King (Meliaceae), is a native tree of Central and South American forests, where it also is known as Honduran or big-leaf mahogany, or simply mahogany (Snook 1998). It is a dominant species in the forest canopy, reaching a total height of about 70 m and a diam of about 3.5 m (Williams 1932; Lamb 1966; Pennington & Sarukhan 1968).

Mahogany wood is extremely valuable and used for many purposes (Lorenzi 1992). In Brazil, *S. macrophylla* has been widely used in urban forestation, especially in Brasília, Federal District, and in Manaus, Amazonas (Prance & Silva 1975). Its potential as a tree planted in parks and in agroforestry systems also has encouraged seedling production, which heretofore generally has been free of insects and diseases. So far, only 1 insect, the pyralid moth *Hypsipyla grandella* Zeller (Lepidoptera: Pyralidae), has been reported causing damage to this tree in Brazil.

Scale insects, including coccids (Hemiptera: Coccidae), are commonly associated with trees, sometimes causing severe damage. Coccid species of the genera *Ceroplastes*, *Coccus*, *Eucalymnatus*, *Megalecanium*, *Pulvinaria*, and *Saissetia* are abundant in Brazil, including many native species (García et al. 2017). This paper reports a coccid associated with *S. macrophylla* for the first time in Brazil, and includes observations on the morphology of the insect and associated species, and symptoms caused by feeding on mahogany seedlings.

Scale insects were collected on 1-yr-old mahogany plants cultivated in a glasshouse located in Brasília, Brazil (15.7305°S, 47.8997°W). Scales were observed during Dec 2014 until Jan 2015 infesting the leaves and stems. All stages of development were present, as was abundant honeydew secretion (Fig. 1). Samples were stored in 75% ethanol and slide mounted according to the methodology described by Gullan (1984) and Ben-Dov and Hodgson (1997). The insects were identified mainly using the characteristics given by Williams and Kosztarab (1972), Williams and Watson (1990), and Granara de Willink (1999). Voucher specimens were deposited in the Reference Collection of Insects and Mites, CRIA, at the Department of Plant Protection of FCAV/UNESP.

The scale attacking *S. macrophylla* was identified as *Saissetia miranda* (Cockerell & Parrott) (Hemiptera: Coccidae), commonly called

Mexican black scale, a polyphagous soft scale recorded here for the first time in Brazil. Mahogany seedlings showed deformation of the stem and the apical bud and the presence of sooty mold fungi due to the large amount of honeydew excreted by the insect (Fig. 1). Sooty mold blocks light, reducing photosynthesis and tree vigor.

Genus *Saissetia* includes 44 described species, with 13 species reported from Brazil (García et al. 2017). They occur mainly in Afrotropical and Neotropical regions (García et al. 2017). The most economically important species are *S. coffeae* (Walker) and *S. oleae* (Olivier), both causing injuries to several cultivated plant hosts, especially coffee and olives trees.

Mexican black scale has been reported on 26 genera and 58 species of plant hosts, and also collected on another species of the same genera, *S. mahagoni* (L.) (Nakahara & Miller 1981; García et al. 2017). Mexican black scale originally was described by Cockerell & Parrott from samples collected on *Abutilon* sp. (Malvaceae) in Vera Cruz, Mexico (Cockerell 1899) and named *Lecanium oleae mirandum*. Later it was recorded in several places around the world, mainly in Central and North America, South Asia, and several islands in the Australasian region. In South America it is known only from Argentina (Granara de Willink 1999; García et al. 2017).

Macroscopically, *S. miranda* is similar to *S. oleae*, becoming gray and black in mature specimens, and with all stages possessing raised areas forming an “H” dorsally. Mature specimens of *S. coffeae*, are easily separated from *S. oleae* and *S. miranda* because it is light brown in color, with a smooth and convex dorsum, and devoid of the “H” on adult females; the “H” is visible only on young specimens (Choi & Lee 2017). Mounted specimens can be differentiated by the characters given in Table 1.

Also sometimes associated with *S. macrophylla* around the world are 6 other species of coccoids: *Hemilecanium imbricans* (Green) (Hemiptera: Coccidae); *Chrysomphalus dictyospermi* (Morgan), *Hemiberlesia cyanophylli* (Signoret), *Ischnaspis longirostris* (Signoret) (Diaspididae); *Crypticerya multicatrides* Kondo & Unruh (Monophlebidae); and *Dysmicoccus nesophilus* Williams & Watson (Pseudococcidae). *Swietenia macrophylla* was not known to be a suitable host of *S. mi-*

