TIPRoot DATABASE: A TOOL FOR MANAGING BREEDING, TESTING, AND SELECTION DATA IN THE NC STATE UNIVERSITY COOPERATIVE TREE IMPROVEMENT PROGRAM

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The NC State University Cooperative Tree Improvement Program developed its online database (TIPRoot – Tree Improvement Program Rapid online output tool) to provide Cooperative staff and members a means for organizing and accessing breeding, testing, and selection data for loblolly pine.

The most utilized tool in the TIPRoot database is the PRSTM database that contains breeding values for each selection and genetic values for every possible cross. In addition to downloading data for all selections in a given geographic region, a user can create PRSTM Spec Sheets that can be used toinform landowners and foresters about the predicted performance for growth, fusiform rust resistance, and stem quality of specific open-pollinated or full-sib families and for marketing seedlings. Since the primary limitation to adaptability for loblolly pine seedlings is tolerance of cold temperatures, a map is generated for each Spec Sheet indicating the risk of cold damage using minimum winter temperature.

Other tools in TIPRoot will be described including the use and management of pedigree information, management of genomic data, and the enhanced uploading of test measurements that includes data quality checks. We have recently developed Breeding Logistic tools to manage all the breeding and testing activities that connects information about the status of each cross in field tests, seed and pollen inventories, conelet and flower counts, and need for continued breeding. We estimate that the Breeding Logistics database has more than doubled the efficiency of breeding activities during the very hectic breeding season.

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