



Forest Health Protection, Southern Region

# FUSIFORM RUST,

caused by *Cronartium quercuum* f. sp. *fusiforme*

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**Importance.** - Fusiform rust infections that occur on the main stem within the first 5 years of a tree's life normally cause tree death. Infections that occur later in the life cycle of the tree weaken the stem, resulting in wind breakage at the canker or quality loss at rotation. Losses in individual nurseries can exceed 80 percent. Loblolly and slash pine are the most susceptible species. Longleaf is fairly resistant, while shortleaf pine is highly resistant. Oak is the alternate host.

**Identifying the Fungus.** - The fungus produces orange spores on the surface of fusiform-shaped pine galls in the spring. Orange spores are produced on the lower surface of the oak leaves. Later, hairlike structures are also produced on the leaf.

**Identifying the Injury.** - Spindle-shaped swellings or galls develop on the branches or main stem. Main stem infections on older trees are somewhat depressed on one side. Trees commonly break at the canker. In the spring, the galls turn orange. Infection on the oak host produces orange leaf spots and hairlike telia, which can cause cupping and curling of the leaf.



Fusiform rust fruiting on loblolly pine.



Fusiform rust damage to main stem.

**Biology.** - Orange-yellow blisters form on the pine gall: the blisters produce aeciospores. In late spring, uredia are formed on the underside of young oak leaves. During late spring or early summer, brown, hairlike structures (telia) form on the oak leaves. Spores produced on the telia infect the pine.

**Control.** - The control strategies for fusiform rust are complex for forest stands and nurseries, and are too numerous to discuss here. The user is referred to the Integrated Pest Management Decision Key (IPM-DK) for more information. Discuss this with a State or Federal forest pest management specialist.

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