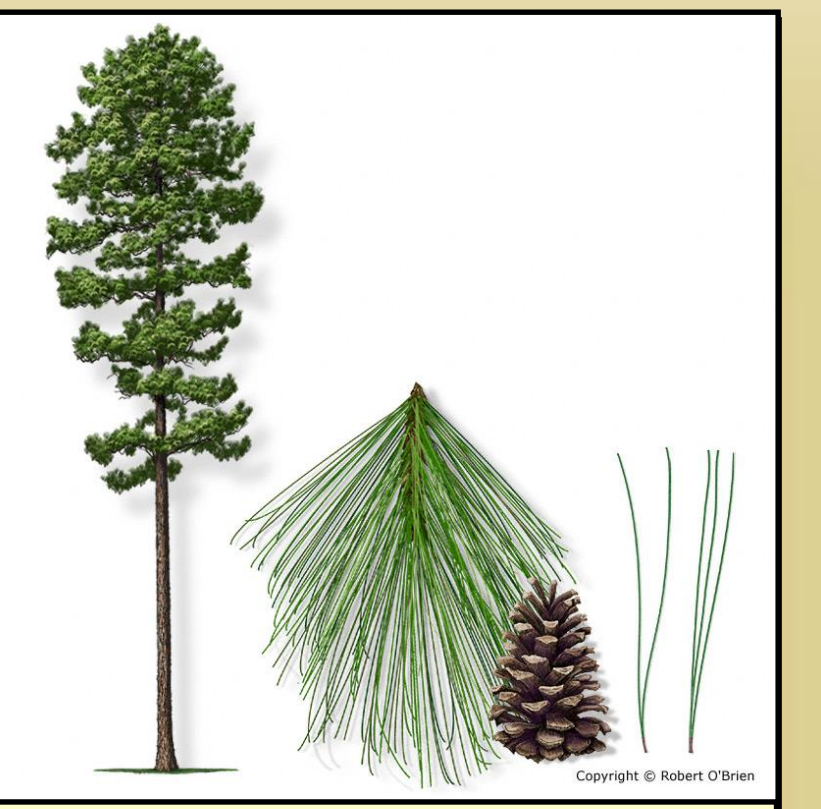




USDA Forest Service – Recent News

LONGLEAF PINE RESTORATION

National Forest System & Partners



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SUMMARY

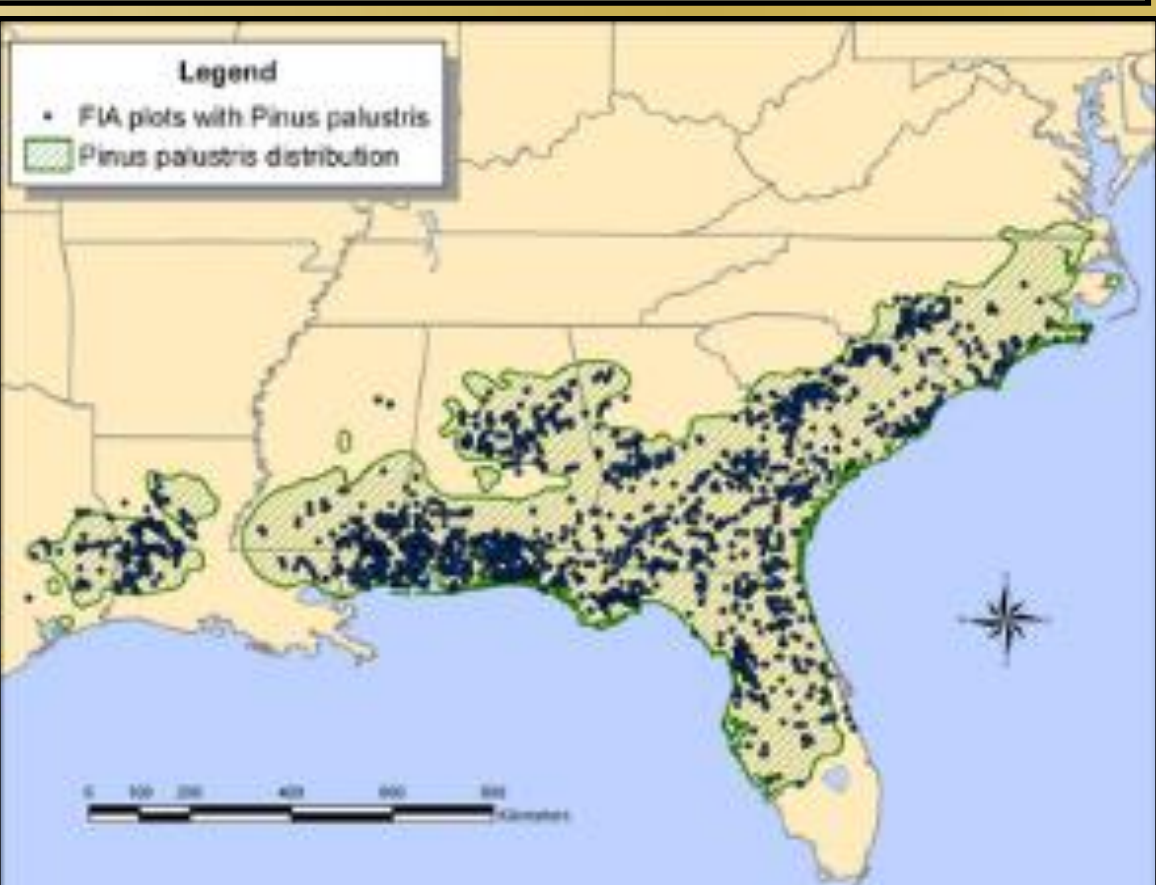
- The USDA Forest Service in the Southern Region (R8) actively supports **longleaf pine ecosystem restoration**. It continues to be a high priority conifer species. The National Forest System (NFS) Genetics and Silviculture programs, along with Southern Research Station and State & Private Cooperative Forestry, are working together to provide guidance and support for reforestation and restoration of longleaf pine ecosystems.
- **NATIVE RANGE:** it is estimated that the longleaf pine ecosystem has declined by 97% of the original range noted in the early 1900's. The major factor of demise was over-logging, naval stores, followed by conversion to faster growing species.
- **SILVICULTURE:** The Southern Region currently manages and maintains approximately 800,000 acres in longleaf pine. It is a physiologically flexible, long lived and genetically diverse species. Successful management requires fire. A **Regional Longleaf Accelerated Restoration Strategy** is currently being drafted.
- **GENETICS and SEED ORCHARDS** - R8 actively manages 240 acres of longleaf pine seed orchards in Mississippi (MS), Louisiana (LA) and South Carolina (SC), most of the genetic material is 1st generation. The orchards have been heavily impacted by hurricanes, with losses from 25 – 95% since 1989. The LA & MS orchards are old and need to be replaced. **Longleaf progeny tests:** 35 tests, aged 20+ years old, have been measured and data is being analyzed. Scion material will be collected to establish 2nd gen. orchards. **Seed production areas** in the general forested landscapes are being established. **Cones** are harvested about every 5 years, at peak crop cycles. **R8 seed inventory:** about 5000 pounds of viable seed in storage, representing 8 seed zones, ages 2-15 years old. At current planting rates, this seed inventory will last only 4-5 years. Nurseries grow both container and bareroot seedlings for planting on the national forests.
