

To

Date

Tuesday August 25, 2009

*3 pages from Mario Lanthier*



The “2009 Farwest Show” was held in Portland August 20 to 22.

This meeting is held every year. Technical seminars are held every morning. Seminars target nurseries, garden centers and landscape professionals. The trade show has 1200 exhibitors, of which 60% are wholesale nurseries.

Attendance appeared to be down again this year but numbers were not released. All industry trade shows in the United States report a 20 to 30% drop in attendance this year.

For more information, visit <http://www.farwestshow.com/>.

### ***The trendy word: Sustainability***

The official definition, 1987 UN “World Commission of Economic Development”:  
”Meeting the needs of today without compromising the resources of future generations”.

- The magazine “American Nurseryman”, published by the American Nursery Association, devoted its August issue to “Marketing Sustainability” and “Green cities”.
- The magazine “Digger”, published by the Oregon Association of Nurseries, called the June edition “The Green Issue”, or ways that nurseries can adopt sustainable practices.
- Examples: composting to manage plant waste and using biological control.

“Successful” biocontrol programs in Oregon nurseries:

- releasing Hypoaspis mites against fungus gnats in greenhouse production /
- releasing predator mites for spider mite control in outdoor shrub production /
- releasing nematodes against root weevils in container production.

## **OPTIMIZATION OF SPRAY APPLICATION IN NURSERIES**

**By Heping Zhu, Agricultural Engineer, US Department of Agriculture, Ohio**

This is a prolific researcher for spray technologies in nurseries and greenhouses.

See a list of publications at <http://www.ars.usda.gov/pandp/people/people.htm?personid=34709>.

Nursery spraying at [http://www.ars.usda.gov/Research/docs.htm?docid=11213&pf=1&cg\\_id=0](http://www.ars.usda.gov/Research/docs.htm?docid=11213&pf=1&cg_id=0).

*“Pesticide spraying is the most complex practice in crop production today.”*

- Quality of application has many variables, including diversity of spray equipment / diversity of crops / diversity of plant sizes / diversity of pests / diversity of weather.
- Spray efficiency: minimum amount of water and pesticides to achieve optimum control.

*“Using full spray rates based on traditional orchard methods causes overspray in nursery crops of up to 4 times too much spraying.”*

- Current spray guidelines were developed for conventional tree orchards. Those guidelines assume trees 3.6 meters high, 3.6 m wide and 5.5 m apart (24,000 m<sup>3</sup> / ha).
- Many pesticides recommend a spray volume of 1000 L/ha (80 gal / acre). It is reduced for “low-volume spraying”, thus same amount of pesticide in 550 to 850 L water /ha.
- In studies with nursery field-grown Malus trees, at 700 L/ha, tree canopies received 4 to 15 times the spray deposits actually needed for adequate leaf coverage! Less than 30% of total spray volume deposited on target trees while 34% landed on the ground.
- At 230 L/ha, tree parts were “well covered” by the spray deposits.

*“Matching delivery rate to plant size is the most important parameter to justify spray cost.”*

$\text{Gallons per acre} = \frac{20 \times \text{tree width in tree row (feet)} \times \text{canopy height (feet)}}{\text{Distance between tree rows, or tractor alley (feet)}}$
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- 20 is a constant factor. Traditional spraying is 40. The researcher suggests 10, but “growers should try a 50% reduction in spray volume before going to 75% reduction”.
- This formula accounts for *more* spray volume when nursery trees occupy more space per acre, and *less* spray volume when nursery trees occupy less space per acre.
- For example, if spray volume is 1000 L/ha for mature trees 10 feet tall, then spray volume should be 500 L/ha for the same trees at 5 feet height.
- To reduce spray volume, use fewer nozzles, increase speed, or reduce pressure.
- In low humidity situations, minimum spray volume should be 190 L/ha (68 gal/acre).
- This researcher thinks pesticide rates can be reduced in the same proportion.

## **ENERGY-EFFICIENT GREENHOUSE PRODUCTION**

Dr. Erik Runkle, Michigan State University

More information at “greenhouse energy website” at [www.hrt.msu.edu/florAoE](http://www.hrt.msu.edu/florAoE).

### ***# 1: Don't cheat on heat***

- Crops grown under cooler temperatures take longer to produce.
- If using cooler temperatures, start production earlier, or start from larger plugs.

### ***# 2: Use a retractable energy or shade curtain***

- 80% of heat is used at night.
- A closed-weave curtain (35% shade) can reduce night heat loss 40 to 60%.

### ***# 3: Maximize light and provide supplemental light to plugs***

- Use high-pressure sodium lamps to minimize shading until mid-March.
- Cost is returned quicker with plugs (light shortens finish time) than with finished crop.
- Higher light levels help with more flowers, faster time to flower, increased stem.

### ***# 4: Provide long-days to long-day plants***

- At least 10 footcandles until early April, when days become longer.
- In general, provide long days to plants until flower buds become visible.
- Long-day plants include Fuchsia, Lobelia, Pansy, Petunia, Rudbeckia, Verbena.

### ***# 5: Improve insulation***

- Use IR and anti-condensation poly as the inside layer of a double-poly greenhouse.
- Inflate all double-layer roofs, to ensure blower fans continue to work through winter.
- Best payback: Repair compressed air leaks / Install AC poly / Insulate hot water piping

### ***# 6: Grow cold-tolerant and cold-sensitive crops separately***

- Cold-tolerant crop at 60 to 64°F (Alyssum, Campanula, Gaillardia, Petunia, Rudbeckia)
- Cold-sensitive crop at 72 to 75°F (Celosia, Coleus, Poinsettia, Purple fountain grass)

### ***# 7: Use greenhouse space efficiently***

- Avoid gaps between crops.

### ***# 8: Start with a larger / older plug***

- Heat and lighting costs are lower per plant during plug stage vs. finish stage.
- A larger plug takes longer to produce in propagation, but is closer to finish stage.

### ***# 9: Install horizontal airflow fans***

- Improves temperature uniformity by mixing warm air near roof with cool air near floor.
- Air movement helps reduce humidity on plants and possible disease problems.

### ***# 10: Use a positive DIF and increase the deadband***

- Increase day temperature, lower night temperature, to maintain the same average.
- However, positive DIF (warmer day vs night) results in more stretch and taller plants.