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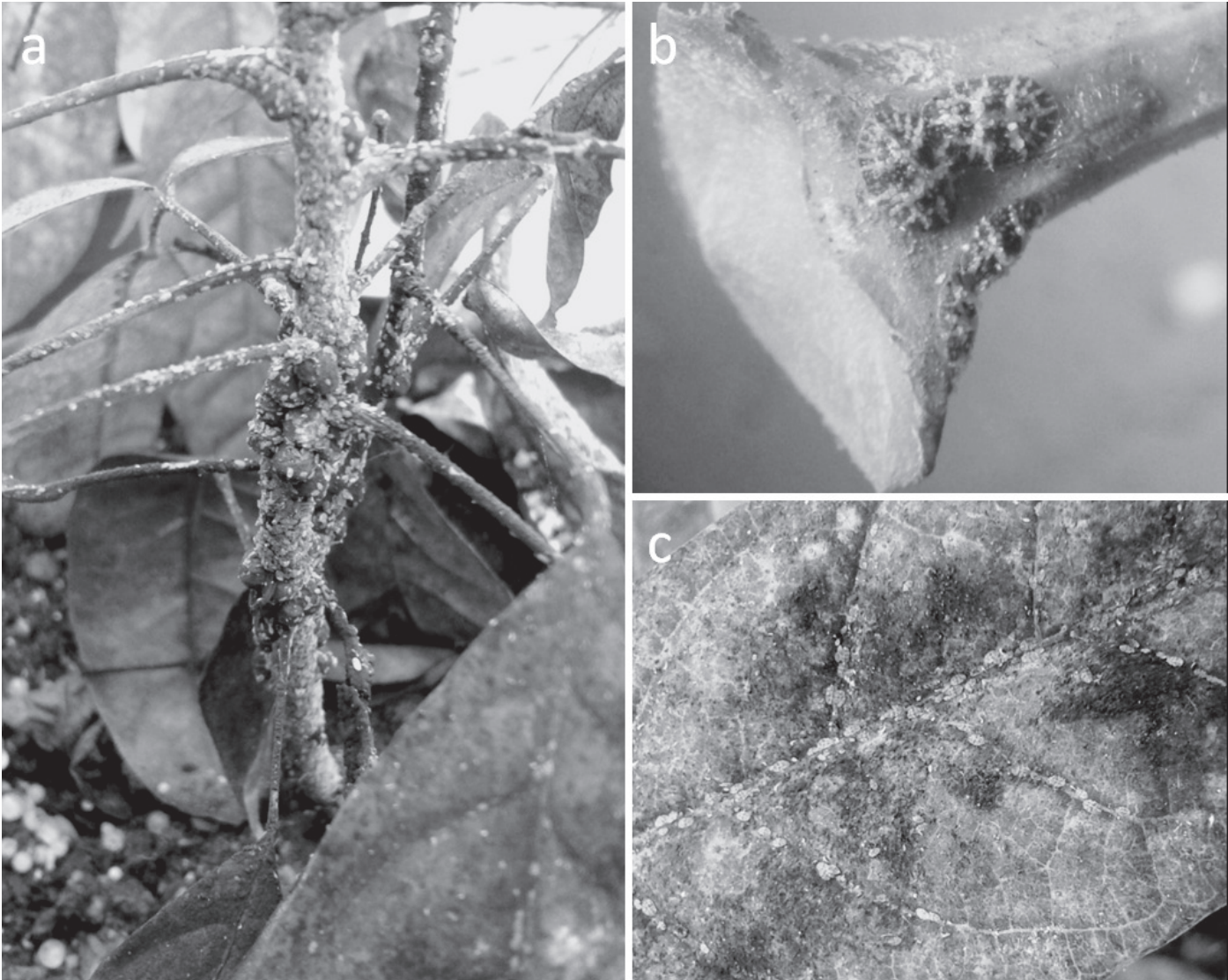


Fig. 1. *Saissetia miranda* (Hemiptera: Coccidae) on *Swietenia macrophylla*. (a) Immatures and adults infesting stem, petiole, and on leaves of mahogany seedlings conducted under greenhouse conditions. (b) Detail of the macroscopic characteristic of adult female, with “H” on dorsum. (c) Sooty mold fungi on leaves.

randa until now. Production of seedlings is indispensable for the introduction of this tree into new areas. However, *S. miranda* can affect the development of mahogany plants and thus reduce the supply of high-quality seedlings to plantations in the region.

Summary

Saissetia miranda (Cockerell & Parrott) (Hemiptera: Coccidae) was collected on leaves and stems of mahogany seedlings, *Swietenia mac-*

Table 1. Differentiation between *Saissetia miranda*, *Saissetia oleae*, and *Saissetia coffeae*.

