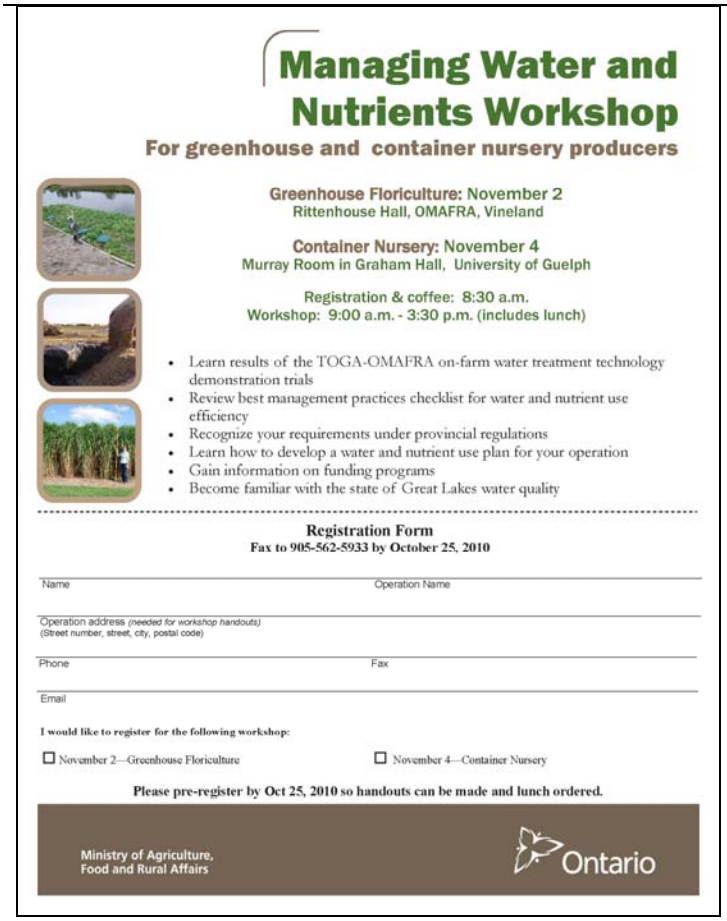
CropHealth Advising & Research
Rural P.O. Box 28098, Kelowna, B.C. www.crophealth.com

To Date

Tuesday November 9, 2010

3 pages from Mario Lanthier



Managing Water and Nutrients Workshop

For greenhouse and container nursery producers

Greenhouse Floriculture: November 2
Rittenhouse Hall, OMAFRA, Vineland

Container Nursery: November 4
Murray Room in Graham Hall, University of Guelph

Registration & coffee: 8:30 a.m.
Workshop: 9:00 a.m. - 3:30 p.m. (includes lunch)

- Learn results of the TOGA-OMAFRA on-farm water treatment technology demonstration trials
- Review best management practices checklist for water and nutrient use efficiency
- Recognize your requirements under provincial regulations
- Learn how to develop a water and nutrient use plan for your operation
- Gain information on funding programs
- Become familiar with the state of Great Lakes water quality

Registration Form
Fax to 905-562-5933 by October 25, 2010

Name Operation Name

Operation address *(needed for workshop handouts)*
(Street number, street, city, postal code)

Phone Fax

Email

I would like to register for the following workshop:

☐ November 2—Greenhouse Floriculture ☐ November 4—Container Nursery

Please pre-register by Oct 25, 2010 so handouts can be made and lunch ordered.

Ministry of Agriculture, Food and Rural Affairs

Ontario

This event was organized by the Ontario Ministry of Agriculture, Food and Rural Affairs (OMFRA).

It was the first public presentation of "Best Management Practices" developed by Ministry officials over the past 3 years. The one-day event was first presented for greenhouse floriculture, then repeated for container nurseries.

Both days were poorly attended. November 2nd was attended by 17 persons (10 from greenhouses, 7 from the project). November 4th was attended by 26 persons (20 from nurseries, 6 from the project).

The "Clean Water Act"

The Ontario "Clean Water Act" is a recent legislation covering many aspects of water quality, including drinking water and irrigation water. Regulations cover the use of water (a permit is required for irrigation over 50,000 liters per day) and disposal of water (a permit is required for surface discharge of used water over 10,000 liters per day).

