- Genetic diversity is important for all forest users.
- It has both economic and ecological value.
- Loblolly pine contains a high level of natural genetic diversity, and tree improvement programs are committed to maintaining genetic diversity in trees for the future.



The Western Gulf Forest Tree Improvement Program is a cooperative tree breeding project founded in 1969 with the objective of providing the best genetic quality seed for use in forest regeneration programs in the Western Gulf Region of the United States. Current members include five states and 11 industrial members collectively responsible for planting 300,000,000 seedlings per year. The cooperative is preserving and improving populations of five southern pine species and several hardwood species.

Membership, Pine Program:

Arkansas Forestry Commission **Boise Cascade Company** The Bosch Nursery, Inc. **Champion International Deltic Timber Corporation International Paper Company** Louisiana Department of Agriculture and Forestry Louisiana-Pacific Company **Mississippi Forestry Commission Oklahoma Forestry Services Potlatch Corporation Temple-Inland Forests Texas Forest Service** The Timber Company Weyerhaeuser Company Willamette Industries, Inc. **International Forest Seed Company** Louisiana Forest Seed Company, Inc. Netafim Irrigation, Inc. **Robbins Association**

Western Gulf Forest Tree Improvement Program Forest Science Laboratory College Station, Texas 77843-2585 URL: www.ars-grin.gov/misc/wgftip/index.html

Texas Forest Service A Member of The Texas A&M University System

Circular 300

Front Cover: One of 89 Geographic Seed Source Study Locations

Western Gulf Forest Tree Improvement Program

Tree Improvement and Genetic Diversity in Loblolly Pine



The Western Gulf Forest Tree Improvement Program: A Genetics Cooperative Since 1969

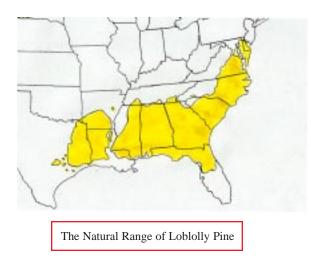
What is Genetic Diversity?

- Genetic diversity separates species.
- Genetic diversity makes individuals within a species different, even when the effects of the environment are constant.
- Genetic diversity within a species exists between geographic regions, stands within regions and trees within stands.

Why is Genetic Diversity Important?

- Genetic diversity is important to the health of a species.
- Genetic diversity allows a species to adapt to changes in the environment.





- Loblolly pine is one of the widest-ranging and most economically important conifers in the Southern United States, harvested for both pulpwood and solid wood products.
- Loblolly pine is not threatened or endangered, because new stands are planted or naturally regenerated on millions of acres every year.
- Conserving genetic diversity is an important ٠ aspect of sound species management.



Marking a Selection in a Plantation

How do Tree **Improvement Programs** Affect Genetic Diversity?

- Genetic diversity is the raw material • for tree improvement programs.
- Tree improvement programs work with ۰ a sample of the genetic variability present in the natural population.
- **B**reeding populations are managed to enhance variation, which can result in genetic combinations not seen in the natural population.
- Breeding populations are often subdivided. This avoids inbreeding in the production population and ensures a high level of genetic diversity in the breeding population.
- Tree improvement programs are careful not to rely on only one or a few genotypes.



Trees Grafted for Gene Preservation