

Reforestation in Tennessee

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Good morning! I appreciate the opportunity to speak to you today. I want to extend you an extra welcome to Tennessee as you get down to serious discussions of nursery management and seedling production. If you can escape the delights and seductions of Dollywood, the gift shops, and outlet malls while you're here, I urge you to spend a few hours walking a trail in the Park, visiting the Cherokee National Forest, or taking a day's tour in "God's County," as the East Tennessee Region is affectionately known to the natives.

As you have no doubt noticed, Tennessee is abundantly blessed with forests that support an impressive variety of plants and animals. It has been said that the biological diversity in the Southern Appalachians is as rich as any region on earth outside the tropics. Tennessee is located in that in-between land where the central hardwood forests to the north merge with the pines farther south. Unlike most of the other Southeastern states, dominated by southern pine types, almost 90 percent of Tennessee's forests are composed of hardwood and pine-hardwood types.

Arrayed from east to west, we also have a diversity of physiography and forest types, ranging from the spruce-fir and northern hardwood forests of the Smoky Mountains . . . to the cove hardwoods of the Cumberland Plateau ... to the oak-hickory forests on the Highland Rim and Central Basin of Middle Tennessee ... to the bottomland hardwood and cypress-tupelo forests in the floodplains of the Mississippi and other rivers in West Tennessee.

Timber and wood products have been a mainstay of the State's economy for almost two centuries. Long known for production of fine hardwoods, Tennessee has been for many years among the top 2 or 3 hardwood lumber-producing states. In recent years, increased demand for paper and other fiber products has created a greatly expanded market for low grade hardwoods, a product with which we are amply blessed. In addition, the State produces impressive amounts of hardwood veneer, cooperage, and crossties. Although forest industry utilizes significant volumes of pine, mainly for pulpwood, hardwoods still provide the bulk of raw material for the primary wood-using industries.

Most forest regeneration in the State, especially regeneration of hardwoods, is accomplished through natural means. Primarily for this reason, artificial regeneration does not receive as much attention as it does in the states of the Coastal Plain.

To be sure, the productivity of hundreds of thousands of acres of low-grade hardwood sites could be dramatically increased if converted to pine. In the years ahead, more hardwood-to-pine conversion is sure to occur. but until very recently the lucrative markets for pine. enioved

by the states to the south, were not available to us.

The birth of artificial reforestation in Tennessee began during the 1920s soon after creation of a Bureau of Forestry and establishment of a rudimentary fire control organization. In those days, new land was cleared when old farm land was "worn out," and the worn out" fields produced millions of tons of eroded sediment.

Farmland erosion was widespread throughout the State, but nowhere was it as severe as in West Tennessee where silty loess soil overlies Coastal Plain sands and gravels. Although highly productive for agricultural crops, the fertile loess erodes like sugar when unprotected by cover. Countless fields were reduced to useless moonscapes by such erosion. Up to 200 tons of soil per acre per year may be lost on these bare loess sites, depositing unwanted silt in the lowlands, polluting streams, and leaving the land barren for decades.

The State's first seedling nursery was established near Jackson in the late 1920s to furnish planting stock for stabilizing eroding lands. Planting records from those early days are lost; but oral tradition and the existence of some of the older pine stands throughout the State, especially in the West Tennessee area, suggest that loblolly pine was the main species produced.

One of the agencies established to get America back on its feet during the Great Depression was the Civilian Conservation Corps, which also ushered in the State's first significant tree planting initiative. A number of CCC camps were established across the State, and tree planting, primarily for erosion control, was a major CCC activity. According to a former state forester, something over half a million acres were severely eroded in the mid-thirties; yet less than 1,500 acres had been reforested.

In addition to the State's West Tennessee nursery, a nursery was established by the Tennessee Valley Authority during the mid-30s at Clinton near Knoxville. The Clinton Nursery furnished seedlings to CCC camps in East Tennessee both for reforestation of old fields on its reservoir properties and for erosion control plantings on private lands.