- **LONGLEAF PINE RESOURCES:** A **Longleaf Pine Resources Survey** was circulated across the south in 2009 and 2015. Information gathered, e.g. status of seed orchards, seed production areas, seed inventories, ownership, acreages, age, genetic generations, seed zones, is being compiled to provide a comprehensive overview of the available longleaf resources. The largest stakeholder is the Forest Service, owning approximately 75% of all longleaf seed orchards in the south. This information will help determine any barriers to continued long-term restoration utilizing artificial regeneration. Survey results will be posted on the LLA and Forest Service websites.
- **RESEARCH PROJECTS:**
 - Longleaf X loblolly potential **hybridization** event in spring 2013 impacted a 2014 seedling crop > unusual seedling morphology was noted. Warming temperature is thought to be a major influence. DNA analysis and seedling morphology studies are underway to determine if these are Sondereggers. Longleaf trees in R8's seed orchards and longleaf seedlots are being DNA fingerprinted for genetic purity.
 - **Climate change:** impacting range, health, reproductive potential, seedling survival, etc. In partnership with the Eastern Forest Environmental Threats Assessment Center (EFETAC) - updated planting zone maps are being developed. Updated seed zone maps are also under construction. **Where will we plant longleaf now so that it survives and reproduces in 100 years?**
- **PARTNERSHIPS:** NFS field personnel, National Genetics Lab (NFGEL), Southern Research Station, State Private Forest Health Protection and Coop. Forestry, Dr. Jim Barnett (retired FS) et. al., Longleaf Alliance, various academic institutions, NGOs, state and federal agencies, etc.



