Zootaxa 2527: 1–27 (2010)
www.mapress.com/zootaxa/

Article

ISSN 1175-5326 (print edition)
ZOOTAXA
ISSN 1175-5334 (online edition)

A study of some species of the genus *Stictococcus* Cockerell (Hemiptera: Sternorrhyncha: Coccoidea: Stictococcidae), and a discussion on *Stictococcus vayssierei* Richard, a species injurious to cassava in Equatorial Africa with a description of a new species from Nigeria

DOUGLAS J. WILLIAMS [1], DANIÈLE MATILE-FERRERO [2] & DOUGLASS R. MILLER [3, 4]

[1] *The Natural History Museum, Department of Entomology, Cromwell Road, London SW7 5BD, UK*
[2] *Muséum national d'Histoire naturelle, Departement "Systematique et Evolution", UMR 7205 MNHN-CNRS : Origine, Structure et Évolution de la Biodiversité, CP 50, F – 75231 Paris Cedex 05, France*
[3] *U.S. Department of Agriculture, Systematic Entomology Laboratory, PSI, Agricultural Research Service, Building 005, Barc-West, 10300 Baltimore Avenue, Beltsville, MD 20705, U.S.A. E-mail: douglass.miller@ars.usda.gov*
[4] *Corresponding author*

Table of contents

Accepted by C. Hodgson: 13 May 2010; published: 5 Jul. 2010

Abstract

The adult female of the scale insect *Stictococcus vayssierei* Richard is described and illustrated. The species feeds on the root system of cassava *(Manihot esculenta)* (Euphorbiaceae) in Equatorial Africa, affecting tuber formation of the plant. Although damage has been reported only recently, the species has probably remained unnoticed because of its subterranean habit. The distribution and host plants of this species are listed and the segmentation of the adult female of *Stictococcus* is discussed to help describe the characters in detail when specimens are prepared on microscope slides. Six other species of *Stictococcus* are described or discussed: *S. formicarius* Newstead, *S. intermedius* Newstead, *S. pujoli* Richard, *S. sjostedti* Cockerell & Cockerell, *S. subterreus* Williams, Matile-Ferrero & Miller sp. n., and *S. formicarius* var. *tuberculata* Laing which is here raised to specific rank as *S. tuberculatus* Laing.

Key words: Scale insects, *Stictococcus*, *Manihot esculenta*, damage to roots, new species, description of adult females, key to genera, key to species

Introduction

The purpose of this paper is to discuss the genus *Stictococcus* Cockerell and, in particular, the adult female of *Stictococcus vayssierei*, a species described by Richard (1971) on the basis of first-instar nymphs and the adult male only. We redescribe in detail the adult females of *S. formicarius* Newstead, *S. intermedius* Newstead, *S. sjostedti* Cockerell & Cockerell, and *S. vayssierei* Richard, and we discuss further, *S. pujoli* Richard and raise *S. formicarius* var. *tuberculata* Laing to specific rank as *S. tuberculatus* Laing. We also describe a new species on cassava roots as *S. subterreus* sp. n., and provide a key to genera of the family Stictococcidae and a key to separate the species of *Stictococcus*.

Stictococcus vayssierrei was recorded originally from Cameroon and the Central African Republic on the roots of cassava (*Manihot esculenta*) (Euphorbiaceae) by Richard (1971). Further reports indicate that *S. vayssierei* causes extensive damage to cassava. Root feeding is unusual in the genus *Stictococcus*, and is found only in *S. vayssierei* and in *S. subterreus* sp. n., both of which have been found on cassava. All species of *Stictococcus* are apparently attended by ants and, in southern Cameroon, Dejean & Matile-Ferrero (1996) reported that the ant *Anoplolepis tenella* Santschi was the principal agent for the dispersal of *S. vayssierei*. This ant is a forest-dwelling species found everywhere in the area where the ground is out of direct sunlight. Lutete *et al.* (1997) indicated that heavy infestations of the scale insect totally disturbed the tuber formation of the plant in Bas Zaire (now the Democratic Republic of the Congo), but that the aerial parts of the plant were not affected. Ngeve (1995), however, reported that young plants affected by the insects in Cameroon showed stunted growth, extensive leaf-fall, wilting and tip-dieback. According to Ambe *et al.* (1999), farmers in Cameroon reported that the storage roots of cassava were smaller and deformed, and Tchuanyo *et al.* (2000) stated that more than 200 insects were observed on a single plant in the southern part of Cameroon, a semi-humid zone. In an interesting report on *S. vayssierei* on cassava in Cameroon, Ngeve (2003) indicated that pest frequency was only 12.5% in 1990 but increased to 87.5% by 1994. Furthermore, the insect attacks were more severe when cassava was planted on the flat rather than on ridges. There were more severe infestations when cassava was intercropped with other plants such as maize and groundnuts than when planted alone. Tubers were covered with the scale insect making them unattractive at market.

It is unclear why *S. vayssierei* has become a notable pest of cassava in recent years. Despite extensive surveys on cassava in Africa for the cassava mealybug, *Phenacoccus manihoti* Matile-Ferrero, which first appeared in Africa in 1973 (Herren & Neuenschwander, 1991; Neuenschwander & Herren, 1998), there were no reports of a species of *Stictococcus*. Probably, *S. vayssierei* remained unnoticed because of its subterranean habit. It is interesting, however, that when Richard (1971) was studying the genus *Stictococcus*, she identified specimens of *S. vayssierei* collected in the Congo Republic (Brazzaville) in 1907 on an unidentified plant but never recorded the material. Cassava was first taken to São Tomé and the Congo from Brazil in the 16th century (Purseglove, 1982) and cannot be an original host plant because *Stictococcus* is restricted to Africa. Lutete *et al.* (1997) reported *S. vayssierei* on the roots of *Dioscorea* sp. (Dioscoreaceae) and *Xanthosoma* sp. (Araceae), plant genera that are of Asian origin. Specimens of *S. vayssierei* are also at hand collected on *Colocasia esculenta* (Araceae), a plant that possibly reached Africa in classical times (Pursglove, 1981).