

LITERATURE CITED

- Jenkins, J.J. and J.P. Lyons.** 1988 Use of an expert system to derive pesticide groundwater contamination recommendations. Proc of Workshop. Integration of Expert Systems with Conventional Problem Solving Techniques Agriculture San Antonio, TX. Aug 10-12,1988.
- Goss, D.** 1988 Pesticide-Soil Interaction: Potentials For Loss USDA-SCS National Bulletin No 430-9-3, National Soil Survey Center, Lincoln, NE
- Williams, W.M.** 1988. Pesticide in Ground Water Data Base 1988 Interim Report. USEPA-OPP Environmental Fate and Effects Division, Washington D.C

MONDAY AFTERNOON 9 DECEMBER 1991

The afternoon session was convened at 1:45 p.m. with Dale Deppe serving as moderator.

Environment-Friendly Plant Production System: The Closed, Insulated Pallet

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Editor's Note: This paper was also presented in the Southern Region and can be found on page 304.

The following short papers by Richard Watson; Dale Deppe; Elwin Orton; Ralph Freeman; Dan Gilrein; Murdick McLeod and Scott Clark; and Margery Daughtrey, W.S Clark and M.T. Macksel were part of a **Helpful Hint—Solutions to Common Problems** panel moderated by Dale Deppe.

Use of Spunbonded Fabric Grow Covers in Deciduous Seedling Production

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During 15 years of deciduous seedling production my greatest obstacle to good germination and survivability has been our spring weather that is typified by prolonged cool wet spells followed by sunny days with many frosty nights. The frosts rarely killed outright, but rather seedlings appeared to get progressively weaker with each frost making them more susceptible to damping-off. Surviving plants usually grew slowly until the warmer weather of June.

After many trials over several years with different covers and supports I settled on the following system. In early spring prior to germination we cover individual seedbeds with 10 ft wide freeze covers weighing 1.5 ounces per yard and later with grow covers of 0.6 ounces per yard. These tarps, manufactured by Kimberly Farms, are made of UV-stable, white-polypropylene, spunbonded fabric and are porous to water and self-ventilating.

The tarps are supported on 1/2 in. PVC pipe hoops fitted on 18 in. steel stakes which have been driven halfway into the ground, 48 in. apart over our 36 in. wide beds. Hoops every 4 ft down the length of the bed provides a tunnel support for the tarps with a clearance of 18 to 24 in. at bed center. The sides of the tarps are secured down with boards and concrete blocks.

On frosty nights and during cool, wet weather tarp ends are closed down, otherwise they are left rolled up. We maintain 5 to 12°F warmer temperatures under these closed covers. After danger of frost has passed and with warmer weather we ventilate more as each species dictates by switching to the lighter tarps or by opening short sections of tarps in the middle of beds.

I have found not only better germination with less damping-off, but also much larger and more vigorous seedlings. For example, without fabric covers 1-0 *Cornus mas* ranged 2 to 9 in. tall, with fabric they are 6 to 24 in. tall.

Though porous to water, penetration is not uniform, particularly with brand new tarps. The heavier fabric especially sheds much water. Actually during the spring I believe this is of benefit keeping the beds drier and warmer, hence less prone to damping-off.

When seedlings are 2 to 6 in. tall the beds are uncovered for weeding, fertilizing and a thorough irrigation as well as for disease and insect control. Insect populations have been down considerably with a few exceptions. Irrigation also continues over covered beds as needed through the summer.