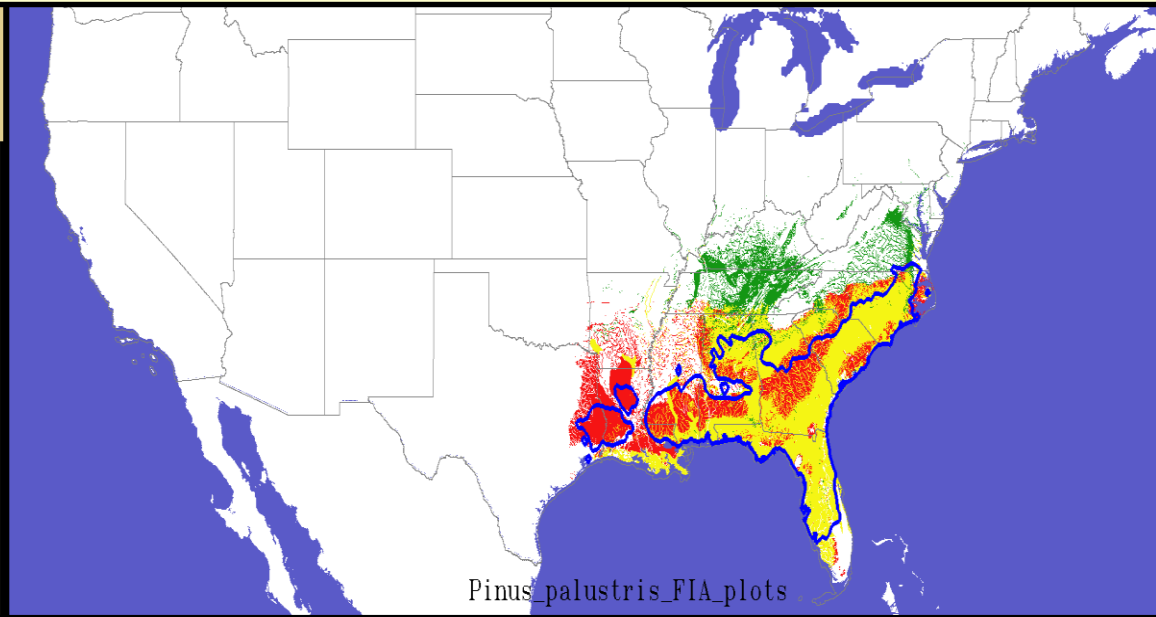
R8 NFS houses over 5000 pounds of longleaf seed, representing 8 seed zones, stored in the regional seed bank at the Ashe Facility, DeSoto NF, MS.

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Current Longleaf pine FIA range map

