

Plant Stock Management in Nursery

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Opinion Article

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ABOUT THE STUDY

Planting stock is nursery stock that has been prepared for outplanting, such as seedlings, transplants, cuttings, and occasionally wildings. The amount of seed used in the development of white spruce seedlings and direct sowing varies depending on the method. At the IUFRO Workshop on Techniques for Evaluating Planting Stock Quality in New Zealand in 1979, a working definition of planting stock quality was agreed. "The quality of planting stock is the extent to which it achieves management objectives (until the end of the rotation or the accomplishment of specified targeted benefits) at the lowest possible cost." Quality refers to a product's suitability for its intended use. Any judgement of planting stock quality must thus start with a clear statement of objectives. Not only must performance be determined, but it must also be appraised in relation to management objectives.

Planting stock is created in order to carry out the organization's forest policy. The terms "planting stock quality" and "Planting Stock Performance Potential" must be distinguished (PSPP). The sort and condition, i.e., the intrinsic PSPP, of any particular batch of outplanted planting stock determines just a portion of the stock's actual performance. Because outer appearance, especially of stock retrieved from refrigerated storage, can fool even experienced foresters, who would be outraged if their ability to discern good planting stock when they saw it were questioned, the PSPP is hard to assess properly by sight. Prior to Wakeley's (1954) demonstration of the relevance of the physiological condition of planting stock in influencing the stock's capacity to function after outplanting, and to some extent even beyond, morphological appearance was commonly used to estimate the quality of planting stock. The physiological characteristics of planting stock are not visible to the naked eye and must be discovered through testing. Various morphological and physiological characteristics of a batch of planting stock, or a sample thereof, can be used to evaluate the stock's potential for survival and growth. Despite this, the size, shape, and general look of a seedling might provide important PSPP indicators. In low-stress outplanting conditions with a decreased handling and lifting-planting cycle, a system based on nursery stock standards and basic morphological requirements for acceptable seedlings performs tolerably well. In many cases, using a large planting stock of highly

ranked morphological grades might provide benefits in particular situations. Under diverse site and planting conditions, leading shoot length, stem diameter, root system volume, shoot:root ratios, and height:diameter ratios have all been associated to performance.

On the other side, the notion that more is better misses the underlying complexities. For example, Schmidt-Vogt (1980) observed that, whereas mortality among large outplants is higher than that of small outplants in the year of planting, mortality among smaller outplants is higher in subsequent growing seasons. Many studies of comparative seedling performance are contaminated by questions about whether the stocks being compared are in the same physiological condition; differences invalidate such comparisons. Height and root-collar diameter are typically recognised as the most relevant morphological traits, and they are frequently the only ones taken into account when creating standards. Quantification of root system morphology is difficult, but it may be done, for example, by employing a photometric rhizometer to determine intercept area or volume using displacement or gravimetric approaches.