

## Field Validation of Laboratory Seedling Testing Results

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Tanaka, Y.; Carrier, B; Meade, R.; Duke, S. 1996. Field Validation of Laboratory Seedling Testing Results. In: Landis, T.D.; South, D.B., tech. coords. National Proceedings, Forest and Conservation Nursery Associations. Gen. Tech. Rep. PNW-GTR-389. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station: 245. Available at: <http://www.fcanet.org/proceedings/1996/tanaka.pdf>

Abstract-The Weyerhaeuser Seedling Testing System (STS) has been operational since 1985. Located in Centralia Washington, USA, the laboratory can conduct five types of tests which evaluate: (1) root growth potential (RGP), (2) seedling viability, (3) cold hardiness, (4) morphology and (5) pathogen infection level. About 500 to 800 tests are conducted annually. The seedling testing results gathered at the laboratory are compiled as base-line data for each nursery/species/stock type for interpretation of current and future test results.

Several field validation trials have been installed with Douglas-fir (*Pseudotsuga mensiezii* (Mirb.) Franco) seedlings to determine how the results of the RGP and viability tests correlate with the performance of seedlings in the field after outplanting. The results to date have shown that Douglas-fir 1+1 stock sustaining winter damage from nursery freeze showed various levels of field performance at several planting sites in the states of Oregon and Washington, USA.

Under mild weather conditions, winter-damaged seedlings, despite their reduced vigor, showed good survival. Under harsher conditions, however, performance of stock with low vigor, particularly those with Root Growth Index (RGI) less than the threshold value of 4.8 and (Growth Value) GV less than 90%, tended to perform poorly.

Under relatively mild field conditions at the Springfield and Coos Bay Regions, Oregon, USA, height growth of survived seedlings was about the same regardless of the original RGI and GV values after two growing seasons in the field.

It is recommended that Douglas-fir 1+1 stock sustaining nursery freeze damage, particularly those with RGI less than the threshold value of 4.8 and/or GV less than 90% be handled, transported and planted with utmost care to capture their maximum survival and growth potential.

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