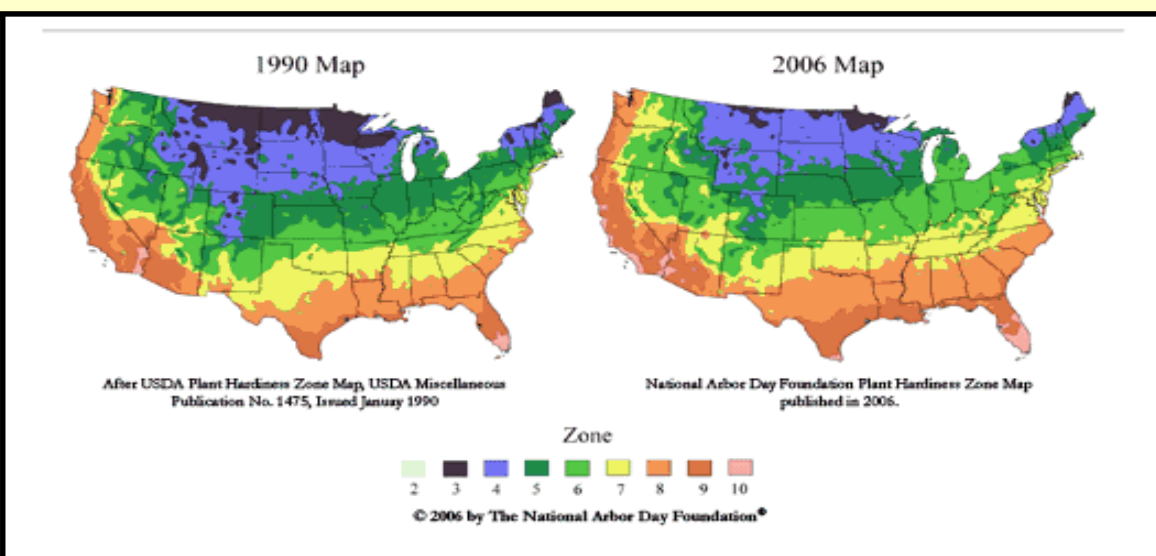


Longleaf pine predicted range map in 22nd century

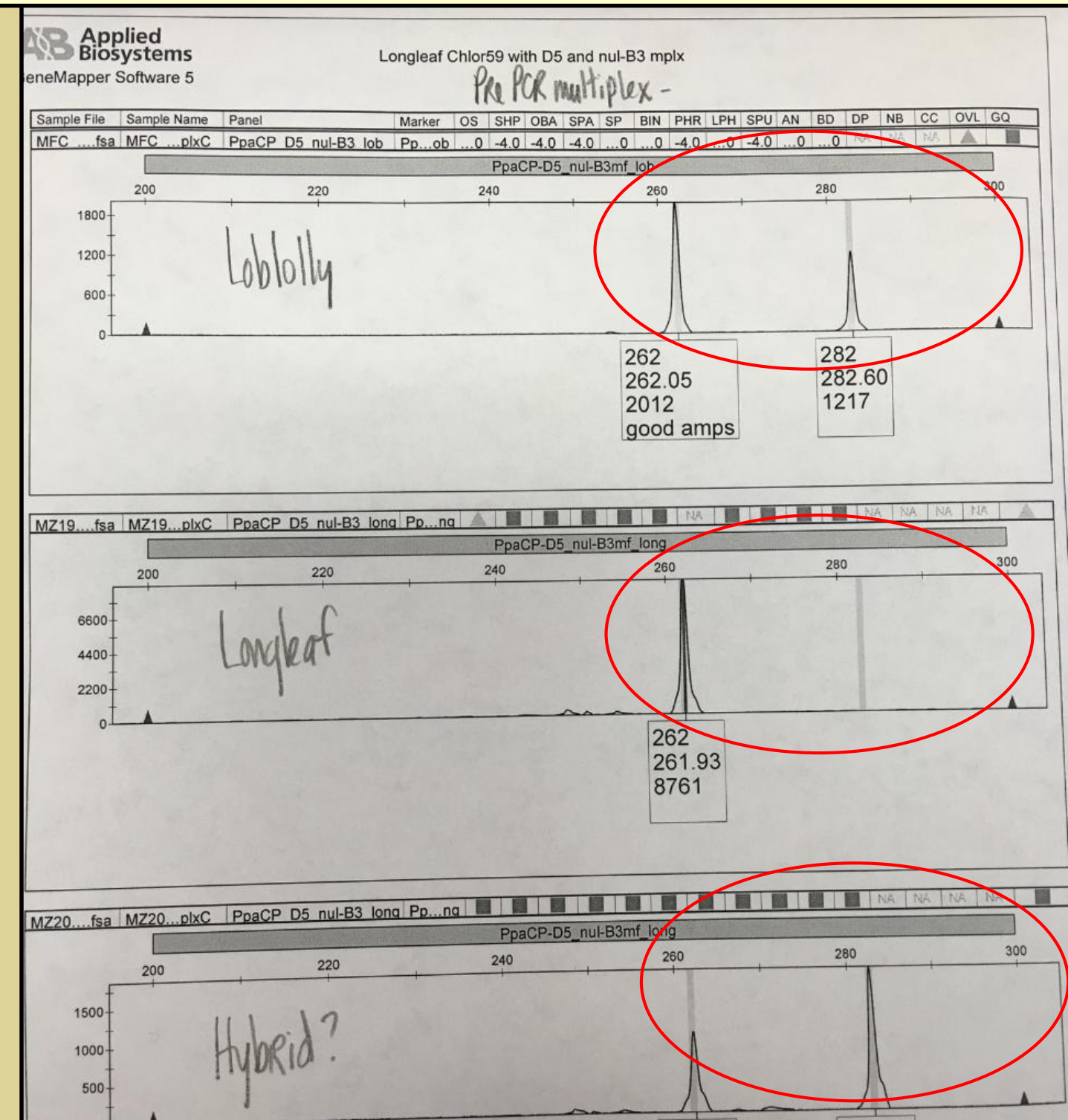


Updated seed zones and planting maps are under construction.

