

Research Note

OCCURRENCE OF SUGARCANE RUST IN PUERTO RICO¹

Although rust of sugarcane has been recorded in Australia, Burma, Ceylon, China, Egypt, Fiji, India, Japan, Mozambique, New Guinea, Philippines, Republic of South Africa, Thailand and Taiwan², it has not yet been reported in Puerto Rico. On October 11, 1978, while making a sugarcane disease survey on the southern coast of the Island, I observed rust pustules on leaves of sugarcane seedlings 78-57 in the Fortuna Substation. The earliest symptoms on the leaves were minute, elongated, yellowish spots or stripes which resemble eye spot or brown stripe disease symptoms at a distance. However, close examination revealed the ruptures of the epidermis and the pustular appearance. The lesions measured 3-12 mm long \times 1-3 mm wide; they were brown to orange-brown in color, surrounded by a yellow-green halo (fig. 1). Occasionally the lesions coalesced to form large, irregular, necrotic areas, and resulted in premature death of the leaves.

The economic importance of the disease depends largely on the susceptibility of local commercial varieties to the rust as well as races or species of the rust. In India, epiphytotics of the rust occurs regularly simply because most of the Coimbatore varieties contain a high percentage of *Spontaneum* germ plasm, which is highly susceptible to the rust. *Puccinia erianthi*, which caused severe damage to Co 475, CP 44-101 and Q 50 in India, has been considered to be dangerous to the sugar industry in other countries should it ever appear. Knowing its possible economic impact on cane production, we made a complete survey of the disease on sugarcane plantations in Puerto Rico. The results indicated that in addition to the Fortuna Substation, this rust also occurs on 1977 seedlings from polycrosses no. 22 (68-1099 \times ?) and no. 32 (69-1052 \times ?) at both Lajas and Gurabo Substations. The 1975 seedlings cross no. 279 (67-1336 \times PR 1059), originated from the Isabela Substation, also were attacked by the rust. In addition, G. Ramírez found recently that two additional crosses [cross no. 71 (67-1070 \times 67-3129) and cross no. 73 (67-1070 \times 70-3413)] from the 1978 seedling series at the Lajas Substation were also found susceptible to the rust.

Under the microscope, the rust pustules were identified. The specimens diseased with rust revealed both urediospores and teliospores on the same leaves, probably showing it is a short cycle rust. The urediospores

¹ Manuscript submitted to Editorial Board November 3, 1978.

² Hughes, C. G., Abbott, E. V., and Wismer, C. A., Sugarcane diseases of the world, Volume II: 61-68, Elsevier Publishing Company, Amsterdam, London, New York, 1964.

