

Panel Discussion: Using Shielded Sprayers to Control Weeds in Nursery Beds

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Abstract: Shielded sprayers have proven to be more effective than mechanical-type machines at controlling weeds in hardwood crops. Hand weeding times are reduced significantly, lowering costs and saving time for nursery personnel to do other jobs.

Keywords: Roundup™, Egedal, MTDC, Goal™, herbicides, bareroot seedlings

Controlling weeds in hardwood nursery crops has always been a major problem for nursery managers due to the lack of effective herbicides that will kill the weeds without damaging the crop. With the realization that the potential loss of methyl bromide could make the problem even worse, the Virginia Department of Forestry (VDOF) began looking at alternative methods of weed control in the late 1990s.

Mechanical cultivators, such as the brush hoe and triple share cultivators that would physically remove the weeds between drill rows, were purchased and tested. Although these pieces of equipment were helpful in removing weeds, they had drawbacks. Some weeds that were disturbed managed to live, and we felt that damage was occurring to fine feeder roots of crop plants. The violent spinning action of the brush hoe created dust and visibility problems for the operators and any small error in alignment would result in damaged seedlings.

As a result of our less than complete satisfaction with these units, we decided to purchase a shielded sprayer that could be used to apply Roundup™ directly to the weeds between drill rows. At the time, the only shielded sprayer (Figure 1) known to us was made by Egedal, a company based in Denmark. We purchased the unit and began testing it, tentatively at first, until we were comfortable that we would not kill the seedlings as well as the weeds. Roundup™ is a non-volatile chemical that does not produce vapors that can drift around and damage susceptible vegetation nearby. The shields prevent the spray from escaping and damaging seedlings. A row marker is suspended directly over the outside drill row to allow the tractor operator to keep the sprayer running properly between rows. The unit also has an operator seat and steering bar to help keep the unit lined up in the rows. An added benefit to using shielded sprayers over mechanical weed removal is that weeds growing in the drill row that extend some foliage into the inter-row spaces receive enough spray to eliminate them.

The VDOF has also cooperated in the testing and development of a shielded sprayer (Figure 2) designed and constructed by Keith Windell of the USDA Forest Service Missoula Technology Development Center (MTDC) (see also Vachowski, this proceedings). Mr. Windell and VDOF personnel tested his sprayer at the New Kent Forestry Center. After a few changes, the unit is now located at the VDOF Augusta Forestry Center where it is working fine. The sprayer has specially constructed shields that can be adjusted to varying widths, allowing the sprayer to be used in seedbeds having 4 to 8 drill rows. As part of the MTDC effort at technology transfer, this sprayer is available for others to try. Contact the author for more information. Design specifications and drawings will soon be available on the MTDC Web site allowing others to build their own sprayer if they desire.

The VDOF currently uses the shielded sprayer to assist in weed control in hardwoods in the following manner. In any seedbeds where our initial spray schedule of other herbicides has failed to adequately control the weeds, which occurs all too frequently, Roundup™ is applied to all inter-row areas and to the tractor paths using the shielded sprayer. An application of Vantage® or other grass control herbicide is applied to the beds to remove grasses from the drill rows where Roundup™ is not effectively applied. After these 2 applications are allowed to work, the beds are hand weeded until the beds are free of weeds. To prevent weeds from returning, Goal™ is applied to the beds of oak and other large-seeded species using the shielded sprayer at the monthly rate for Goal™ use. This method will take care of severe weed problems and usually allows the seedbed canopies to close in, preventing more weeds from getting started.



Figure 1—Egedal shielded sprayer used to spray Roundup™ directly to weeds between drill rows.

VDOF has found the use of shielded sprayers to be a highly effective tool in the constant battle to keep hardwood seedbeds free of weeds. Our hand weeding time has been significantly reduced, which has lowered our costs. If

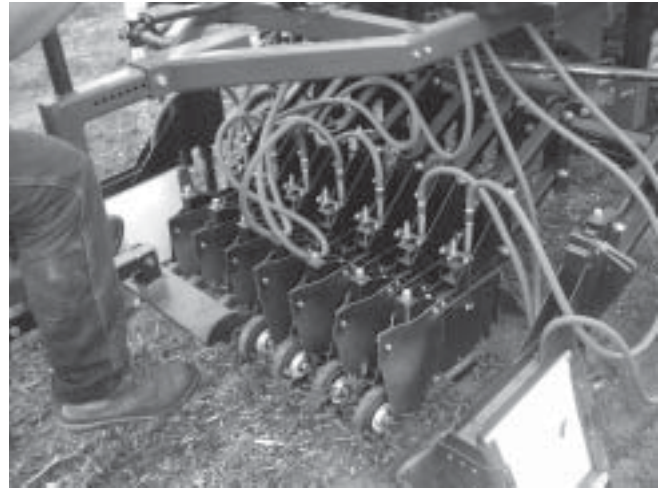


Figure 2—Shielded sprayer designed by USDA Forest Service Missoula Technology Development Center.

methyl bromide is lost, tools of this type will be absolutely necessary to control weeds in both hardwood and conifer seedbeds.