



NURSERY • CITRUS • GOLF COURSE

GREEN-UP NEWS



By Dana Venrick, Commercial Horticulture Agent II

Bi-Monthly Newsletter

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IMPROVING PRODUCTION WITH BETTER CHEMIGATION AND FERTIGATION

Wednesday, October 11, 2006
10:00 a.m – noon

Catered Lunch Provided by Brian's Bar-B-Q
Sponsored by Volusia County Extension

* R.S.V.P.

Pidgeon Ferneries
1440 Harper Rd.
Pierson, FL

Directions: From Hwy 17 between Pierson & Barberville, go west on Emporia across Blackburn, continue forward on Peterson Rd., (2 ½ miles from Hwy 17), then left on Harper Rd., 300 yards on the right.

Coordinators: Dr. Robert Stamps, Dana Venrick, Larry and Roy Pridgeon
District Conservationist, NRCS, George Johnson will be available to answer questions about water conservation projects.

Three groups will determine efficiencies for three types of irrigation heads. Dr. Stamps will follow-up the field exercises with suggestions on how to improve distribution uniformities, and improve fertigation for better pest control and chemigation for better nutrition.

• **R.S.V.P Dana Venrick or Jeanne Blanchard 386-822-5778**

UNIFORMITY OF IRRIGATION SYSTEMS

The performance of irrigation systems with overhead sprinkler heads is described by **uniformity application efficiency**. A well-designed system will have a distribution uniformity (DU) of 80% or better. To avoid over watering/fertigation/chemigation or under watering/fertigation/chemigation by sprinkler heads in an irrigation zone, it is critical that the irrigations system be designed for high uniformity and that this high uniformity be maintained.

Uniformity in Irrigation

The coefficient of uniformity is an indicator of how equal the application rates are throughout the nursery or fernery. A high coefficient indicates that they are very similar in value and water is distributed evenly to all plants.

A low coefficient of uniformity (where application rates are not similar in value) can be a result of various factors:

- Incorrect delivery pipe diameters from submains to laterals.
- Poor selection of heads and nozzles
- Nozzle clogging
- Too high or too low operating pressure
- Effects of wind on sprinklers
- Changes over time in such things as pump efficiency, pressure regulation, and nozzle size
- Sprinkler system performance should periodically be evaluated by measuring **operating pressures, uniformity of water application, and application rates**. Field evaluation should be conducted at least annually to monitor changes in system performance and to identify the need for repairs or maintenance. ¹ A high coefficient of uniformity means you won't have "hot spots" and "cold spots" in the nursery/fernery caused by too little water in some areas and too much in others. Too little water may mean the fertilizer is not reaching the root zone and not enough pesticide is reaching the foliage. Too much water may mean that the fertilizer is being leached below the root zone (and perhaps to the ground water) and too much pesticide is reaching certain areas.

Irrigation System Calibration

One easy way to determine the water application rate of an irrigation system is to run the system with a calibrated, properly functioning flow meter for a certain amount of time. ²

Then, knowing the number of gallons of water applied and the size of the irrigated area, the water application rate (inches per hour) can be calculated:

$$\text{Water application rate (in inches per hour)} = \frac{(\text{gallons applied} \times \text{60 minutes per hour})}{(\text{acres irrigated} \times \text{minutes irrigated})}$$

27,154 gallons per acre – inch ²

This calculation is based on the fact that each acre-inch is equal to 27,154 gallons of water. ^{1 2}

Another way to calibrate a system, without using a flow meter, is to place a straight-sided, flat-bottom (e.g., coffee cans) randomly throughout the nursery/fernery and run the sprinkler system for a known period of time. The cans should be placed on supports, so that they are just above the foliage canopy. Measure the depth of the collected water in each container and average those numbers. The water application rate, in inches per hour, is calculated:

$$\text{Water application rate (in inches per hour)} = \frac{\text{average depth (in inches)} \times \text{60 minutes}}{\text{minutes irrigated} \times \text{hour}}$$