Small, on-site nurseries were also established on at least three, and probably more, Resettlement Administration Project areas in the State. Later, these areas were turned over to the State of Tennessee and now exist as state forests.

Records show that many native and non-native species were planted. Most were apparently trial plantings, established to determine how various species survived and developed under various soil and site conditions. Judging from the appearance of these lands today, few of the species planted survived and grew as intended. Among the hardwoods, only a few black walnut and yellow poplar plantings survived and grew. In most cases, the reason for failure was unsuitable site conditions.

Among the softwoods, loblolly, shortleaf, and white pines were generally successful. Several thousand acres of CCC-planted loblolly sawtimber still exist on Natchez Trace and Chickasaw State Forests in West Tennessee. Much of it has been thinned two or three times. Now 60 years

old and of high quality, this timber is being sold for the highest prices ever seen for pine sawtimber in Tennessee.

The work of the CCC was cut short by the Second World War when suddenly plenty of jobs were available for everyone. We are greatly indebted to the CCC for the pioneering work they did under some of the most difficult economic conditions Americans have ever lived through. From 1935 to 1942, the CCC planted more than 130,000 acres in Tennessee.

After the War, it was apparent that the 38-acre nursery site near Jackson was inadequate for the State's seedling needs. In 1947 a 319-acre site, located at Pinson about 10 miles South of Jackson, was purchased by the State. Approximately 100 acres were suitable for seedling production. The smaller nursery was closed, and in 1948 the first seedlings were grown at the newer Pinson nursery.

Until the late 1980s, all planting stock was produced at Pinson with the exception of white pine. The hot summers experienced in West Tennessee made production of white pine seedlings, a 2-year crop, extremely difficult. An arrangement was made with TVA to produce white pine seedling stock for distribution to private landowners by the Division of Forestry. TVA continued to supply State needs for white pine until the Clinton nursery was closed in the mid-60s.

Beginning in the early 1950s, the pulp and paper industry became interested in Tennessee as a raw material source for its products. In addition to the native hardwoods, Tennessee had abundant natural shortleaf and Virginia pine resources from the Cumberland Plateau east to the North Carolina line.

The first big industry was Bowater Southern Paper Company, which built one of the world's largest newsprint mills in the Tennessee River Valley at Calhoun, northeast of Chattanooga. Bowater also acquired numerous forested tracts on the Cumberland Plateau and in the Valley to supplement purchases of pine grown on non-industrial private lands mostly in Tennessee, Georgia, and Alabama.

Bowater soon established a state-of-the-art nursery and seed orchard on Rose Island, a beautiful site in the Little Tennessee River about 35 miles northeast of the mill. Pine seed and seedlings were produced at this site until the late 1960s when the site was vacated to make way for impoundment of the River by TVA's Tellico Dam. Nursery improvements were moved to a North Georgia site 50 miles to the south, and the entire seed orchard, several hundred 25 to 40-foot trees which had just begun to produce seed, was moved to a nearby upland site. Beginning in the early 1950s, Bowater planted several thousand acres of loblolly and Virginia pine on its company lands each year, greatly improving the productivity of tens of thousands of acres of low-grade hardwood sites.

During the 60s, 70s, 80s, and 90s other pulp and paper interests were also drawn to Tennessee. Tenneco Packaging, Willamette, Westvaco, Champion International, and L.M. Huber today control more than 1.1 million acres in Tennessee on which they expect to produce a portion of their raw material needs. Tree planting on company lands by the pulp and paper industry

currently exceeds 20,000 acres annually.

Beginning in the mid-1950s, tree planting soared in Tennessee, boosted by industry's new presence and the new federally funded reforestation programs. In 1955, the Pinson nursery produced 13 million seedlings, many of which were produced for sale to forest industry.

