

At the end of 1 year, well-rooted liners are removed from both flats and boxes and potted into 1-gal containers. These are then grown an additional year and usually develop by that time into saleable, husky three- to six-stem plants.

Allegheny pachysandra is a slow-growing and very fine native ground cover. Though our own production method is not a quick one, the success rate with this program has been close to 100%. Without the need for a greenhouse or mist equipment, expenses are very low once a stock block is established.

Environmentally Friendly Nursery Production Practices

Calvin Chong and Bob Hamersma

Ontario Ministry of Agriculture, Food and Rural Affairs, Horticultural Research Institute of Ontario, Vineland Station, Ontario, Canada L0R 2E0

INTRODUCTION

The ornamental nursery/landscape industry has been one of the fastest growing agricultural sector in Ontario. Nursery research at Vineland has provided leadership and direction in research and development to make this industry competitive and viable. Research has focused on: propagation, container production, new and innovative technologies, and environmentally friendly practices.

PROPAGATION

Our studies have confirmed the benefits of rooting selected difficult species using liquid IBA rooting solutions. A range of plastic plugs were shown to increase rooting, facilitate small plant handling, and facilitate production.

More recent studies have demonstrated that readily available and inexpensive plumbing, car radiator, and windshield antifreezes were suitable alternative solvents for dissolving IBA and that these mixtures were satisfactory for the rooting of cuttings from a wide range of woody taxa. These studies will make it easier and less costly for propagators to formulate and use rooting hormones.

CONTAINER PRODUCTION AND WASTE RECYCLING

Our research has demonstrated the benefits of container growing using potting mixes derived from a wide range or combinations of composted or uncomposted waste by-products, such as spent mushroom substrate, paper mill sludge, waxed corrugated cardboard, composted municipal wastes, tree barks, wood chips, wood wastes, pulverized broken glass, food wastes, animal wastes, and various manures.

Experiments using trickle fertigation and slow-release fertilizers have demonstrated the benefits of reducing water, fertilizers, and run-off pollution. Recently, in cooperation with Dr. Glen Lumis, University of Guelph, we initiated research on a "closed-loop, zero-run-off" system of container nursery culture, the first of this type of research in Canada. We also studied nonchemical weed control in nursery containers using: (1) various types of weed discs on the surface of the media, and (2) weed bags (plastic sleeves) wrapped around the container like a florist's sleeve.



Figure 1. A trickle-irrigated pot-in-pot tree. The garbage bag suppresses weeds and reduces evaporation from the medium.

SHADE TREE PRODUCTION

We have tested and evaluated various in-ground or above-ground container growing methods of tree culture. In the late 1980s, we introduced and tested in Ontario in cooperation with Dr. Glen Lumis, University of Guelph, the new innovative in-ground pot-in-pot tree-culture technique which we first observed in Oklahoma. Our results demonstrated that trickle-irrigated shade trees in 25-gal containers supplied with special combinations of slow-release fertilizers, can be produced more rapidly than by traditional field culture. Preliminary observations indicated that black garbage bags placed over the pot is very effective in controlling weeds (Fig. 1). Less irrigation is required during the season since evaporation from the medium is much reduced. We are now growing the trees using a range of recycled wastes in the container media.

LAND REHABILITATION WITH PAPER MILL WASTES

Each day Ontario generates over 2000 tonnes of raw paper-mill sludges—about 10% is produced in the Niagara Region. Projects in recycling and utilization of paper mill sludges in agriculture and horticulture have included: land reclamation and rehabilitation, soil amendment for field crop production, greenhouse, and nursery potting mixes, and composts for gardeners and landscapers. A long-term “mega-project” is now underway to reutilize paper mill sludge to grow a 3000-acre forest and landscape on near-barren, heavy clay soil previously dug from the Welland Canal on an 11-km strip near Niagara Falls, Ontario.

PUBLICATIONS

During the past decade, we have released over 150 technical and scientific publications on all aspects of the nursery research program. Since 1990, we have also published an annual report summarizing the findings of our research at Vineland.