Sprinkler Irrigation Uniformity

Not only do you need to know how much water is being delivered by an irrigation zone, but the uniformity of the delivery. Uniformity is either reported as Distribution Uniformity (DU) or Christiansen's Uniformity Coefficient (UC) 1

For simplicity purposes let's look at how to determine DU. To determine DU, place perhaps 16 catch cans (as described earlier) in a square grid between four sprinklers. Run the irrigation system for a set amount of time. Then the average depth of water in all the cans is calculated. Then the average depth of the 25% (1/4) of the cans with the least amount of water is calculated. The DU is then calculated:

$$DU = \frac{\text{average low quarter depth} \times 100\%}{\text{Overall average depth}}$$

For high value crops that are chemigated, the DU should be greater than 80%. An irrigation system with a DU of less than 60% will not produce a quality crop because uniform distribution of soluble fertilizers and pesticides is not possible.

For complete information about irrigation management, refer to the below references. Both are available on-line or call me at 386-822-5778 for copies. Better yet, attend the October 11th Irrigation/Fertigation/Chemigation Field Day at Pidgeon Ferneries. R.S.V.P. today and join us for education and lunch.

1 D.Z. Hamon, A.G. Smajstria and D.J. Pitts. 1997. Uniformity of Sprinkler Microirrigation Systems for Nurseries. IFAS Ext. Bul.321, University of Florida, Gainesville, FL. Available on line:
<http://edis.ifas.ufl.edu/pdffiles/AE/AE09000.pdf>

2 Robert H. Stamps. 2001. Irrigation and Nutrient Management Practices for Commercial Leatherleaf Fern Production in Florida. IFAS Ext. Bul. 300, University of Florida, Gainesville, FL. Available on line:
<http://edis.ifas.ufl.edu/pdffiles/EP/EP02700.pdf>

FNGLA MEETING

**The Central East Coast
Chapter of FNGLA
will meet:**

Wednesday, October 4, 2006

Place: River Grille

950 N. U.S. Hwy 1

Ormond Beach

(3 miles north of Granada Blvd.)

Meet & Greet at 6:00 p.m.

Dinner at 7:00 p.m.

R.S.V.P. Curtis Davis

(407) 322-5133

TRAIN THE TRAINER

Wednesday, October 11, 2006

3:00 p.m. – 5:00 p.m.

Volusia County Agricultural Center

Conference Room 1

3100 E. New York Avenue

DeLand

Call Dana Venrick, Trainer at

386-822-5778.



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Your email should open and if you send this e-mail message, you will automatically be signed
up for the List Service

Dates To Remember



September

- 27** **Temik Applicator Meeting**, Program/Dinner starts at 5:00 pm at the Putnam county Ag. Center – East Palatka, Program and Dinner sponsored by Bayer CropScience Call Edsel Redden (386)329-0318
- 28-30** **Florida Nursery & Allied Trade Show (FNATS)** Orlando, FL 407-295-7994
www.fn gla.org/info@fn gla.org

October

- 4** **FNGLA Central East Coast Chapter meeting** (See details on page 2)
- 11** **Foliage Forum** (See front page for details)
- 11** **Train-the-Trainer** (See details on page 2)
- 17-19** **Agricultural Exposition** Moultrie, GA 229-985-1698 www.sunbeltexpo.com/info@sunbeltexpo.com
- 24** **Limited Pesticide Certification Training and Testing (Limited Commercial Landscape Maintenance (LLM) or Limited Lawn & Ornamental (L&O)** Volusia County Extension Service Auditorium. Call Dana Venrick or Jeanne Blanchard for a registration form 386-822-5778.

November 30 thru

- December 1** **2006 Great Southern Tree Conference Hilton Hotel and Conference Center, UF Gainesville**
<http://www.fn gla.org/gstree/gen-info.asp>

Sincerely,

A handwritten signature in black ink, appearing to read 'Dana Venrick'.

Dana Venrick

Extension Agent II – Commercial Horticulture

If you would like more information on upcoming programs or want to receive publications please call, fax, or e-mail me. All Extension Service programs and information are free and open to the public regardless of race, color, sex, age, disability, religion, or national origin.