

00

1993

Georgia Forestry Commission

FOREST HEALTH FACT SHEET



FUSIFORM RUST (*Cronartium quercuum* f. *sp. fusiforme*)

RECEIVED

DEC. 12 1994

DOCUMENTS
UGA LIBRARY



Figure 1

Fusiform rust, is the most damaging disease of slash and loblolly pines throughout the southeastern United States. This disease causes stem, branch and trunk cankers (galls) to form on infected trees (Figures 1 and 2). The majority of infections occur prior to age 5. In the early spring active galls produce yellow-orange spores (aeciospores) that are windblown to young, tender oak leaves. Water, willow and laurel oaks are the most susceptible species affected. The fungus goes through three additional spore stages underneath the oak leaves. (Figure 3) The fourth and final stage results in basidiospores being formed. The basidiospores are windblown to new pine needles and/or succulent green bark areas of young trees thus completing the disease life cycle.

The amount of infection in planted and natural pine stands varies considerably across the South. Factors such as individual tree resistance, site characteristics and rust virulence all interact to influence infection levels.

When regenerating sites to pine, land managers must take steps to deal with fusiform rust. Below are some practices that will help minimize rust problems and protect economic investments.

ARTIFICIAL REGENERATION

Use rust resistant seedlings (improved) that are available from state and privately owned nurseries.



Figure 2

These seedlings are the result of many years of valuable research that hopefully will result in increased seedling resistance to the disease. Further protection from rust is provided by timed applications of fungicides to these seedlings at the nursery. However, sometimes these fungicides do not get applied for one reason or another. Occasionally seedlings will leave the nursery that are rust infected. Seedlings should be inspected for obvious stem swellings and culled prior to planting (Figure 4). Infected seedlings should be reported to the appropriate nursery officials immediately. Don't wait.

In high hazard regions increase planting densities to allow for anticipated losses. This will, of course, increase the number of thinnings required throughout the

life of the stand.

Consider site preparation techniques that reduce oak trees unless they conflict with other management objectives (prescribed burning, herbicides, and intensive mechanical preparation).

Use seed from a resistant source. Seed should be treated with an approved bird and rodent repellent (see appendix).

NATURAL REGENERATION

If the seed tree or shelterwood method is used, select disease-free seed trees.

MANAGING ESTABLISHED STANDS

Evaluate plantations at age 3-5 to ascertain the amount of rust infection. Plantations that are showing 50% or more infections should be seriously considered for clearcutting. If the decision is made not to clearcut, a sanitation cut should be planned as soon as it is economical.

After age 5 it is usually uneconomical to clearcut and start over. However, rotation ages will need to be adjusted in order to maximize on the establishment costs.

In older stands with less than 50% stem infections, remove as many stem cankered trees as possible with each thinning. Try to maintain a basal area of 75-85 sq. ft. per acre or at least 200 trees per acre.

When thinning plantations, be sure to consider annosus root rot.

LIFE CYCLE OF *Cronartium quercum* f.sp. *fusiforme*

Source: USFS, Athens, GA

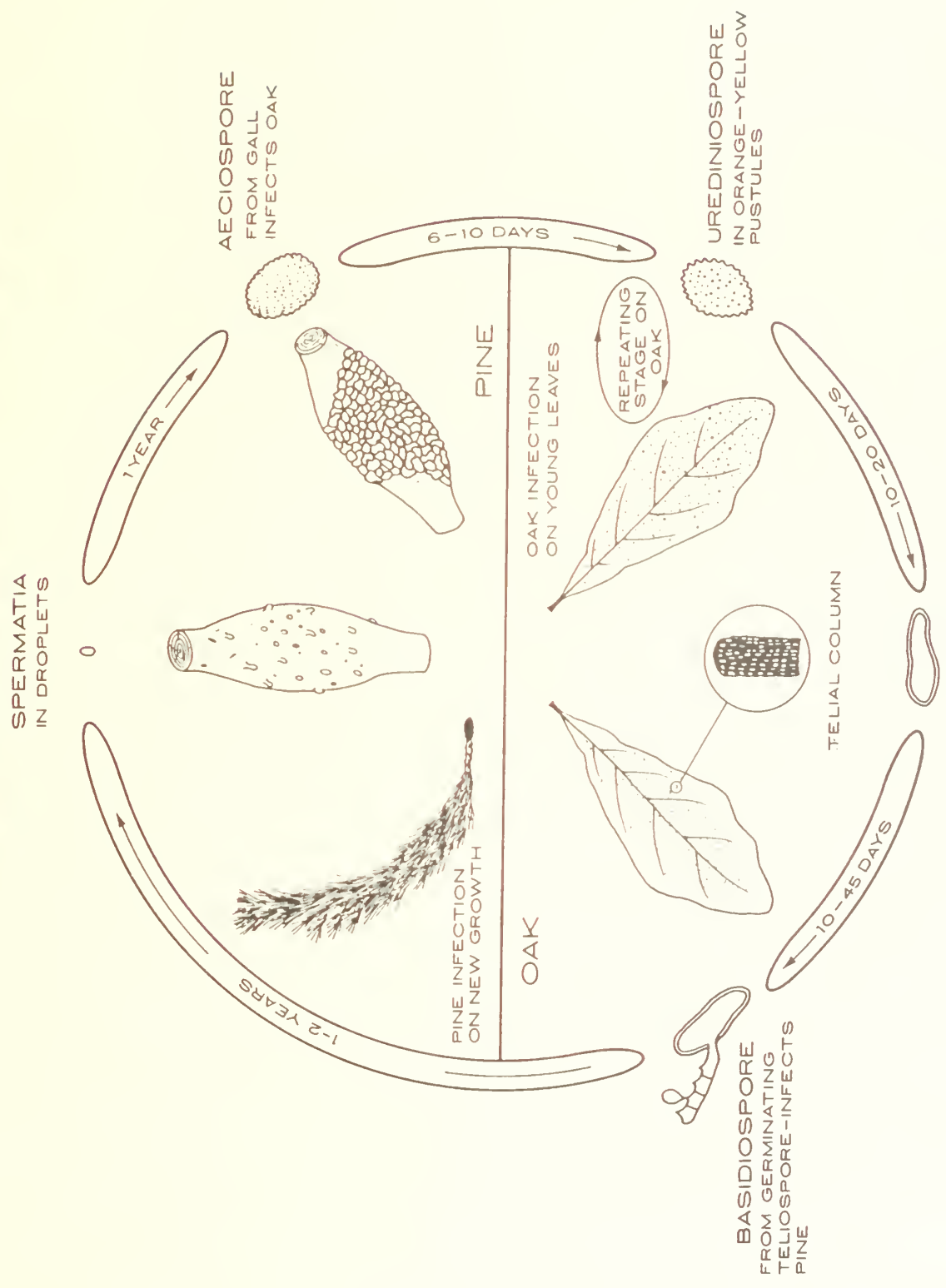


Figure 3

UNIVERSITY OF GEORGIA LIBRARIES
3 2108 04449 2919



YARD TREES

Severely cankered trees often break at the canker during storms with 35 mph. winds or above. Although its hard to predict breakage, trees closest to homes, powerlines etc. should be removed. Otherwise trees with cankers that do not girdle more than 1/2 the stem's circumference usually pose no immediate threat.

However, wind direction and tree location is critical, when predicting hazard.

Photo, Dr. Harry Powers, retired USFS

Figure 4