



First report of garlic rust caused by *Puccinia allii* in Cuba

E. Martínez-de la Parte^{1*}, P.M. Sierra Ricabal², D. García Rodríguez³ and M.E. Lorenzo²

¹ Plant Health Research Institute (INISAV), Ministry of Agriculture of Cuba, Calle 110, No. 514, e/ 5th B y 5th, F. Playa, Havana, P.C. 11600, Cuba; ² Cienfuegos Provincial Plant Protection Laboratory, Ministry of Agriculture of Cuba, Cuba; ³ Central Plant Quarantine Laboratory (LCCV), Ministry of Agriculture of Cuba, Ayuntamiento No. 231 entre San Pedro y Lombillo, Plaza de la Revolución, Havana, P.C. 10400, Cuba

*E-mail: martinez@inisav.cu

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Garlic (*Allium sativum*) is widely cultivated in Cuba with an annual production of 21,631 tonnes in 2013 (Food and Agriculture Organization, 2015). Garlic is produced by small growers and is used as a key ingredient in the preparation of traditional Cuban recipes.

During February 2014, rust symptoms were observed in a single commercial garlic field of 0.25 ha in the Cumanayagua municipality, Cienfuegos province, in the central region of Cuba. Early symptoms consisted of small (1-2 mm), circular to elongate, white flecks on leaves. As the disease progressed, these spots expanded into oblong lesions. The leaf tissue covering the lesions ruptured, and masses of yellow to orange urediniospores became visible as pustules (Fig. 1a). Telia later developed on the same leaves, resulting in black pustules (Fig. 1b). The leaves that were severely infected were almost entirely covered with pustules resulting in yellowing and premature drying. Disease incidence in the field was approximately 25% but most of the infected plants were severely damaged.

For microscopic examination, urediniospores and teliospores were scraped from dry leaves, mounted in cotton blue solution on glass slides and examined with a Zeiss Axioskop 40 microscope. For each sample, 50 spores (approximately equal numbers each of urediniospores and teliospores) from each of four leaves were measured and their dimensions determined. Urediniospores were globose to ellipsoid, yellowish to orange in color, echinulate and measured 25-32 x 20-25 µm with a wall thickness of 1-2 µm (Fig. 2a). Telia were black, oval to elongate and non-erumpent with two-celled, brown and smooth-walled teliospores that measured 40-60 x 20-25 µm (Fig. 2b, c). Teliospore pedicels were short, hyaline and usually fractured. One-celled mesospores were not observed. Based on these morphological characteristics, the pathogen was identified as *Puccinia allii*

(syn. *Puccinia porri*) (Laundon & Waterson, 1964; Koike *et al.*, 2001).

This is the first report of *P. allii* infecting garlic in Cuba. The rust has been reported previously infecting onion in Cuba (Schmiedeknecht, 1984). However, since this initial report there has been no other report of *P. allii* infecting *Allium* crops in Cuba (Camino Vilaró *et al.*, 2006; Farr & Rossman, 2015).

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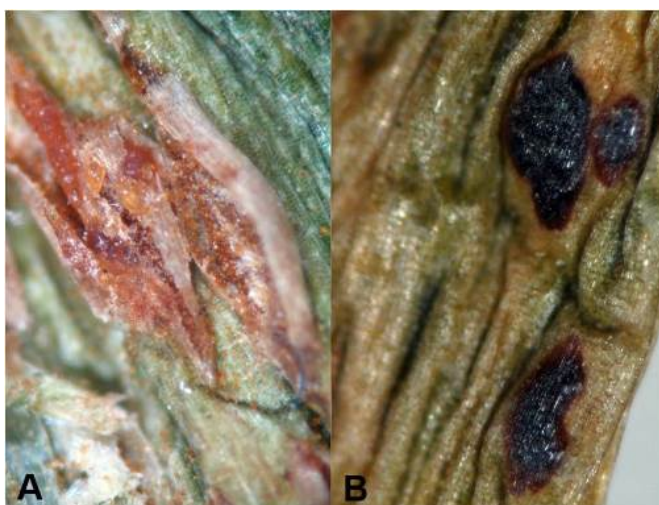


Figure 1

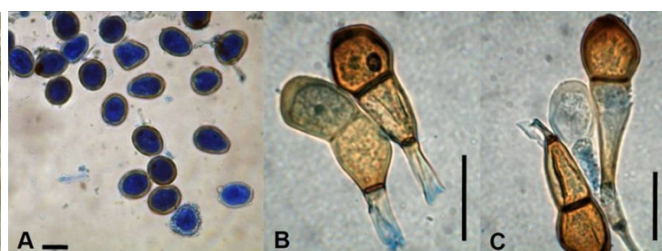


Figure 2

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