Loblolly Pine *PRS*™

Performance Rating System

Family Code: Piedmont 21

PRS™ Ratings — Predicted Family Performance

Productivity Rating **84**

Rust Resistance Grade **A**

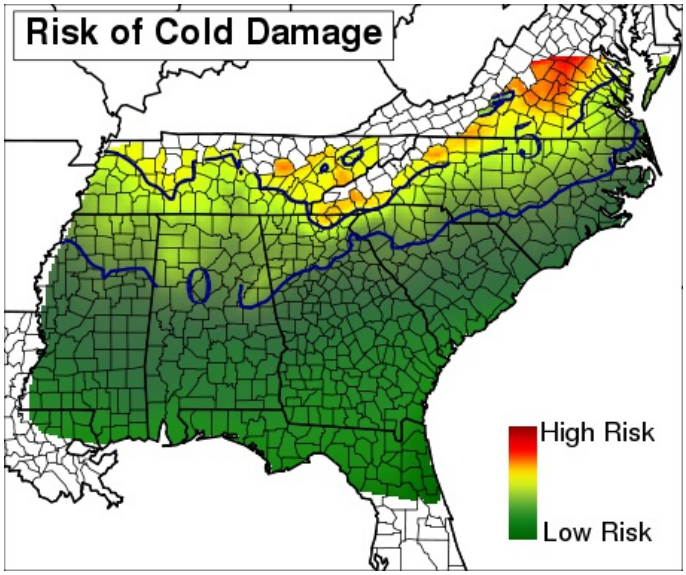
Stem Form Grade **A**

The ***PRS***™ ratings indicate that the progeny of family is projected to be:

- ***P*** = **84** → Approximately 84% greater stem volume at age 6 compared to the combined average of local non-improved loblolly pine checklots across the **Piedmont regions of Georgia and the Carolinas and the Upper Gulf Coastal Plain**.
- ***R*** = **A** → **Excellent** for resistance to fusiform rust disease
- ***S*** = **A** → **Excellent** for stem straightness

The minimum winter temperature "origin" of Family **Piedmont 21** is 10.12°F (0° line). Planting in the green shaded areas on the map up to 5°F colder (south of -5° line) has minimal risk of cold damage[1]. Planting in areas that are 5-10°F colder than the origin (between -5° and -10° lines) will increase the risk of cold damage. Areas that are more than 10°F colder than the origin are too cold and planting is not advised (north of -10° line).

Family **Piedmont 21** has been tested by members of the *NC State University Cooperative Tree Improvement Program.*



[1]These adaptability guidelines were developed by the USDA Forest Service (Schmidtling 2001), Southern Pine Seed Sources, available at: http://www.srs.fs.usda.gov/pubs/gtr/gtr_srs044.pdf

Loblolly Pine PRS™ - description

Piedmont 2013 V1

Progeny test results of measurements at age 6 years are listed in the box to the right.

6-Year Progeny Test PRS™ Data

Family[2]: **Piedmont 21 over CCC**

Volume Rating	84
Height Rating	23
R-50%	17
Straight %	40
Forking (F-50%)	32

Volume Rating and **Height Rating** are predicted progeny performance of open-pollinated (OP) families[2] expressed as percentage deviations from the combined average of local non-improved loblolly pine checklots across the **Piedmont regions of Georgia and the Carolinas and the Upper Gulf Coastal Plain** (e.g. CCC). Family **Piedmont 21** is predicted to be **23%** taller and have **84%** more stem volume at age 6 years compared to non-improved check trees.

R-50 % of **17** indicates that this family is expected to have **17%** of the trees infected with fusiform rust galls at a site where non-improved loblolly pine would have 50% rust infection.

Straight % score of **40** indicates that this family is expected to have **40%** straighter stems compared to the non-improved check trees.

Forking (F-50 %) of **32** indicates that this family is expected to have **32%** of the trees with forked stems or major ramicorn branches at a site where non-improved loblolly pine would have 50% forked stems or ramicorn branches.

Use of the PRS™ Ratings

Customers are encouraged to fully understand the PRS™ Ratings. For a detailed description and limitations of the PRS™ Ratings, go to www.TreeImprovement.org . Version Piedmont 2013 V1 PRS™ Ratings can be used to compare the genetic potential of different families at age 6 years and not the absolute performance of a family at the time of harvest. **These PRS™ Ratings are no guarantee of performance but are indicative of how this family is predicted to perform compared to non-improved loblolly pine if grown in the same environment.** The actual performance of any loblolly pine family depends upon on nursery protocols, the quality of the planting site, the silvicultural practices imposed before, during, and after planting, and the climatic / environmental conditions throughout the life of the stand.

Test Data

Each family is tested by members of the NC State University Cooperative Tree Improvement Program. Standard progeny tests evaluate each family in a minimum of 4 test environments with a range of 60 to 144 seedlings total per family. The following traits are measured at 4 to 6 years in the field: total stem height, diameter at breast height (DBH), presence or absence of fusiform rust galls, straightness of each tree relative to the stand average, and presence of forks or major ramicorn branches. Individual tree volume is calculated for each tree using a standard volume equation. The 6-Year Progeny Test Data reported are the means of individual trees and not per acre estimates.

Rotation Age Projections

The ideal productivity rating is a rotation-age per acre volume and value estimate for each family, calculated using growth and yield models where the height, volume, and quality trait gains at 6 years of age are modeled to predict rotation age values. At this time, these projection systems are too variable and are dependent upon which growth and yield model is used. In future PRS™ versions, we hope to have more reliable estimates of rotation age volumes and values.

Company X is a licensed user of the Loblolly Pine PRS™. **Company X** verifies that the seedlings are of the family **Piedmont 21**. Apart from verification of family identity, Company/Agency makes no representation or warranty of any kind with respect to the rating system or seedlings sold, and expressly disclaims any warranties of merchantability or fitness for a particular purpose and any other implied warranties with respect to the capabilities, safety, utility, or commercial application of the seedlings.

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[2]An open pollinated family refers to progeny from a selected parent (only one parent is known) that have been established in a loblolly pine seed orchard. The PRS™ values for this family are for open-pollinated seeds collected from a seed orchard in the Piedmont area of SC, GA, or AL.