Production Times

UF UNIVERSITY of FLORIDA
IFAS Extension

Fall 2008
Volume 15, Number 3

See the newsletter in color at: http://cfextension.ifas.ufl.edu

Manganese deficiency in Camellia

Plant Clinic Problem of the Quarter -

We are seeing more micronutrient problems lately. This may be because people are holding plants longer and do not want to push them with fertilizer. Plants can survive without much nitrogen fertilizer, but you must provide the necessary micronutrients. Media pH can also affect micronutrient availability—too high a pH makes many unavailable. Check it out at:
http://hort.ifas.ufl.edu/nutdef/
http://edis.ifas.ufl.edu/EP325
http://www.ces.ncsu.edu/depts/hort/floriculture/def/
See all the Plant Clinic diagnoses at:
http://cfextension.ifas.ufl.edu/agriculture/plant_clinic/index.shtml

Save Money on Fertilizers and Water

By Juanita Popenoe

With the sharp increase in cost of fertilizers and the scarcity of water, you cannot afford to waste any. Yet many growers are wasting fertilizer by washing it away with excess irrigation water. Less fertilizer is needed if you irrigate less and plants can survive with much less nitrogen fertilizer than usually thought as long as you supply micronutrients.

Growers using less water by following Best Management Practices (BMPs) have found that they also need less fertilizer. By making your irrigation system more efficient and uniform, you can apply much less water. The BMP Guide at http://hort.ifas.ufl.edu/bmp/containerBMP.pdf can help you reduce your water consumption. **To manage irrigation more efficiently:**

1. Use rain gauges to measure precipitation—FREE water, and reduce your irrigation appropriately. Not everyone has a rain shutoff device for their irrigation system, but you can do it manually.
2. Only irrigate as much as plants need, not a set amount every time. You can use soil sensors to determine this, or calculate it based on evaporation. Details for calculating are at http://edis.ifas.ufl.edu/ae078, although you must know your potting media water holding capacity for these calculations. This is a little work, but worth it if it saves you money. Check out http://mrec.ifas.ufl.edu/rcb/Drought/maximize.htm for details on maximizing the amount of

(Continued on page 2)

Workshop: Surviving Difficult Times in the Green Industry August 19, MREC. Free Program. Register at http://cfextension.ifas.ufl.edu/calendar.shtml. Limited seating.

Hold the Date! Fertilizers and Amendments: What you need to know to save on water, fertilizer and potting mix. Tuesday October 7, 2008 MREC.

Expanding Your Plant Palette November 19, 2008. Leu Gardens Orlando. Growers needed for plant displays of new available material too.

(Continued from page 1)

water that gets used by your crop and http://mrec.ifas.ufl.edu/rcb/drought/howmuch.htm to see how much water your plants really need.

3. Change your potting media to hold more water. Using more fine material like Canadian Peat or Calcined clay can hold more water and make it available to your plant for longer time periods. Watch out for increased chances of root diseases if the roots are wet longer though. Research has shown that adding 11% (by volume) calcined clay instead of sand to a pine bark media required half the phosphorus to produce a good quality plant and reduced water use 25%. Coarse material holds less water and will require more frequent light irrigations to reduce water lost out the bottom of the pot. Do not water all media the same.
4. Use cyclic irrigation—calculate how much water your crop needs based on # 2 above, and supply portions of the total over the day instead of all at once. Water should never leave the bottom of the pot if done correctly.
5. Use micro-irrigation for larger pots. Avoid overhead irrigation unless pots are jammed. Smaller pots can be sub-irrigated for the best water savings. If you must overhead irrigate, make sure your system is uniform (see below).
6. Group plants according to water needs. Plants that require more water should be in a zone where you can apply more. Don't water all the plants with the same amount that is required for your water hogs. Opinions on plant water needs can be found at http://mrec.ifas.ufl.edu/rcb/drought/Opinions%20of%20nursery%20irrigation%20requirements.pdf

To make your irrigation system more uniform:

1. Design the system so that the end of the pipe has the same pressure as the beginning. Pressure loss in a pipe increases with pipe length. In long lengths, the end of the pipe should have a smaller diameter to maintain the water pressure. If you are irrigating based on water that gets to the plants on the end of the line when the pressure is not uniform, you are applying too much to the plants at the beginning of the line. In Lake County the mobile irrigation lab can check this all out for you for free. Just call Bobby Brown at (352) 343-2481 ext 6 to schedule an appointment.
2. Inspect irrigation orifices at least annually for wear and clogging. This is a really easy way to save water.
3. Use windbreaks if you are using overhead irrigation in a windy site.