Eastern Seed Zone Forum Project
<http://eszf.sref.info>



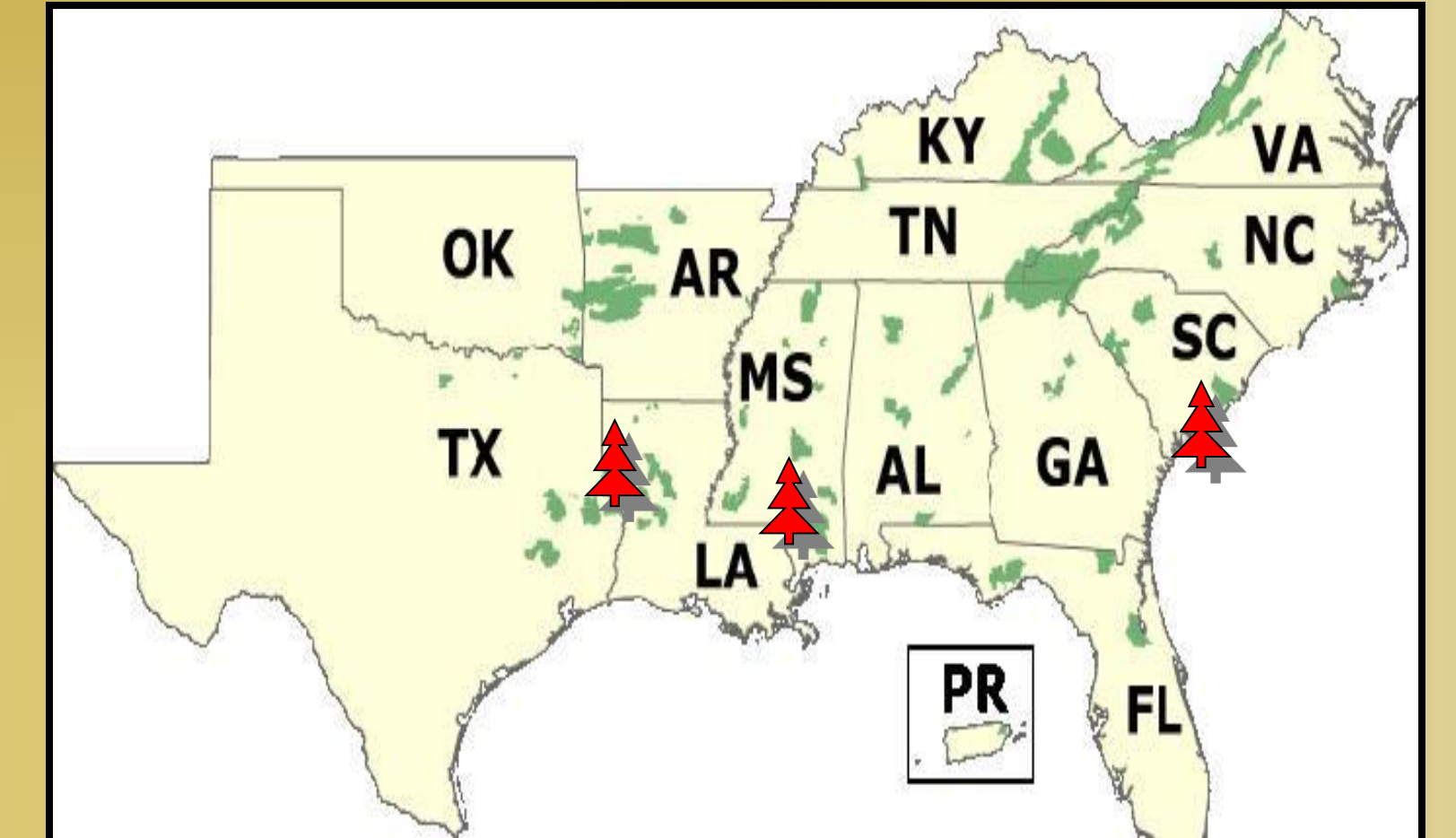
Suspected hybridization between longleaf and loblolly pines. Research work being led by Dr. Jim Barnett et. al. to determine why a 2014 seedling crop revealed unusual morphological traits, similar to a Sonderegger hybrid.



National Forest System & Southern Institute of Forest Genetics (SIFG) are DNA fingerprinting longleaf seed orchard trees and seed bank samples. **Thanks** to the SIFG (Forest Service SRS Saucier, MS) for developing the DNA markers.



R8 NFS longleaf seed is tested by the National Seed Lab (Macon, GA). A small sample of each of the nine seed zones is stored at the ARS's National Center for Genetic Resource Preservation facility, Ft. Collins, CO.



R8 NFS longleaf seed orchards located in Mississippi, Louisiana, South Carolina.



R8 NFS plants about 4-5 million longleaf seedlings annually, container and bareroot.



R8 NFS has 35 longleaf progeny tests which have been measured and data is being analyzed. They will be maintained for future seed production and scion collection to establish 2nd gen. orchards.

Montane “mountain” longleaf is being maintained and managed by NFS and others. Dr. Martin Cipollini, Berry College (GA) is a leader in this effort. Genetic studies have been done to determine if there is a genetic difference between coastal and mountain longleaf.

