

PINE

Introduction

As the human population grows, the demand for wood and the vast array of products made from it increases, making pine trees among the most valuable of commercial crops produced around the globe. Southern pines, which make up more than 32 million acres of forestland in the Southeast, rank among the top four crops in the United States in terms of farmgate value. Of tree crops, they are the country's most important.

In the state of Florida, where forest crops in general and pines in particular have the largest economic impact of all crops, southern pines have long been an economic mainstay. Florida's southern pine germplasm, the state's store of genetic material for this essential crop, is the fastest growing in the southern hemisphere.

From the Beginning

The University of Florida breeding program for southern pine began in the 1950s. UF/IFAS initiated the program to breed better pine trees and improve the Florida crop. The goal was to produce fast-growing trees with straight stems, enabling growers to produce more wood more quickly. UF/IFAS breeding also produced healthy trees with strong disease resistance, ensuring that Florida growers were producing wood of the best possible quality and delivering a reliable, steady supply of it to forest products companies.

Since the 1950s, UF/IFAS scientists have shortened the southern pine breeding cycle and made it more efficient — more wood in less time. The breeding program was the first to use modern statistical methods to analyze the genetic control of traits and rank for selection.



Today and Tomorrow

UF/IFAS's Cooperative Forest Genetics Research Program (CFGRP) has developed a highly advanced crop of slash pine that is now grown widely in North Florida and southern Georgia. The genetic material for nearly all of Florida's 4 million acres of planted pine came from CFGRP selections. Pines benefiting from UF/IFAS's genetic improvements yield from 30 percent to 57 percent more wood than unimproved pines. The value of the genetic improvements the CFGRP has made to the southern pine crop is considerable, with benefits estimated at \$500 million more than if growers had planted unimproved material.

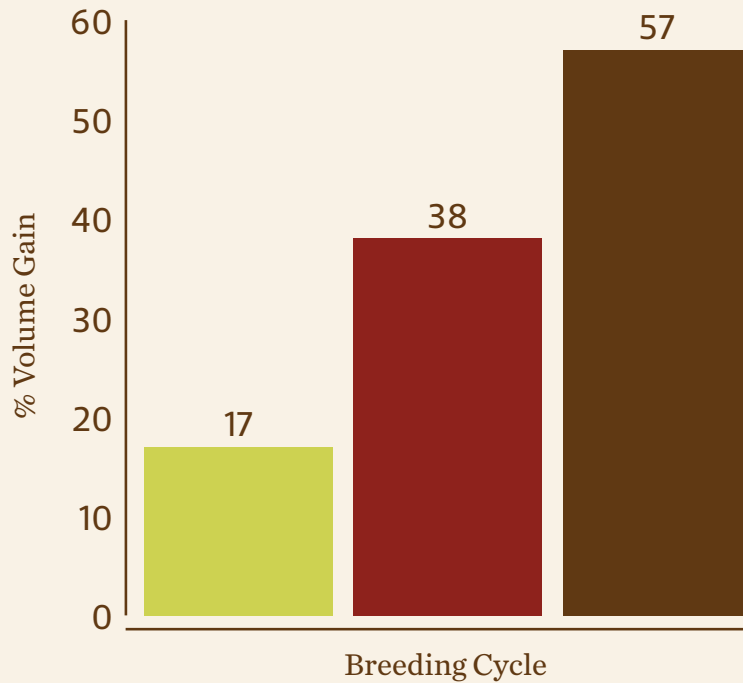
The CFGRP has established a research program in pine hybrids. It continues to breed loblolly and slash pine to increase volume growth, strengthen trees' resistance to fungal disease, improve wood properties, and yield an array of wood selections suitable for a variety of commercial uses. Today, UF/IFAS breeders are working toward developing selections that will be more suitable for bioenergy and biofuel production.

Predictive models developed by the CFGRP allow superior genetic material to be selected based on genomic information alone, eliminating the need for field testing. UF/IFAS breeders have used these models to design crosses that yield the most gains in selected desired traits. The models will drastically shorten the breeding cycle. In fact, researchers estimate that the newfound freedom from time-consuming field testing will double the rate at which genetic gains can be achieved.



Over 99% of southern pine seedlings planted in Florida come from the UF/IFAS Cooperative Forest Genetics Research Program.

Slash pine volume gain at harvest is 57% after three breeding cycles.



The net present value of Florida’s forests planted with CFGRP genetically improved seedlings is estimated to be \$550 million more than forests planted with unimproved seedlings.

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