Ways to save fertilizer:

1. Use media amendments that retain nutrients and make them slowly available (like calcined clay).
2. Use organic sources like humates to slowly release nutrients.
3. Sub-irrigated plants should be fertilized at half the recommended rate. Sub-irrigation has been shown to produce better plants without any lost (leached) nitrogen.
4. Base fertilizer application on plant need.
5. Do not broadcast fertilizer over spaced pots.
6. If using fertigation, apply the fertilizer at the end of the cycle so that the fertilizer is not washed from the pots by the irrigation water. (this assumes that you are applying water until it runs out the bottom, which you should not do).
7. Recent communications with researchers has indicated that half the amount of nitrogen fertilizer (100 ppm) may be used without damaging the plants as long as the full micronutrient fertilizer amount is applied.

♦ **Production Times** is brought to you by:

Juanita Popenoe, Ph.D.
Lake County, Woody Ornamentals/Multi-County
(352) 343-4101

Lelan Parker, M.S.
Orange County, Greenhouse/Foliage Multi-County
(407) 254-9200

This material is provided as one of the many services relating to the educational programs offered to you by this agency. Our statewide network of specialists is prepared to provide current information on agriculture, marketing, family and consumer sciences, 4-H, marine science, and related fields. We will be happy to help you with additional information upon request.

Use of trade names in this newsletter does not reflect endorsement of the product by the University of Florida, Institute of Food and Agricultural Sciences, or the Florida Cooperative Extension Service.

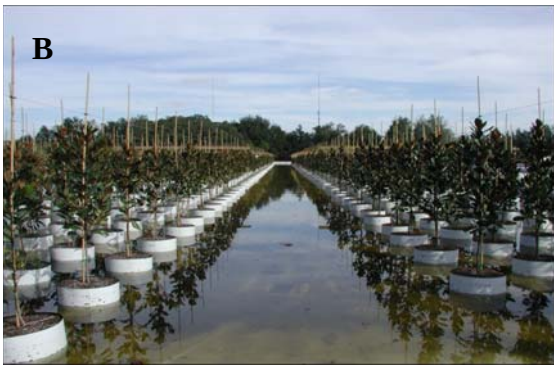
The Institute of Food and Agricultural Science (IFAS) is an Equal Employment Opportunity Institution authorized to provide research, educational information and other services only to individuals and institutions that function without regard to race, color, sex, age, handicap or national origin. U.S. DEPARTMENT OF AGRICULTURE, FLORIDA COOPERATIVE EXTENSION SERVICE, UNIVERSITY OF FLORIDA, IFAS, FLORIDA A. & M. UNIVERSITY COOPERATIVE EXTENSION PROGRAM, AND BOARDS OF COUNTY COMMISSIONERS COOPERATING.

Irrigation Systems for Reduced Runoff

adapted from article by J. Sharma, D.Z. Haman, and R.C. Beeson, Jr. in NFREC News

Subirrigation Based Technologies - This irrigation method utilizes capillary action within the substrate to draw water from a source through drain holes at the bottom of a container. Successful use of capillary systems depends on the capillary rise of the substrate. Substrates used in outdoor production generally have poor to moderate capillary rise. Thus capillary systems are generally limited to production of #3 containers or smaller, depending on the location of roots relative to the bottom of a container. However, for plants nearing market size, where roots have colonized the container volume, subirrigation can be used for most container sizes. By using flooded trays or capillary mats it is possible to recycle nutrients along with the water. This results in reduced usage of water and fertilizer, and in reduced runoff at a nursery.

