

GENETIC IMPROVEMENT FOR ECOSYSTEM RESTORATION

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University-Industry-State Cooperative Tree Improvement has been highly successful in the southern United States. For nearly 60 years, three Cooperative programs have led the way in developing and deploying genetically improved planting stocks for loblolly (*Pinus taeda*) and slash pines (*P. elliottii*). However, much lower levels of success have been achieved for species of lesser economic importance such as longleaf (*P. palustris*) and shortleaf pines (*P. echinata*) and the many southern hardwoods. The result is that many important forest tree species are in need of sustained genetic enhancement for both short-term silvicultural and long-term conservation purposes. To address this need, we are pursuing the concept of participatory plant breeding for application in forest trees. The basic concept includes three types of forest landowner as participants covering the main functions in tree breeding: mother tree selection, progeny testing, and seed production. A species' program would be organized through a web portal with a back-end database containing tree, test planting and orchard data. The program's goal is to provide landowners with an opportunity to actively participate in range-wide genetic improvement and gene conservation. In addition, all landowners would benefit from the low-cost availability of well-bred planting stock for optimal performance in a changing climate. Such improved materials could be planted in current breeding zones or used to improve adaptation potential via assisted migration.