Character	<i>Saissetia miranda</i>	<i>Saissetia oleae</i>	<i>Saissetia coffeae</i>
Ventral tubular ducts	One type with slender filament	One type with slender filament	Two or 3 types with slender and wide filaments
Dorsal setae	Conical and conspicuous	Spiniform	Spiniform
Tibio-tarsal sclerose	Present	Usually present (*)	Present
Marginal setae	Long and fimbriate in the apex	—	—
Number of marginal setae between anterior stigmatic clefts	Between 40 and 60 Two sizes	Between 14 and 24	Numerous, approximately 46–52
Number of marginal setae between anterior and posterior stigmatic clefts.	Between 14 and 24	Between 3 and 12	Approximately 13–16
Dorsum dermal of adult female	With “H” ridge	With “H” ridge	Smooth and convex

*Granara (1999) mentions *S. oleae* as having legs without tibio-tarsal sclerose. Williams and Kosztarab described as “tibio-tarsal sclerose usually absent”. Williams and Watson (1990) noted “tibio-tarsal articulatory sclerose present”. Other references also described this species as having tibio-tarsal sclerose.

rophylla King (Meliaceae), produced under greenhouse conditions in Brasília, Federal District, Brazil. This is the first report of this scale insect in Brazil and *S. macrophylla* as a host. Morphological characteristics of *S. miranda* and comparisons with similar species also are presented.

Key Words: scale insect; Meliaceae; insect-plant interaction; forest entomology

Sumario

Saissetia miranda (Cockerell & Parrott) (Hemiptera: Coccidae) foi coletada em folhas e hastes de mudas de mogno, *Swietenia macrophylla* King (Meliaceae), produzidas em casa de vegetação em Brasília, Distrito Federal, Brasil. Este é o primeiro relato dessa cochonilha no Brasil e *S. macrophylla* como hospedeira. Características morfológicas de *S. miranda* e comparações com espécies similares também são apresentadas.

Palavras Chave: cochonilha; Meliaceae; interação inseto-planta; entomologia florestal.

References Cited

- Ben-Dov Y, Hodgson CJ. 1997. 1.4 Techniques. 1.4.1 Collecting and mounting, pp. 389–395 *In* Ben-Dov Y, Hodgson CJ [eds.], *Soft Scale Insects - Their Biology, Natural Enemies and Control*. Vol. 7A. Elsevier, Amsterdam, Netherlands and New York, USA.
- Choi J, Lee S. 2017. Taxonomic review of the tribe Saissetiini (Hemiptera: Coccidae) in Korea. *Journal of Asia Pacific Entomology* 20: 101–111.
- Cockerell TDA. 1899. Rhynchota, Hemiptera - Homoptera. [Aleurodidae and Coccidae]. *Biologia Centrali-Americana* 2: 1–37.
- García M, Denno B, Miller DR, Miller GL, Ben-Dov Y, Hardy NB. 2017. ScaleNet: A Literature-based model of scale insect biology and systematics. <http://scalenet.info> (last accessed 10 Oct 2017).
- Granara de Willink MC. 1999. Las cochinillas blandas de la República Argentina (Homoptera: Coccoidea: Coccidae). *Contributions on Entomology, International* 3.
- Gullan PJ. 1984. A revision of the gall-forming coccoid genus *Apiomorpha* Rübsaamen (Homoptera: Eriococcidae: Apiomorphinae). *Australian Journal of Zoology, Supplementary Series* 7: 1–203.
- Lamb FB. 1966. Mahogany of Tropical America: its Ecology and Management. University of Michigan, Ann Arbor, Michigan, USA.
- Lorenzi H. 1992. Mogno, pp. 231–235 *In* Lorenzi H [ed.], *Árvores Brasileiras: Manual de Identificação e Cultivo de Plantas Arbóreas Vativas do Brasil*. Ed. Plantarum, São Paulo, Brazil.
- Nakahara S, Miller CE. 1981. A list of the Coccoidea species (Homoptera) of Puerto Rico. *Proceedings of the Entomological Society of Washington* 83: 28–39.
- Pennington TD, Sarukhán J. 1968. Árboles Tropicales de Mexico. INIF/FAO, Ciudad de Mexico, Mexico.
- Prance GT, Silva MF. 1975. Árvores de Manaus. INPA, Manaus, Brazil.
- Snook LK. 1998. Sustaining harvests of mahogany (*Swietenia macrophylla* King) from Mexico's Yucatán forests: past, present and future, pp. 61–80 *In* Primack RB, Zuarra D, Gallett HA, Ponciano I [eds.], *Timber, Tourists and People*, Island Press, Washington, DC, USA.
- Williams DJ, Watson GW. 1990. The scale insects of the tropical South Pacific region. Part 3. The soft scales (Coccidae) and other families. CAB International Institute of Entomology. British Museum (Natural History), London, United Kingdom.
- Williams L. 1932. Peruvian mahogany. *Tropical Woods* 31: 30–37.
- Williams ML, Kosztarab M. 1972. Morphology and systematic of the Coccidae of Virginia, with notes on their biology (Homoptera: Coccoidea). *Research Division Bulletin, Virginia Polytechnic Institute and State University* 74: 1–215.