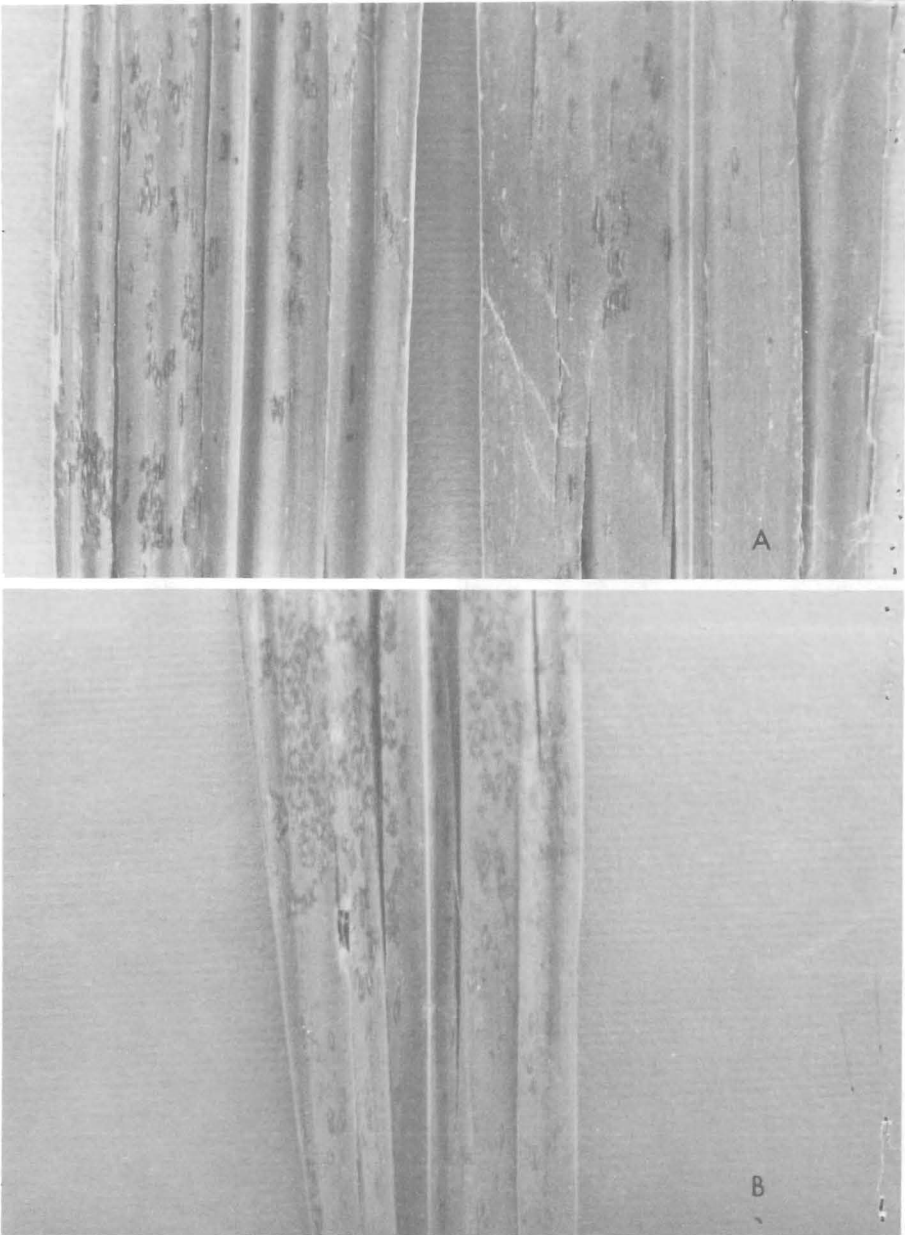


FIG. 1.—Symptoms of the rust on leaves of sugarcane seedlings (cross no. 78-57) at the Fortuna Substation: A, Early state; B, Advanced stage.

