

RUST (*PUCCINIA PSIDII*) OF ALLSPICE (*PIMENTA DIOICA*) APPEARS IN FLORIDA¹

R. B. MARLATT
University of Florida, IFAS,
Agricultural Research and Education Center,
18905 S.W. 280 Street, Homestead, FL 33031

J. W. KIMBROUGH
University of Florida, IFAS,
Botany Department, Gainesville, FL 32611

Additional index words. otaheite apple, rose apple, *Spondias cytherea*, *Syzygium jambos*.

Abstract. *Puccinia psidii* Wint., a rust not previously reported in the United States, was found on allspice, *Pimenta dioica* (L.) Merr., in Dade County, Florida. Allspice and two additional hosts, otaheite apple (*Spondias cytherea* Sonn.) and rose apple, *Syzygium jambos* Alston, were inoculated with *P. psidii*. Inoculated allspice leaves and immature twigs were severely diseased and rust pustules appeared on them within ten days. Rose apple leaves were less severely damaged and rust pustules developed after 23 days. Otaheite apple appeared to be either resistant or immune to the rust under these experimental conditions.

Allspice, *Pimenta dioica* (L.) Merr., is grown in the American tropics, primarily in Jamaica, for its dried, unripe berries. Leaves can also be harvested for their essential oil. In southern Florida the trees are grown only as evergreen ornamentals reaching 25 feet or more in height.

In February, 1977, specimens of diseased allspice branch terminals were received from a home yard several miles southwest of Miami. Immature leaves and succulent stems were distorted, and 10-90% of their surfaces were covered with uredosori having bright, yellow spores over brown lesions. Some severely diseased terminals and flower parts were killed. Mature leaves had roughly circular, brown lesions covered with spores. Leaf lesions were surrounded by chlorotic halos and were often delineated by major veins or clustered near midveins. Both upper and lower leaf surfaces bore spores. Stem lesions were elongate. New infections were more common during the cooler months of winter and on flushes of new growth in early spring. The same disease was identified on specimens from a nursery in Homestead by the Bureau of Plant Pathology, Florida Department of Agriculture and Consumer Services.

The rust was morphologically indistinguishable from *Puccinia psidii* Wint. (2). Although teliospores have been observed outside of the United States, the disease apparently perpetuates itself solely by uredospores, since basidiospores have not been found (7). Uredospores require at least 12 hours to form germ tubes (1) and an additional 14 hours to elapse from spore germination to leaf penetration (6). Optimum temperature for spore germination is approximately 61°F (16.1°C) with reported maxima of 70 and 77°F (21.1 and 25°C) (1, 6). Sporulation was reported 10 to 12 days following inoculation (6). Leaves more than 30 to 40 days old are said not to be susceptible to infection (1) and only young stem tissues are invaded (9).

Two rust races are reported from Jamaica. Race I causes infection of rose apple, *Syzygium jambos* Alston, and otaheite apple, *Spondias cytherea* Sonn (5, 6). Race II

infects allspice and bay rum, *Pimenta racemosa* (Mill.) J. W. Moore (6). Other hosts of the rust reported in tropical areas include *Callistemon speciosus* (11), *Campormansia aurca* (3), *Eucalyptus* sp. (4) *Eugenia* sp., *Martieria edulis*, *Melaleuca leucondendra* (8) *Myrcia* sp. and *Myrciaria jacobitaba* (10) and *Psidium guajava* (7).

Materials and Methods

Young 24-inch (60 cm) trees of allspice, rose apple and otaheite apple in containers were adjusted to a growth chamber environment for 3 weeks before pathogenicity tests began. Temperatures ranged from 70°F (21.1°C) at midnight to 81°F (27°C) at noon in order to simulate natural conditions. Relative humidity varied from 46 to 50% and the photoperiod was 12 hours daily.

Allspice, rose apple and otaheite apple plants were inoculated by brushing a slurry of spores from naturally infected allspice onto immature and mature terminal leaves and stems. During the 48-hr period following inoculation plants were covered with clear, plastic bags to provide high humidity and maintained at 60°F (15.6°C). Bags were then removed and the day-night temperature cycle was resumed. Five plants of each species were inoculated several times.

Results and Discussion

Allspice was more readily infected than rose apple; half of the inoculations caused disease. Only 20% of rose apple inoculations resulted in disease. The period from inoculation to sporulation was 10-12 days on allspice and 23 days on rose apple. Symptoms on artificially inoculated allspice resembled those found in nature. The symptoms on rose apple were much less severe. Very little leaf distortion was seen and lesions, restricted to the leaf lamina, were few in number. Otaheite apple plants remained healthy despite inoculations and were apparently very resistant or immune.

MacLachlan (7) was unable to transfer the rust from allspice to rose apple in Jamaica, but such a transfer was accomplished in Florida. Possibly these different results were due to a difference in host cultivars or environments. Different races of the rust may occur in Jamaica and Florida, since the source of the rust in Florida is not known.

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¹Florida Agricultural Experiment Station Journal Series No. 2539.