

GEOGRAPHIC PATTERNS OF FUSIFORM RUST INFECTION IN
LOBLOLLY AND SLASH PINE PLANTATIONS

Abstract.--Isogram charts revealed distinctive patterns of variation in percentages of fusiform rust infection in 8- to 12-year old loblolly and slash pine plantations throughout the South.

Keywords: Cronartium fusiforme, geographic variation, disease incidence.

In 1971-73, a southwide survey of fusiform rust (Cronartium fusiforme Hedgc. & Hunt ex Cumm.) infection in loblolly (Pinus taeda L.) and slash pine (P. elliottii Engelm.) plantations was conducted by State and Private Forestry, USDA Forest Service, Atlanta, Georgia, in cooperation with State forestry organizations. Although basic results of the survey were presented (Phelps 1973), there was an opportunity to search for and depict the patterns of variation more clearly through use of isogram charts.¹

The isogram charts (figs. 1 and 2) show the average percentage of trees infected with fusiform rust (either stem or branch cankers) in 8- to 12-year-old loblolly and slash pine plantations. Data points on the charts are averages of at least five plantations from areas consisting of from one to five counties. Survey techniques were described by Phelps (1973). No loblolly pine plantations in Florida or southern Georgia were included in the survey reported by Phelps (1973). Supplemental data for these areas were obtained from plantations of known seed source as reported by Kraus (1967), Draper (1975), and R. L. Blair (personal communication, 1974).

The patterns on the isogram charts show a "ridge" of high infection extending generally northeast-southwest through the central portions of the regions sampled. Infection usually decreased to the north and south of this ridge. However, this general pattern is interrupted by some "highs" (such as at Brooks County, Georgia, for slash pine) and some "lows" (such as in southwestern Alabama for both species). The infection patterns for the two species are remarkably similar, although the "ridge" of high infection for loblolly pine is further north than that for slash pine.

¹My preliminary drafts of these maps, based on State District averages, were published by Phelps (1974). Through an oversight, my authorship of the maps was not acknowledged, but it was subsequently acknowledged in the March 1975 issue of Plant Disease Reporter (Vol. 59, No. 3, p. 282). The maps presented here are more complete and show considerably more detail than the earlier drafts.