Subirrigation systems are infrequently used for outdoor production of containerized plants at commercial nurseries. However several nurseries in Florida are successfully using subirrigation principles. The most versatile example in terms of container size is the Holloway Irrigation System in use at Holloway Tree Farm. This is an ebb and flow system on a large scale compared to the more common greenhouse system (Figure A), in which plants are placed on an impermeable surface in graded basins (Figure B) that are periodically flooded for irrigation. Water depth is adjusted to overcome low capillary rise, expanding its application beyond #3 containers. Excess water is then returned to the retention reservoir. Runoff resulting from rainfall is also collected in the reservoir for future irrigation use. Consequently, dis-solved nutrients are retained in the pond, eliminating groundwater and minimizing surface water pollution due to deep percolation and runoff, respectively. Nutrients are only released to the environment during periods of exceptionally heavy rainfall. As in greenhouse ebb and flow systems, unutilized nutrients in the retention water are reapplied at each irrigation event. The amount of water released from a reservoir strongly depends on its size and water level management.



Other subirrigation systems like the capillary mat system (Figure C) also show promise for outdoor as well as greenhouse applications. Small pots are typically the most wasteful of irrigation water because they cannot easily have individual irrigation emitters in each pot, but the capillary mat system is perfect for them. Several local growers are finding that it saves water, fertilizer, and herbicide, but it also takes some adaptation. Pots with enough holes on the bottom to allow the water up, finer soil to provide the capillary spaces for water to move up, and different management practices are required.

Take Hold, With Biocontrol

By Lelan Parker

The primary method of controlling pests in ornamental crops is chemical control. While chemical control may be effective, its use may lead to pesticide resistant pests. You must also contend with phytoxicity, high labor costs and reentry periods. Sometimes there may be an occasional loss of a pesticide due to removal from the shelf by the producer or even health hazards. Biological control, also referred to as biocontrol, is projected to be a solution to some of these problems. Biological control uses natural enemies to reduce populations of harmful pests.

Biocontrol is most effective with an Integrated Pest Management (IPM) program. IPM is a process using a variety of techniques for pairing the risks between pests and pesticides to achieve long term control of pests. IPM is not intended to eliminate pesticide applications, but rather provide a rotation of different methods to suppress and control pest populations. Biocontrol programs are currently available and used for the management of the twospotted spider mite, *Tetranychus urticae* Koch, in many ornamental production systems. Useful predatory mites for controlling the twospotted spider mite are *Neoseiulus californicus* and *Phytoseiulus persimilis*. Significant research is still needed for pests such as thrips, aphids, mealybugs and scales before biocontrol programs can be implemented. Although many of the aforementioned pests have good natural enemies outside the greenhouse, their effectiveness under greenhouse conditions may be compromised, or some beneficial insects may not be commercially available.

Before starting a biocontrol program a foundation must be prepared by first establishing a scouting program. Next, make a detailed list of all potential pests and methods for management. Also, prepare a list of chemicals safe to use on the crop and make a subset of these chemicals that are relatively safe to the beneficial insects you intend on using. Be sure to find reliable sources for the beneficial organisms and other materials needed. Having a consistent source for guidance is also extremely valuable.

For further information go to: http://mrec.ifas.ufl.edu/lso/Biological%20Control%20of%20Foliage%20Pests.htm

2008 Planning Calendar

Links to most programs and agendas may be found at: **http://cfextension.ifas.ufl.edu** or the UF Extension Calendar at **http://calendar.ifas.ufl.edu/calendar/index.htm**

July

26—Review & Exam Limited Certification Licenses. Tavares. Contact Maggie Jarrell 352.343.4101.

August

7-9— Southern Nursery Association Trade Show. Atlanta. http://www.sna.org.

19—Surviving Difficult Times in the Green Industry. Apopka. Contact Maggie Jarrell 352.343.4101.

21—Review & Exam Ornamental/Turf, Private App. Licenses. Orlando. Contact Celeste White 407.254.9200.

26—Review & Exam ROW and Aquatic Licenses. Tavares. Contact Maggie Jarrell 352.343.4101.

September

4—Grades and Standards for Growers. DeLand. Contact Kurt Davis 407.295.5133 or Dana Venrick at **386.822.5778.**

25-27—FNGLA's The Landscape Show. Orlando. http://www.fngla.org