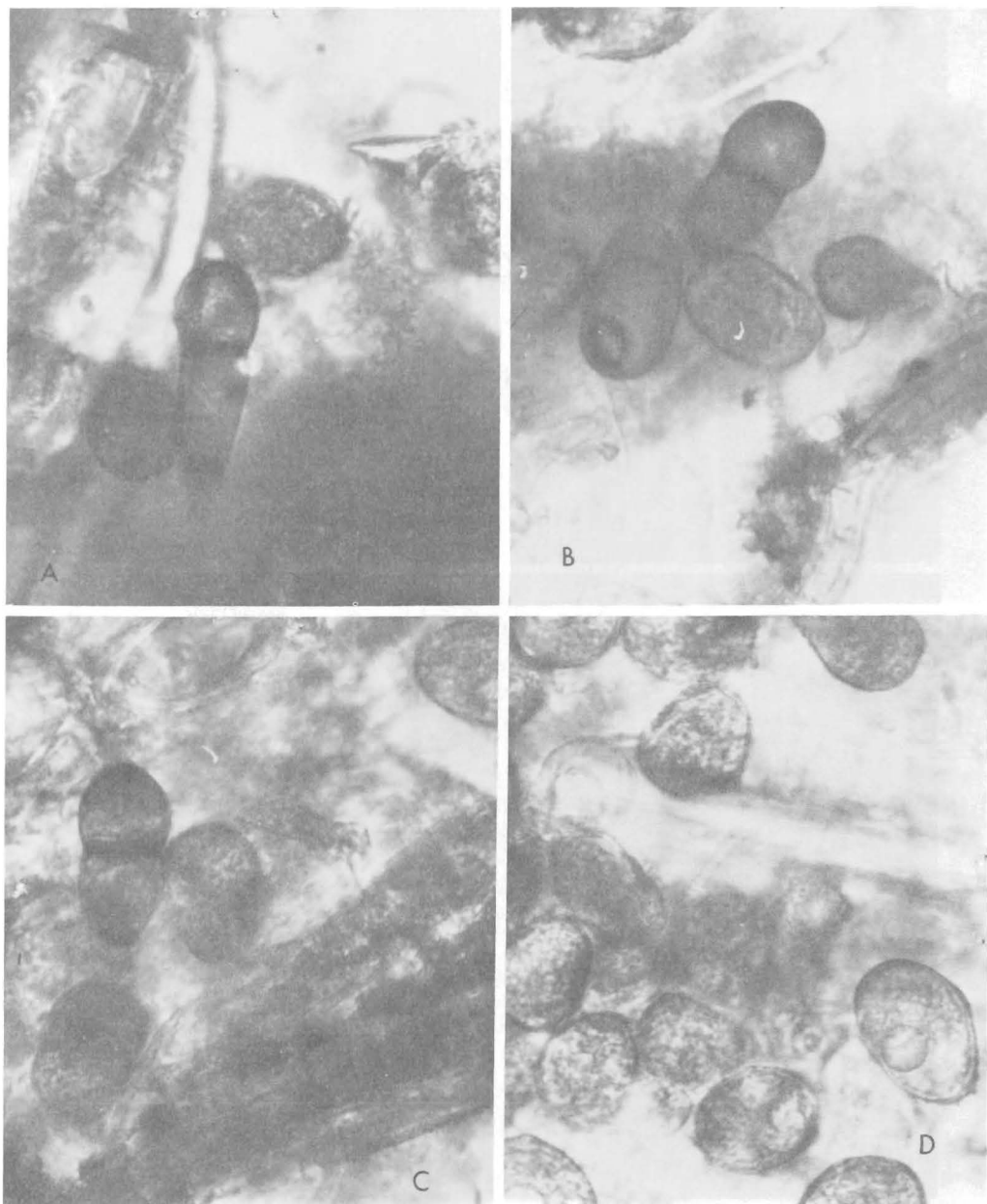


FIG. 2.—Teliospores and urediospores of *Puccinia erianthi* from rust pustules on the leaves of sugarcane seedlings (cross no. 78-57) at the Fortuna Substation: A, B and C, Teliospores (2-celled, clavate shape) scattering among urediospores; D, Urediospores.

measure 36.4–42.0 μ in length \times 23.4–25.2 μ in width, echinulate with 4–5 equatorial germ pores. The color of the urediospores is cinnamon-brown. Colorless to golden paraphyses are present. The teliospores measure 32–58.8 μ in length \times 18.20–19.60 μ in width; they are chestnut brown, smooth, 2-celled, mostly clavate with constriction, wall 1.4–1.9 μ thick at sides, 3–5 μ apically; pedicels are thin-walled up to 11 μ long (fig. 2). According to urediospore and teliospore morphology, the rust is identified as *Puccinia erianthi* Padw. & Khan. This same rust specimen was also sent to Arthur Rust Herbarium for verification. Dr. Joe F. Hennen believes that the correct name of the rust should be *Puccinia melanocephala* H. Syd. & P. Syd.³ which is an earlier name for *Puccinia erianthi*. The aecia stage of this rust is unknown.

The origin of this rust in Puerto Rico is unknown. Presumably the rust entered Puerto Rico through air currents or through importation of wild canes for breeding purposes. However, it is fortunate that the incidence of rust, up to now, is restricted to seedlings in the above-mentioned Substations. Rust has not been detected in commercial plantations. For that reason, an emergency program to eliminate sugarcane seedlings affected with rust is now underway to prevent the spread of rust to commercial plantations.

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³ Personal communication with Dr. Joe F. Hennen, Professor and Curator Arthur Rust Herbarium, Purdue University, West Lafayette, Indiana, USA.