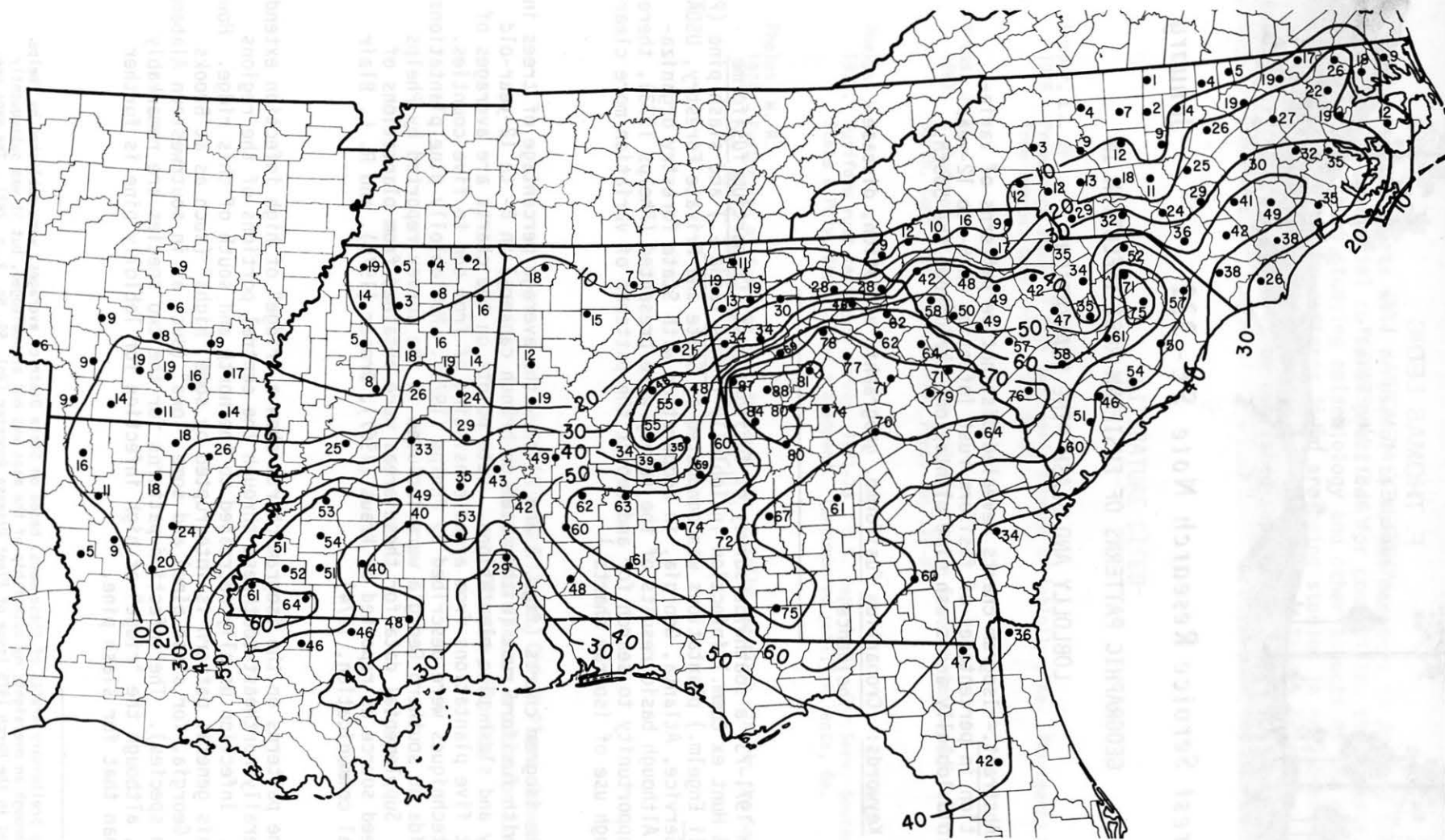


Figure 1.--Percentage of trees infected with fusiform rust in 8- to 12-year-old loblolly pine plantations.

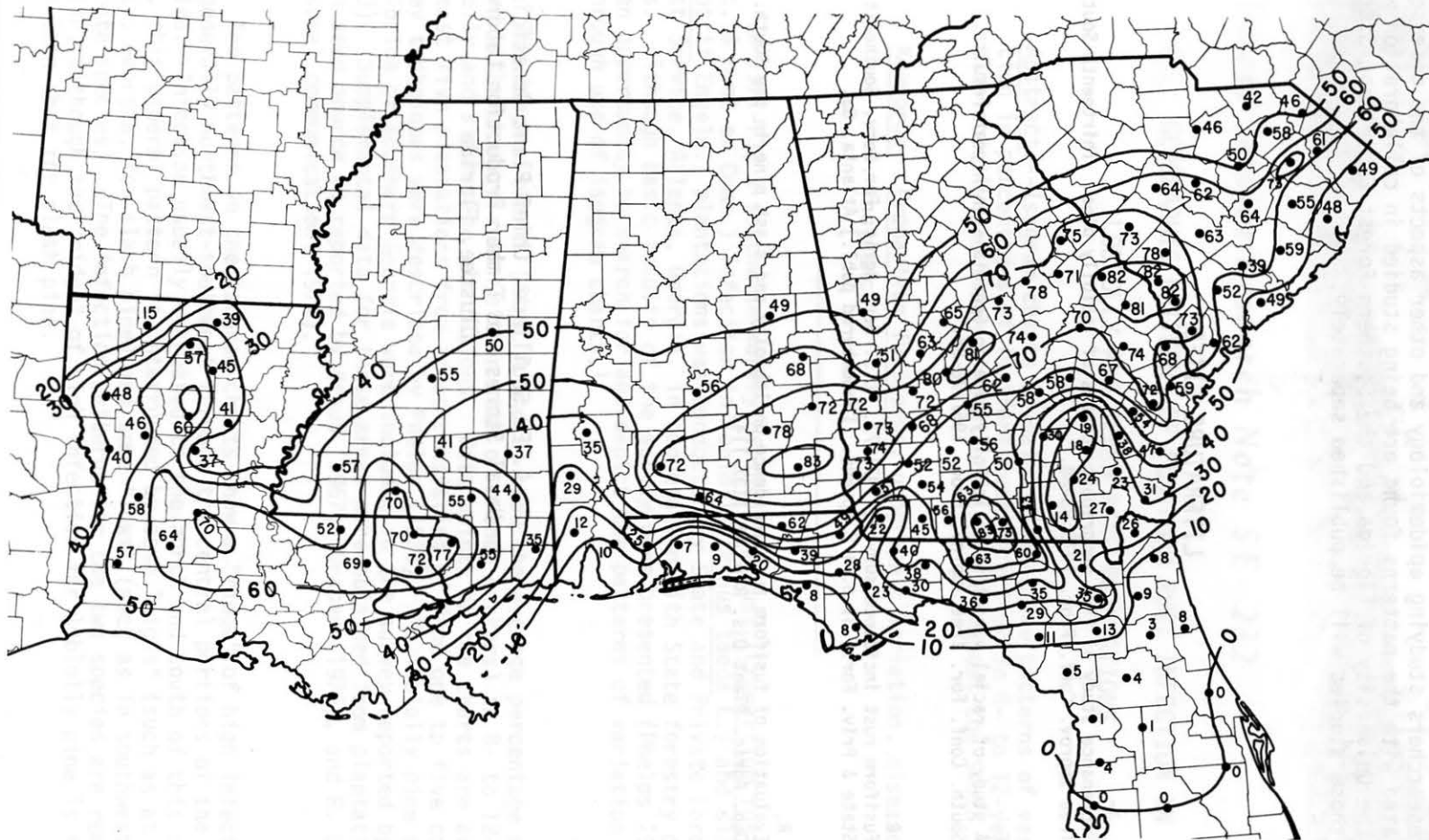


Figure 2.--Percentage of trees infected with fusiform rust in 8- to 12-year-old slash pine plantations.

The isogram charts will be useful to forest managers in judging the need for resistant seed or special cultural practices for controlling the disease. They will also help researchers studying epidemiology and other aspects of the disease. Factors associated with the patterns found are being studied in collaboration with scientists at the University of Florida and the Southern Forest Experiment Station. Results of those studies will be published separately.

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