One important consideration is agriculture release of nutrients into ground water. Nitrates and phosphorus make their way to the Great Lakes, with a negative impact on wildlife. Officials at Ministry of Environment have started farm inspections and issue orders when they find non-compliance with the regulations.

Objectives of project

The “Best Management Practices” aim to reduce the amount of nutrients discharged into ground water via better practices of fertilization and irrigation. The practices apply to container production and greenhouses, not field production.

There are 90 “BMP”. Many are recopied from the “Environmental Farm Plan”.

In general, nurseries and greenhouses that generate “nutrient rich water”:

- Must have storage on-site for the discharge;
- Must manage to minimize off-target movement of the discharge;
- Must have abatement plan to clean the discharge before releasing into groundwater.

Thus, nurseries and greenhouses should aim for the following:

- Minimize the amount of water to treat – do not mix clean water with discharge water
- Close the system – do not discharge water into the environment before treating

Fertilization (30 suggested practices)

Growing substrate (6 suggested practices)

- Test media for pH and nutrients / test for porosity / check for contaminants
- Optimize growing substrate to increase water holding capacity
- Bulk storage, mixing, potting areas are under cover to reduce runoff
- Runoff from containers is collected / runoff from potting areas is captured

Fertilizer management (16 suggested practices)

- Avoid using fertilsers with equal N-P-K / maintain K:Ca:Mg ratio of 4:3:1 weight basis
- Select CRF (controlled release fertiliser) with time-release matched to the crop cycle
- Incorporate CRF into growing media / top dress CRF directly into pots, not broadcast
- Use soluble fertilizers with trickle or drip irrigation only, or 100% capture of leaching
- Match nutrient supply to crop type and stage
- Do not exceed manufacturer rates
- Reduce volume of water applied during top irrigation to reduce leaching fraction

Fertilizer storage (7 practices)

- Construct storage for bulk fertiliser according to regulations / use secure containers
- Maintain an inventory of fertilizer purchased and used
- Ensure containment around fertilizer storage
- Have a written and posted contingency plan for spills
- Ensure regular inspection of fertilizer injectors and pumps
- Avoid stockpiling substrate pre-mixed with CRF during growing season

Management (1 practice)

- Complete a nutrient use plan for each operation

Irrigation (49 suggested practices)

Water sources (3 suggested practices)

- Capture and store rainwater and snowmelt for use in irrigation
- Test wells for sustainable pumping rates

Water quality (4 suggested practices)

- Analyze water sources and mixed fertilizer solutions for EC and pH, pathogens
- Equip all water taking systems with anti-backflow devices to prevent contamination

Water quantity (3 suggested practices)

- Install water meters for all water sources, track volumes used during crop production
- Create a contingency plan to deal with issues of threatened water availability

Irrigation water treatment (4 suggested practices)

- If water quality is a problem, install a purification system to remove excess elements
- Collect water enriched with nutrients and reuse on a less sensitve crop
- Install disinfection systems for the recycling solution for disease prone crops

Irrigation water management (16 suggested practices)

-Irrigation systems should be designed by a qualified individual
- Check irrigation nozzles regularly for plugging, build-up of deposits, spray patterns
- Consider automatically controlled irrigation systems to improve accuracy
- Use evalporation pans, rain gauges and shutoff devices to manage scheduling
- Irrigate outdoor crops in early morning to reduce evaporative losses

-Create zones of plants with similar ertility and irrigation needs
- Place plants needing the most water and nutrients further away from surface water
- Ensure that empty production areas are not irrigated
- Ensure close pot spacing (canopies touching) to intercept most of the irrigation water
- Use the most efficient irrigation system possible: drip vs sprinkler vs overhead
- Manage leachate volumes so no more than 15 to 20% of water applied is leached
- Apply water in shorter pulsed cycled to reduce total water used

Irrigation water runoff (8 suggested practices)

- Line sandy soil, growing beds and channels to maximize capture of irrigation water
- Analyse irrigation water runoff for nutrient concentration
- If storage of runoff is not practical, filter it through sediment basis or vegetated areas

-Install safety fencing on all ponds near public areas

Water treatment systems (11 suggested practices)

These systems are experimental and few are in commercial use. Examples are
Drain inlet insert / Sedimentation ponds / Biofilter with wood particles /
Constructed wetlands / Vegetated filter strips / Bioretention (vegetated) swales