Nonchemical Alternatives for Container Weed Control

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INTRODUCTION

Container production has been increasing rapidly and represents about 30% of Canadian-grown nursery stock. While U.S. nurseries effectively control weeds in containers with a spectrum of licenced herbicides, Canadian nurseries have traditionally resorted to different means — primarily hand weeding, in conjunction with weed discs, and a limited number of herbicides (recently registered) for container use (OMAFRA, 1997).

The typical weed control disc is round and has a slit so that it can be fitted around the stem of the plant. It should be easy to apply; should fit snugly on top of the container mix; should not easily be dislodged or wind-blown; should allow penetration of water to the mix; should not support weed germination and growth on its surface; and should be durable and cost effective (i.e., perhaps costing less than 5 or 10¢ for a 2-gal container).

In the early 1980s, Connon Nurseries (AVK, Rockton, Ontario) introduced the Weed Guard in Ontario. This disc is made of semi-rigid plastic similar to a 45 rpm record. Small holes allow water to penetrate — but also the escape of weeds. Two discs in off-set positions provide better weed control than a single disc.

Chong et al. (1989) reported an 85% reduction of container weeds using Mori-Guard discs made from geotextile fabric (1/16 inch thick, introduced by Mori Nurseries, Niagara-On-The-Lake, Ontario) or from foam (1/8 inch thick, similar in consistency to polyfoam used for winter storage protection and packaging). The foam disc tended to curl upward at the edges, partially exposing the surface of the container mix. Since then, several types of weed discs have "come and gone" because they did not meet one or more of the criteria listed above. It is noteworthy that, during the past 12 years, the Ornamental Nursery Program at the Horticultural Research Institute of Ontario has annually reused the same fabric discs obtained originally from Mori Nurseries. Unfortunately these discs are unavailable, most likely, due to the high unit cost.

There seems to be a renewed interest in weed discs (Mervosh, 1999), due in part to limited choice and experience with container herbicide use, and also to their potential negative impact on both plant and environment.

Since 1998, we have been evaluating several "new-generation" weed discs fabricated from materials such as pressed peatmoss, cardboard, fabric, and plastic (Table 1), and comparing them to mulches of pine sawdust and paper mill waste, to various herbicides, to selected "old-generation" weed discs, and to the Mori "Weed Bag". This patented method of weed control was introduced by Mori Nurseries in the early 1990s. Black polyethylene sleeves with pre-punched holes are placed onto the containers in the same fashion that florist plants are prepared for market.

Although our trial is still in progress, we believe it interesting and worthy to draw further attention at this time to "nonchemical ways" of container weed control.

Table 1. Description of various "new-generation" weed control discs.

Disc	Material	Comments
Tex-R Geodisc	Polyester and viscose fabric	Easy to apply; fits well but easily wind-blown; made with or without copper coating for preventing surface germination of weeds.
Biodisc	Pressed peatmoss	Easy to apply; fits well; starts to degrade within days after application.
Corrudisc	Corrugated cardboard	Awkward to apply due to rigidity of the material; initially fits well but degrades starting after the first irrigation; it loses shape, separates into layers and progressively deteriorates within days.
Enviro LID	Moulded plastic	Snaps into place; growing medium needs to be at least 3.8 cm (1.5 inches) below top of container or the lid does not fit properly and may dislodge; expensive.

Previously, we made and used weed discs fashioned from commonly used synthetic weed fabrics. We suspect that there may be other materials that are inexpensive and potentially worthy of similar use. There is a good market for the right product.

Nonchemical alternatives will remain important as long as herbicide use is restricted, and may become even more so should there be similar restrictions in other jurisdictions.

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Forcing Environment Affects Epicormic Sprout Production from Branch Segments for Vegetative Propagation of Adult Hardwoods

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Successful rooting of cuttings of adult hardwoods often requires that propagules be removed from the more juvenile parts of trees. Latent or dormant axillary buds found in the bark of a tree usually possess some juvenile characteristics because these buds developed when the stem or branches were first formed. In this study we evaluated the effect of different forcing environments on production of epicormic sprouts from latent buds on branch segments taken from adult trees of four hard-to-root hardwoods. In addition, we evaluated whether these sprouts were suitable as softwood or semi-woody cuttings for vegetative propagation.

In the spring of 1997 and 1998, one to four lower branches were removed from each of three phenotypically superior trees of black walnut (*Juglans nigra*), white ash (*Fraxinus americana*), white oak (*Quercus alba*), and northern red oak (*Q. rubra*). Branches were cut into 24 cm long segments ranging from 2.0 to 8.0 cm in diameter. Branch segments were place horizontally in plastic 1040 trays filled with moist perlite and set in one of seven greenhouse forcing environments. Forcing environ-