

First report of *Vryburgia amarillidis* (Bouché) (Homoptera, Pseudococcidae) on *Agapanthus* sp. in Sicily, Italy

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Abstract

The lily mealybug, *Vryburgia amarillidis* (Bouché) (Homoptera, Pseudococcidae) was detected on containerized *Agapanthus* sp. plants in Sicily, Italy. The morphological characteristics of the Sicilian populations of this pest are described.

Introduction

African lilies (*Agapanthus* spp.) are beautiful flowering ornamentals widely used in gardens in Sicily. These lilies, native to South Africa, are deciduous or perennial and produce campanulate, white or violet-blue flowers. Breeding programs have improved the size, color and shape of these flowers. There is a great demand for these lilies and they are produced and marketed in many ornamental nurseries on the island. During an insect survey conducted in 2011, a large population of *Vryburgia amarillidis* (Bouché, 1837) (Homoptera, Pseudococcidae) (Figures 1, 2) was detected on the basal leaves of potted *Agapanthus* sp. at two sites (Mascalucia and Nicolosi) among the foothills of Mount Etna, in the province of Catania. The mealybug was identified using the key published by MacKenzie (1967). This is the first time this mealybug has been detected in Sicily.

The lily bulb mealybug has a wide host range that includes species of the Agavaceae, Amaryllidaceae, Cyperaceae, Iridaceae, Liliaeae, and

Poaceae families (SEL, 2012). It also has a wide geographical distribution in the Afrotropical, Australasian, Nearctic and Palaearctic regions, including Bulgaria, Crete, Egypt, France and Germany. It is also known in the Netherlands, the United Kingdom (Ben-Dov, 1994; Cox, 1987), Portugal (Kozar and Franco, 1995), and northern (Emilia Romagna) and southern (Campania) Italy (Menozzi, 1933; Marotta, 1987, 1990).

Following its initial identification in Sicily, the lily bulb mealybug has spread to new sites on the island. The morphological variability observed in the Sicilian populations compared to that of the original description has prompted researchers to study its morphological profile. In this way, the most important characteristics of the lily bulb mealybug can be defined and made available to the local pest diagnosis agencies on the island to facilitate its identification.

Materials and methods

Morphological observations

The morphological characteristics described below were obtained from two lily bulb mealybug populations:

- i) 10 females on *Agapanthus* sp., 18.07.2011, Mascalucia (CT), legit S. Longo.
- ii) 8 females on *Agapanthus* sp., 31.07.2011, Nicolosi (CT), legit S. Longo

Live females (Figure 3) are characterized by a dark purple body, covered with a thin layer of powdery white wax and with 2 pairs of caudal filaments, of which the posterior pair is longer and broader than the anterior. They have a large ovisac containing pink eggs that covers the entire body.

The morphological features of fixed slide-mounted females (Figure 4) consist of an elongated body with almost parallel-sides (2.5-3.9 mm long and 1.15-1.65 mm wide) and the following characteristics.

Dorsum with cerarii located on the last 2 abdominal segments; anal lobe cerarius with 2 quite large, conical setae, 5-10 slender auxiliary setae and 20-30 trilocular pores; preanal cerarius with 2 conical setae and 1-3 slender auxiliary setae and 3-10 trilocular pores. Anal ring apical with 6 setae. Multilocular disc pores absent. Trilocular pores evenly distributed over the entire dorsum. Scattered simple circular pores. Oral rim tubular ducts arranged in 3 or 6 transverse rows across each abdominal urite, except for segment IX. Smaller oral collar tubular ducts arranged sparsely in rows across abdominal urites; larger oral collar ducts moderately numerous to numerous on abdominal urites IV- VIII, moderately numerous on the margins of most other segments. Body setae moderately long and slender.

Venter with 8-segmented antennae. Well developed legs, without denticles on tarsal claws; hind femora and tibiae with translucent pores. Absent circulus. Multilocular disc pores present in midregion of abdomen and around vulva, arranged in rows across postmedian edges of abdominal urites IV-VII and antero-median edge of VII, and scat-

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tered over median areas of thorax. Widely distributed trilocular pores. Scattered simple circular pores. Oral rim tubular ducts present in limited numbers along lateral areas of most abdominal urites, and in clusters on the thorax. Smaller oral collar tubular ducts in rows across median areas of abdominal urites II-VII, and a few on median areas of thorax. The larger oral collar ducts numerous on median areas of abdominal urites V- VII, and in large marginal groups on most body segments. Small and slender body setae.

Results

The populations found in Sicily were morphologically closer to the populations from California (McKenzie, 1967) than to those from New Zealand (Cox, 1987). The Sicilian populations have more numerous trilocular pores than those from California and New Zealand. Other differences in the number and distribution of multilocular disc pores and ventral oral rim tubular ducts fall in the range of expected variability for this species.



Figure 3. A colony of live female *Vryburgia amarillidis*.



Figure 1. A potted African lily, *Agapanthus* sp.



Figure 2. A colony of *Vryburgia amarillidis* on the basal leaves of potted *Agapanthus* sp.

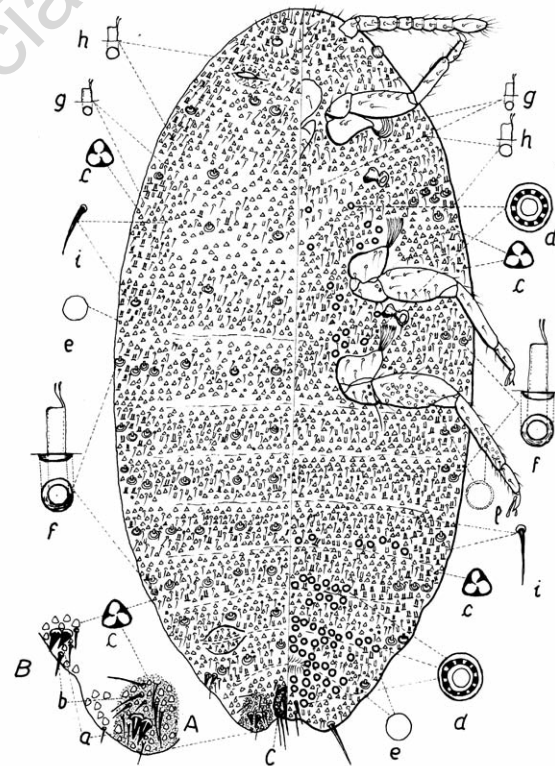


Figure 4. Camera lucida line drawing of *Vryburgia amarillidis* female: (A, B) cerarii; (a) conical setae; (b) auxiliary setae; (c) trilocular pores; (C) Anal ring; (d) multilocular disc pores (e) simple circular pores; (f) oral rim tubular ducts; (g) smaller oral collar tubular ducts; (h) larger oral collar ducts; (i) body setae, (l) translucent pores.

Discussion and conclusions

Management strategies that prevent the spread of this pest in Sicily rely mainly on appropriate cultural practices that ensure large scale population do not enter propagation sites and nurseries on the island. The propagation of African lilies by seeds is strongly encouraged because seeds are not infested by the mealybug. Planting the new plantlets germinated from seeds in clean soil and containers placed away from any source of insect contamination is the most effective method to protect the nurseries from infestation of this pest. The propagation of the *Agapanthus* sp. by cuttings is discouraged because these can carry eggs and larvae from the stock plants.

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