Assessing Rust Resistance in Limber Pine Seedlings: A Test Under Way

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Seedlings grown from limber pine and bristlecone pine seed collections made in Boulder County, Colorado, are being tested for susceptibility to white pine blister rust. The limber pine seedlings were 3 years old and bristlecone pine two years old when transported to Dorena, Oregon, near Cottage Grove.

The objectives of the inoculation test are to compare performance of limber pine and bristlecone pine exposed to three spore densities, and to compare their susceptibility to that of three other previously studied species—western white pine, sugar pine, and whitebark pine. The study design for the limber and bristlecone pine seedlings was a randomized complete block with three replications of three treatments. Thirty limber pine seedlings were used in each block by treatment combination for 90 total seedlings per treatment. Twenty-four bristlecone pine seedlings were used per treatment block for a total of 72 seedlings per treatment.

Ribes leaves infected with blister rust at the telial stage were collected from forested areas and placed on wire frames above the seedlings in the inoculation chamber on September 18, 2003. The seedlings were exposed to 3 different inoculum densities—low (3,000 basidiospores/square cm), medium (6,000), and high (9,000-10,000). Monitoring slides were placed in 5 positions within each replication and treatment. Agar plates to monitor basidiospore germination were also randomly placed within each replication.

On July 19, 2004, the seedlings were assessed for needle lesions (spots) and stem symptoms. Preliminary observations suggest limber pine seedlings are more susceptible than bristlecone pine seedlings. The trees will be reassessed periodically and a full report will be available in 2005.■