

Grape Rust, *Physopella ampelopsidis*, on *Vitis rotundifolia* in North Carolina

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ABSTRACT

The grape rust fungus, *Physopella ampelopsidis*, found in 1967 for the first time in North Carolina, caused premature defoliation of many cultivars of *Vitis rotundifolia*. Inoculated cultivars varied in rust susceptibility. *Phytopathology* 60:1022-1023.

Grape rust was found in 1967 for the first time in North Carolina. By late August, the rust fungus, *Physopella ampelopsidis* (Diet. & P. Syd.) Cumm. & Ramachar was present on almost every leaf of 10-year-old muscadine grape vines, *Vitis rotundifolia* Michx., cultivar NC57-56, at the Central Crops Research Station, Clayton, North Carolina. In October 1967 it was present on a few muscadine grape cultivars, including NC57-56, at the Sandhills Research Station near Candor, North Carolina. No rust was found in several vineyards in Onslow County, 125 miles east of Raleigh. This fungus could not be found in 1968 or 1969.

Physopella ampelopsidis under the name *Physopella vitis* (*Phakopsora vitis*) has been reported previously (1, 2, 3) from southern South Carolina southward, and on *Muscadinia munsoniana* and *Vitis teliaefolia* in southern Florida, the West Indies, South America, and Japan. Only uredia were found in North Carolina. One-celled orange colored uredospores ranged in size from $14\text{-}20 \times 24\text{-}28 \mu$.

Rust infections occurred only on leaves. Small, orange-colored uredial pustules were extremely abundant on the dorsal leaf surfaces (Fig. 1). Yellowish lesions with sparse uredia on the ventral leaf surfaces were dark and necrotic in the center. Severely affected leaves of very susceptible cultivars became yellow and dropped prematurely.

Cultivars in the test planting and grape breeding plots of the Department of Horticultural Science at the Central Crops Research Station were rated for rust susceptibility on a scale of 0 to 5 (0 = no infection; 1 = trace; 3 = 50% leaves with rust but no leaf yellowing; and 5 = almost 100% leaf infection and considerable leaf yellowing and moderate defoliation). There were only one or two plants of each of 742 cultivars in this planting. Plants rated 0 could have been escapes, but because of the random or scattered distribution of affected plants throughout the planting and the very heavy inoculum on leaves in this vineyard, it is unlikely that any plant could have escaped exposure to many rust spores. Of the 742 cultivars in this planting, 82% were rated 0, 6% were rated 1, 4% were 2, 2% were 3, 3% were 4, and 3% were rated 5. Those rated 5 were NC selections 57-56, 64-53, 80-74, 101-12, 20-119, 272-156, 272-166, 273-94, 274-53,

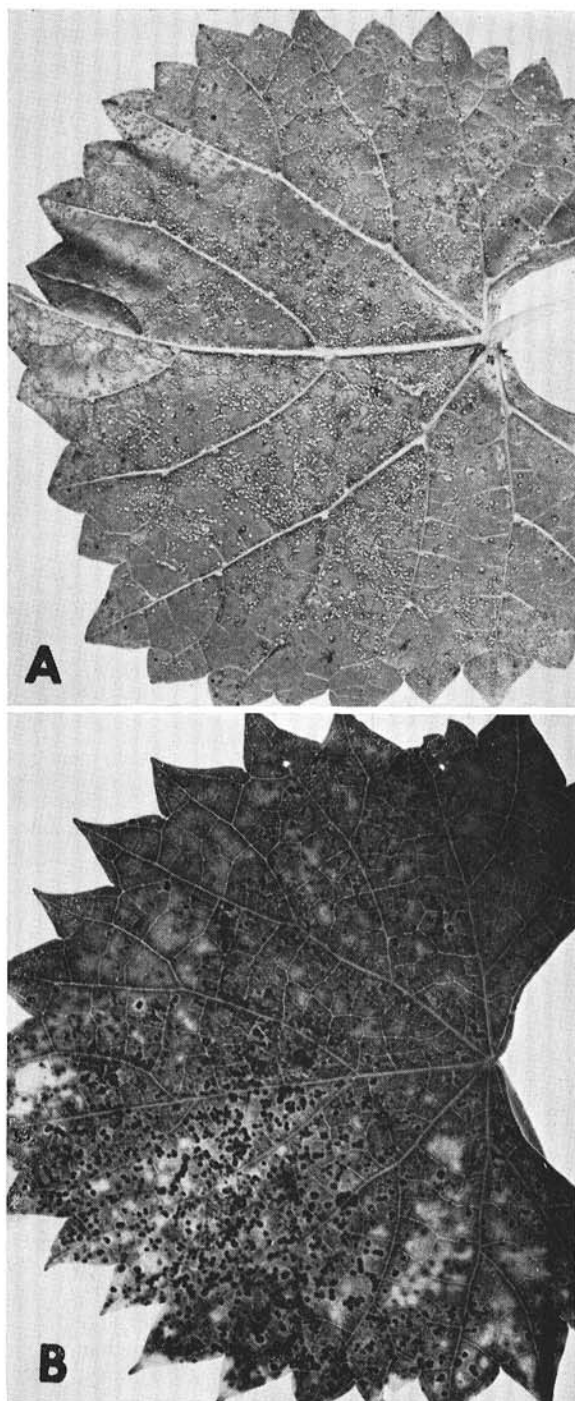


Fig. 1. Rust symptoms on muscadine grape leaves. A) dorsal leaf surface; B) ventral leaf surface.

274-208, 274-139, 276-73, 281-117, 283-77, 283-82, 289-84, and 290-36. Many cultivars apparently have inherent resistance to rust infection.

Inoculations with spores from naturally infected NC57-56 leaves were made on leaves of plants of 18 cultivars under greenhouse conditions. After being sprayed with a spore suspension, inoculated plants

were kept wet for 48 hr under mist. Rust lesions appeared within 10 to 14 days. Ratings of severity of the disease were made 4 weeks after inoculation. NC57-56 and Howard were very susceptible; Higgins and Hunt were slightly susceptible; no infection developed on NC17-123, NC20-30, NC11-173, Magnolia, Pamlico, Topsail, Scuppernong, Roanoke, Tarheel, Albemarle, Chowan, and Thomas. Of inoculated bunch grape cultivars, Portland and Fredonia were slightly susceptible, whereas no rust developed on Niagara and Concord. These results show that wide variation in rust susceptibility exists in *V. rotundifolia*, and that the fungus

can infect certain cultivars of eastern bunch grapes. Primary inoculum of this fungus probably came to North Carolina in air currents as spores from farther south.

LITERATURE CITED

1. ARTHUR, J. C. 1934. Manual of the rusts in the United States and Canada. Hafner Pub. Co. 438 p.
2. CUMMINS, G. B. 1959. Illustrated genera of rust fungi. Burgess Pub. Co. 131 p.
3. CUMMINS, G. B., & P. RAMACHAR. 1958. The genus *Physopella* (Uredinales) replaces *Angiospora*. Mycology 50:741-744.