Most of the rest were grown for the new federal programs. The Agricultural Conservation Program, the so-called "ACP Program," offered private landowners federal cost-sharing for tree planting beginning in 1936. But when the PL-566 Watershed Protection and Flood Prevention Act was passed in 1954, most ACP cost-share funds for tree planting were utilized for soil stabilization on PL-566 projects, located mainly in the West Tennessee Area. In the decade from the mid-50s to the mid-60s, ACP provided cost-sharing for the reforestation and stabilization of more than 330,000 acres in Tennessee.

Another stimulus to tree planting during this period was the Soil Bank Program. From 1956 to 1962, landowners planted trees on more than 45,000 acres of crop and pasture land in Tennessee.

Seedling production at the Pinson nursery grew from 6.7 million trees in 1954 to 62 million in 1958. In the mid-1960s, when the Soil Bank Program ended and tree planting in PL-566 watersheds tapered off, seedling production declined. Still, production remained relatively high through the early 1980s as industry accelerated reforestation on company lands and demands for seedlings continued for surface mine reclamation and reforestation of private lands, supported largely by the Forestry Incentive Program, created in 1973.

Beginning in the early 80s, industry began to rely less on Tennessee's nursery for seedling production. Most developed company nurseries to produce seedlings with home-grown genetic material. As a result, annual seedling production at the State nursery throughout most of the 80s dipped below 10 million.

In 1986, however, reforestation received another shot-in-the-arm with the introduction of the Conservation Reserve Program. Since 1986, more than 35,000 acres were planted under CRP.

After TVA's Clinton nursery was closed, the Division of Forestry began producing white pine at the Pinson Nursery but was always unable to satisfy demand for the species and furnish high quality planting stock due to the warmer climate of West Tennessee. A decision was made to develop a new nursery in East Tennessee; so in 1988, a site was purchased in extreme southeast Tennessee in a bottomland, of the Hiwassee River, an old Cherokee Indian site, in the shadow of the Smoky Mountains.

Outfitted with all new, state-of-the-art buildings and equipment, the new nursery produced its first seedling crop in 1989. The site proved near ideal for white pine production as well as many other species. During the first eight years of operation, the new nursery has produced an average of 6.6 million seedlings, 83 percent of which were pines. This year's production is almost 10 million.

In 1992 the first Stewardship Incentive Program funds were allocated to the State. After the fifth program year, landowners have planted more than 12,000 acres of trees under SIP and requests for cost-sharing continue to climb.

The continuing pressure for cuts in State spending forced the Division to close the Pinson nursery earlier this year. The last seedling crop produced at Pinson was 300,000 yellow poplar, the State Tree, grown for this year's Tennessee Bicentennial event.

The Division's Tree Improvement Program, started in 1964, provides first generation improved seed for all loblolly, shortleaf, Virginia, and white pine, including white pine Christmas tree stock, from more than 250 acres of orchards. In addition improved seed is also produced for black walnut, yellow poplar, and Northern red oak seedling stock.

Over the years, Tennessee nurseries have furnished planting stock for a variety of conservation uses, programs, and customers. In addition to the CCC and PL-566 watershed projects, millions of seedlings were produced for erosion control for the Yazoo-Little Tallahatchie Flood Prevention Project in North Mississippi until completion of tree planting in the late 1970s.

Virginia and white pine, black locust, and several other species were grown for federal and State agencies and coal companies for surface mine reclamation work.

The already-mentioned Soil Bank Program of the 50s and 60s and Conservation Reserve Program of the 80s and 90s used significant amounts of seedlings for retirement of agricultural lands.

When the Interstate Highway System was built, the Department of Transportation utilized millions of trees for beautification and soil stabilization along rights-of-way throughout the State.

Oaks, pecan, persimmon, autumn olive, bicolor lespedeza, and indigo bush have been produced for planting on Wildlife Resources Agency lands, as well as for sale to landowners, for improvement of wildlife habitat.

In addition, Tennessee's State nurseries have produced seedling stock for forest industry, the Forest Service, TVA, Corps of Engineers, Army Ammunition Plants, Department of Energy, and many municipal and corporate owners for a variety of projects and purposes for more than half a century.

