

## THE ROOT STUDY BOX:

## A DEVICE FOR THE EVALUATION OF ROOT DEVELOPMENT

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In the evolution of container planting systems, concern has frequently been expressed that containerization might lead to potentially adverse effects upon seedling root development and the vigor and stability of the subsequent stand. Experience has shown that certain containers are more likely to induce root deformations than others. Consequently, with the continuing proliferation of container types, there are obvious benefits to be derived from any method which, in a relatively short time, can provide an indication of a seedling's probable rooting habit after planting.

To facilitate rapid evaluation and documentation of root system development, the Root Study Box was developed at the Swedish University of Agricultural Sciences, Garpenberg, based on the pinboard method for studying root habit. The version demonstrated (Fig. 1) was constructed at the Great Lakes Forest Research Centre from 6 mm acrylic plastic sheet. It consists of a 17.5 x 17.5 x 22.0 cm box, open at both ends, with holes bored in each face at 2 cm vertical and 2.5 cm horizontal spacing. Nylon fishing line (20 lb test) was threaded horizontally through the holes to produce a multi-layered network of crossed strands, which serve to support the root system in *situ* when the growing medium is washed away. A loose-fitting plywood or plastic base, with drainage holes, facilitates filling and handling of the boxes, and may be left in place during the growing period.

The Root Study Box offers the following advantages:

- it may be constructed to accommodate any size of tree or length of growing period;

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- it may be used in growth chamber or greenhouse, thereby accelerating root development and avoiding the delays inherent in the conduct of rooting studies under field conditions;
- the root system, undamaged and with the original root orientation intact, is preserved *in situ*;
- it provides an early warning of the potential for root deformation, and can be used to simulate and evaluate many planting problems;
- the clear plastic walls permit a three-dimensional view of rooting habit, and provide suitable conditions for photographic documentation;
- the integral network of nylon strands facilitates quantitative assessment of rooting habit;
- seedling root systems may be preserved for future demonstration (those displayed were stabilized by soaking in ethylene glycol).

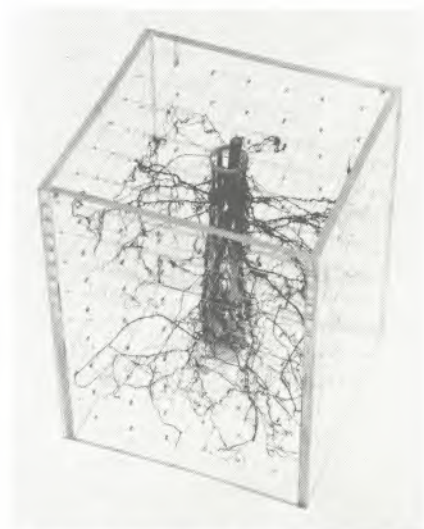


Figure 1. The Root Study Box