economic, but on high value layers such approaches may have an advantage.

The phenolic foam blocks used for propagation also offer potential for use as easy-to-use air layer units. The present size of foam propagation blocks presents the same small volume disadvantage as peat plugs, but large sheets 2" thick may be carved to form blocks of suitable size and a central cavity is easily carved out.

Rockwool has been available for over 15 years and has found extensive use in propagation and culture of horticultural crops. It is offered in blocks of different size as well as larger slabs which can be cut to desired size. Water is readily taken up, but the wet weight of a saturated block may be too great and some draining must be allowed. A slice to the middle of the block permits its application to the girdled portion of a branch, and it is easily handled and wrapped as a single unit.

LITERATURE CITED

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A NEW, EFFICIENT METHOD FOR EVALUATING ROOT GROWTH POTENTIAL OF PLANTING STOCK USING A ROOT AREA INDEX[1]

W. J. RIETVELD[2]

North Central Forest Experiment Station
Rhinelander, Wisconsin 54501
and

R. W. TINUS[3]

Rocky Mountain Forest and Range Experiment Station
Flagstaff, Arizona 86001

Root growth potential (RGP), the ability of seedlings to promptly and abundantly initiate and elongate new roots after transplanting, is an important and useful attribute of planting stock performance. However, it is generally laborious, tedious, and subjective to measure. A method was developed that employs aeroponic culture of seedlings in a root mist chamber (RMC) and measurement of root growth by changes in root area index (RAI) with a video camera and digitizing area measurement system. The

[1] Poster Presentation
[2] Research Plant Physiologist
[3] Supervisory Plant Physiologist

area meter scans each horizontal TV line and sums the segments that are traversed by roots. A high resolution camera was used for accurate area measurement of roots. The method consists of: 1) premeasuring RAI of individual seedlings, 2) growing seedlings in the RMC for about 2 weeks (depending on species), 3) staining new roots to make them visible to the camera, and 4) remeasuring RAI of individual seedlings.

An experiment was conducted to compare xylem water potential (XWP) of seedlings grown in the RMC with that of seedlings grown in pots of a growing medium and seedlings grown in hydroponic culture. XWP, measured with a pressure chamber, of seedlings grown in the RMC was similar to that in potted seedlings, and increased (became less negative) when new roots were initiated. Seedlings in the RMC initiated new roots 1 week sooner than potted seedlings. XWP in hydroponically grown seedlings steadily decreased and very few new roots were present after 20 days.

A second experiment determined the relationship between root growth quantified by difference in RAI and that quantified by direct measurement of new root number and length. A range in RGP was accomplished by placing groups of 10 jack pine 2-0 seedlings in a forced-air oven (40°C, 30% RH) for 0, 10, 20, 30, and 40 min., then growing them in the RMC for 17 days. Root growth of individual seedlings was evaluated by the RAI method and by counting and visually estimating length of all new roots > 0.5 cm. Linear regression of individual seedling data revealed r^2 values of 0.88 and 0.90 for predicting number of new roots and length of new roots, respectively, from difference in RAI. Eleven seedlings/person/hr were completed using the visual estimation method compared to 32 seedlings/person/hr using the RAI method.

The research documents the accuracy and productivity of the RAI method. Observer subjectivity is nearly eliminated.