Turning now to the future, several realistic opportunities exist both for increasing regeneration of natural stands and for artificial regeneration in the Volunteer State during the next few years. Probably the greatest opportunity for forest regeneration in the foreseeable future is, of course, natural regeneration of the fine hardwoods for which Tennessee is famous. With more complete utilization of lower grade trees and the cutting or deadening of unusable trees, we are confident that hardwoods can be cost-effectively regenerated by natural means on the better sites. The key to the success of natural regeneration on private lands, however, is the ability of

our agency to furnish information and close technical assistance to the huge number of forest landowners in the State.

Considerable opportunity also exists for producing pine on forest sites unsuitable for high grade hardwoods. Although more expensive than natural regeneration, conversion to pines will produce greater volumes and more profit than native hardwoods on these poorer sites. With the growth of the pulp and paper industry and Tennessee's geographic location, such investments are becoming more obvious to landowners, and we see more of them planting trees without federal cost-share program subsidies.

Although the Soil Bank and Conservation Reserve Programs were responsible for changing thousands of acres of agricultural lands to forest land, great potential still exists for reforesting marginal crop and pasture lands in Tennessee. According to the SCS's National Resource Inventory of 1992, there are 1.8 million acres of Class VI, VII, and VIII lands in the State. These lands are unsuitable for crop and forage production due to steepness of slope, shallowness of soil, and or eroded condition. These lands could be reforested at low cost and provide enormous economic and environmental benefits to both landowners and the public.

Recent new emphasis on wetland protection and restoration offers new opportunities to plant bottomland hardwoods on tens of thousands of acres of cleared wetland sites, located mostly in West Tennessee. During the 1960s and 1970s, wholesale clearing of bottomland hardwoods was conducted to make way for soybeans and other crops. In many cases, farmers have been lucky to make a crop one or two years in five due to seasonal flooding, high water table, or other factors. Through the corporate efforts of the Division of Forestry, the Wildlife Resources Agency, NRCS, Fish and Wildlife Service, and others, a number of wetland restoration projects are now getting underway.

In addition to hardwood restoration in West Tennessee under the Natural Resource Conservation Service administered Wetlands Reserve Program, the Wildlife Resources Agency has begun restoring bottomland hardwoods on several Agency-managed lands, and the Division of Forestry, having received a three-year federal grant from EPA, recently hired a Wetlands Project Forester who is stationed at the old nursery site near Jackson. In addition to working with NRCS on WRP cases, the forester provides assistance to private landowners in managing existing bottomland hardwoods and restoring the resource on suitable wetland sites. This new activity in wetlands will generate considerable new demand for hardwood planting stock and provide us much-needed experience in hardwood reforestation.

We think these opportunities can also yield huge benefits in terms of improving wildlife habitat, water quality, soil protection, outdoor recreation and natural beauty.

To summarize the main points:

- * Most forest regeneration is achieved in Tennessee's predominantly hardwood forests
- * The bulk of artificial regeneration in the State is carried out by pulp and paper companies.

- * The bulk of artificial regeneration in the State is carried out by pulp and paper companies.
- * Historically, the relatively modest amount of reforestation performed on non-industrial private lands has been driven mainly by federal agricultural lands retirement and cost-share incentive programs.
- * Reforestation in Tennessee would benefit greatly from a state-funded incentive program as it has elsewhere.
- * The recent acceleration of timber prices shows that market conditions may be the most effective incentive for reforestation on non-industrial forest lands.
- * Significant opportunities exist for increasing forest regeneration in Tennessee through natural means; conversion of low-grade hardwoods to pine; reforestation of marginal crop and pasture lands; and restoration of bottomland hardwoods on wetland sites.

In closing, I want to thank you again for the opportunity to speak to a group which has served the South and the Nation so well during the past half century. The fruits of your efforts will be the economic prosperity of the people and the sustainability of the land for many generations.

Best wishes for a productive meeting.

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