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Description of the immature female stages of *Ceroplastes janeirensis* (Gray) (Hemiptera: Coccidae) with a special reference to the development of the wax test

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Abstract

This paper describes the nymphal development of *Ceroplastes janeirensis* (Gray), which develops its wax test differently to that currently known for other Ceroplastinae. Macroscopic and microscopic characters of the three immature female stages are described and illustrated for the first time. An identification key to the female instars is provided and a brief discussion is also included comparing their morphology with those of other Ceroplastinae.

Key words: soft scale, Ceroplastinae, wax scale, female nymphs morphology, taxonomy

Resumo

Este trabalho descreve o desenvolvimento ninfal de *Ceroplastes janeirensis* (Gray), a qual desenvolve uma carapaça de cera diferentemente daquela normalmente conhecida para outros Ceroplastinae. Caracteres macroscópicos e microscópicos dos três estádios imaturos da fêmea são descritos e ilustrados pela primeira vez. Uma chave de identificação para os ínstares da fêmea é apresentada e uma breve discussão também é incluída comparando sua morfologia com a de outros Ceroplastinae.

Palavras-chave: cochonilha, Ceroplastinae, cochonilha cerosa, morfologia das ninfas de fêmeas, taxonomia

Introduction

Ceroplastes janeirensis (Gray) (Hemiptera: Coccoidea: Coccidae) is a South American species of "wax scale", known from Argentina, Brazil and Colombia. Although most common on Myrtaceae, mainly on *Psidium guajava*, it has been recorded on a wide range of host plants in the following families: Apocynaceae, Asteraceae, Bignoniaceae, Clusiaceae, Ebenaceae, Fabaceae, Lecythidaceae, Lythraceae, Moraceae, Myrtaceae, Punicaceae and Solanaceae (Silva *et al.* 1968; Ben-Dov *et al*. 2010).

Ceroplastes janeirensis is the type species of the Ceroplastinae Atkinson, the second largest subfamily in the family Coccidae with 153 species and 12 subspecies (Ben-Dov *et al.* 2010). This subfamily includes several species of economic importance, mainly on fruit trees and ornamental plants in the urban landscapes and in nurseries. It is the female stage which causes the damage due to their ability to build up large populations on a plant, thus removing copious amounts of sap. In addition, they eliminate the excess water and sugars in the sap through their anus as honeydew, an ideal substrate for sooty mould fungi, which come to cover the leaves and fruit, greatly reducing photosynthesis. The male cause little or no damage, only feeding briefly during the first and second instars, the later stages (prepupa, pupa and adult) all lacking functional mouthparts.

The females of these insects are neotenic, becoming adult after three moults (Gimpel *et al.* 1974). The adult females have a thick wax test covering the whole dorsal area of the body. Previous studies have found that the first- and second-instar female nymphs secrete a dorsal cap of dry wax which covers most of the dorsum, plus a submarginal series of about 15 filaments of dry wax. These dry wax filaments are retained in the third instar but, during

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