butternut, juglans cinerea is being examined for listing as a threatened or endan-
gered species. Its demise is caused primarily by a fungus, Siroccophae clavige-
nunti-juglandacearum. Butternut canker was first reported in Wisconsin in 1967.
In 1976, 2,882 trees on 83 plots in 36 counties were examined; 31% and 9% of
the trees surveyed were found to be cankered and dead, respectively. In 1992, 17
counties were resurveyed to determine disease incidence, severity, spread, and
impact on reproduction. Of 1,394 trees surveyed, 92% were cankered and 27%
dead. Reproduction was frequently affected, 69% of the axillary shoots and 75% of
the trees were cankered. Apparently disease resistant individuals were
found rare. Butternut canker was observed in 18 of 36 counties in 1976 and in all 17
counties surveyed in 1992. Rare, noncankered butternut >10 m in diameter is
currently being used for preservation of genetic material. Silvicultural tech-
niques are being applied to encourage reproduction of nut trees.

**A189**


Two hundred cork oak seedlings were divided into two treatments: well-watered, and watered every 10-20 days. When mean leaf water potentials of the low water treatment were maintained at -2.0 MPa for 8 weeks, stems were inoculated with mycorrhizal plugs of *B. tropica* and *M. medicago*. These treatments were significant (p<0.01) larger than those of non-inoculated plants (1.3 cm). *C. aurum* was not pathogenic to seedlings from either watering treatment.

**A190**

* MORPHOTYPE AND WATER STRESS EFFECTS ON DISEASE DEVELOP-
MENT BY *SPHAEROPTIS SAPINAe* ON RED PINE. J.T. Bledsoe and G.R. Stanosz, Dept. of Plant Path., Univ. of Wisconsin, Madison, WI 53706.

*Sphaeroptis sapinae* (syn. *Diploia pinea*) causes a shoot blight and canker disease of pines and other conifers. Severe losses have been reported on trees predisposed by stresses, including drought. Two *S. sapinae* morphotypes ("A" and "B") are recognized and have been suggested to differ in virulence. A greenhouse study was conducted to compare the aggressiveness of "A" and "B" isolates on water-stressed and nonstressed red pine (*Pinus resinosa*). Three-year-old pot seedlings were either daily watered or when the mean water potential fell below -1.64 MPa. Growing shoots were inoculated by placing a colonized aster plug on a wound made by removing a needle fascicle. Two "A" and two "B" isolates were used. After four weeks, "A" isolates caused more severe symptoms and could be recovered further from the inoculation site than "B" isolates (which produced less severe or no symptoms). "A" isolates also caused greater symptom development on water-stressed trees. Symptom development was positively correlated (R² = 0.90) with distance of recovery from the inoculation point.

**A190a**

A needle-cast disease complex in Southern pines. F.F. Jewell, Jr., School of Forestry, Louisiana Tech University, Ruston, LA 71272.

since 1953, periodic observations and collections have been made of fungi associated with needle-cast symptoms on the four major Southern pines in Alabama, Florida, Louisiana, and Texas. The prominent fungi observed (anamorph and/or teleomorph) were *Lobodermella xerina*, *Lophodermium australis*, *Folodermium xerina*, and *P. mammillaria*. Similar patterns of seasonal symptom appearance were observed regardless of geographic locality. *L. xerina* was usually the earliest needle cast observed, with the axillary shoots remaining bright red, which continued through fall (colored "red needle cast"). Characteristic symptoms of *L. australis*, *F. leutea*, and *P. mammillaria* appeared regardless of weather on an individual host. *L. australis*, *F. leutea*, and *F. mammillaria* were observed both individually as well as in various combinations on affected foliage of host pines.