

Scanning Electron Microscopy of Six Selected Mealybug (Hemiptera: Pseudococcidae) Species of Sri Lanka

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ABSTRACT: *The Scanning Electron Microscope (SEM) is extremely useful for studying the detailed morphology of very small structures on insect cuticle, enabling quick and accurate representation. Scanning electron microscopy of mealybugs (Hemiptera: Pseudococcidae) is challenging, due to the thinness and flexibility of the cuticle. The three-dimensional structure of the wax-producing pores of mealybugs is complicated and can be best elucidated using the SEM. Only a few studies have reported on ultrastructure and wax-secretion processes in the Pseudococcidae. The aim of this study was to enrich the understanding of the external morphology and wax-secreting pores of mealybugs, using scanning electron microscopy. Six economically important pest mealybug species in Sri Lanka were studied under the SEM namely, Coccidohystrix insolita (Green), Dysmicoccus brevipes (Cockerell), D. neobrevipes Beardsley, Maconellicoccus hirsutus (Green), Phenacoccus solenopsis Tinsley and Planococcus lilacinus (Cockerell). The specimens were subjected to dehydration, critical point drying and sputter coating, before being scanned using the SEM. The ultrastructure of the antenna, ostiole, vulva, claw digitules, cerarius, circulus and wax-secreting pores were examined. Wax-secreting pores of different species showed remarkable structural variation. Minute characters of taxonomic importance that can only be seen under the SEM are discussed. Although the preparation of specimens for viewing under the SEM is time-consuming and expensive, the effort is worthwhile because the detailed information obtained may solve some difficult aspects of mealybug taxonomy, and help to improve the understanding of the role of wax secretions in mealybug biology.*

Keywords: *Mealybugs, morphology, structural variation, wax-secreting pores*

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