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NORTH FLORIDA RESEARCH & EDUCATION CENTER
SUWANNEE VALLEY—MARIANNA—QUINCY

NFREC NEWS

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Ag Adventures Awards

Ann Blount-Forage Specialist, **Holly Ober**-Wildlife Ecology Specialist, **Steve Olson**-Vegetable Specialist, **John Allen Smith**-Farm Manager, and **David Wright**-Small Grain Specialist, along with five North West District faculty, were recognized by the Florida association of Extension 4-H Agents for Excellence in Teamwork on the Ag Adventures program.

During the "Extension Professional Association of Florida" meeting held in Orlando, Florida from August 31 through September 3, 2009, the Extension Professionals recognized their peers for scholarly work performed throughout the year.

Extension Specialists and Agents surrounding the North Florida Research and Education Center (NFREC) implemented an Ag Adventures Program designed to teach 4th-6th grade students in the North West District of Florida about local agriculture through in-class, in-field, and hands-on learning.

Local teachers prepared their students with in-class experiences before Ag Adventures Day, a field trip to NFREC where they would be exposed to seven target topics at five different stations. Each station involved a short discussion about its theme, and culminated in a hands on experience and take home sample.

Teachers and students alike were excited to return to their schools from Ag Adventures Day with the promise that they would be able to continue their inquiry. Indeed the investigations continued, and as a result local teachers and students are more aware of agriculture and our team of specialists and agents have an annual event on their hands!

Team Members also included the following agents; Monica Brinkley, Liberty County Family and Consumer Science and 4-H Agent, Yolanda Goode, Gadsden County 4-H Agent, John Lilly, Jefferson County 4-H Agent, Whitney Cherry, Calhoun County 4-H Agent, Judy Ludlow, Calhoun County, County Extension Director, Roy Carter, Gulf County, County Extension Director, and Sherri Hood, Wakulla County 4-H Agent. [Vicky Morris]

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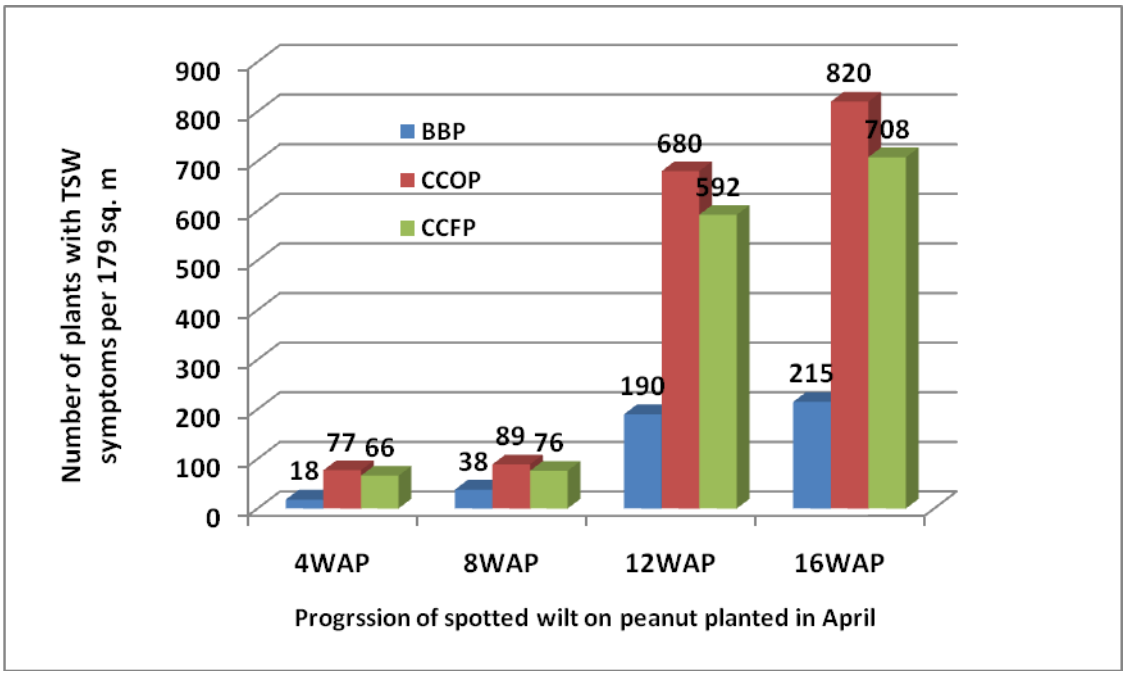
Special points of interest:

- **November 5, 2009 - Agricultural Enterprise Workshops for North Florida**, North Florida REC, Live Oak, FL. For more information contact Karen Hancock at 386-362-1725 x 101, khancock@ufl.edu or Laurie Osborne 386-362-1725 x 102, losborne@ufl.edu.
- **November 13 or 14, 2009 - Advanced Topics in Hydroponics**, North Florida REC - Suwannee Valley, Live Oak, FL. For more information contact Karen Hancock at 386-362-1725 x 101, email khancock@ufl.edu or Wanda Laughlin at 386-362-1725 x 104, email solus@ufl.edu.

For information on other events happening around the state go to http://calendar.ifas.ufl.edu.

Effect of Planting Date Following Bahiagrass on Tomato Spotted Wilt of Peanut

One of the best control strategies for managing tomato spotted wilt of peanut (TSW) is to plant later in the season. Before TSW became severe in 1980's in the southeast, peanuts were planted in mid April. However, researchers found that the disease could be avoided if the planting date was moved to mid May, a practice the growers quickly adopted. Since then, varieties have been developed that are less susceptible to the thrips-vectored virus that causes the disease. Also, the NFREC established a systems level project to examine the benefits of incorporating sod into row crop production with a 4 year rotation (2 yrs of bahiagrass-peanuts-cotton). This sod-based-rotation study is now a multi-state project with cooperators from across the southeast. One of the observations documented by UF PhD plant pathology student Francis Tsigbey was that peanuts in the sod rotation had significantly less TSW than in the conventional (cotton-cotton-peanut) rotation. The next logical question was then could growers return to the earlier May planting date if planting after bahia grass. In 2008 plots were established to test this at both NFREC-Quincy and NFREC-Marianna. At both sites TSW was much lower after bahiagrass rather planted early or late. The experiment is being repeated in 2009 with similar results. [Jim Marois and David Wright]



Cropping sequence effect on number of plants showing TSW symptoms on peanut planted in mid-April in Marianna during 2008. Weeks after planting (WAP), cropping sequence: bahiagrass-bahiagrass-peanut (BBP), cotton-cotton-winter oat-peanut (CCOP), cotton-cotton-winter weed fallow-peanut (CCFP).

What to Think About When Culling Cows From the Herd

Culling cows from beef operations frequently is thought of as a necessary evil for beef producers. Annually, producers remove 10 to 25% of their cow inventory and replace those cows with new breeding stock in the form of pregnant replacement females (raised or purchased) or purchased pregnant cows. Removing the unhealthy, nonpregnant, old, or poor performing cows from the herd seldom is thought of as a significant financial contributor to a beef operation. However, with some strategic planning producers could enhance the value of their cull cows significantly by understanding numerous management and market factors.

Factors that producers use for culling cows can be broken down into several areas:

1) Biological Factors: When understanding some of the biological selection tools producers should consider the ability of each cow to conceive regularly to ensure that she produces a calf annually.

2) Market Factors: With a clear understanding of the market trends producers have an opportunity to realize significant value in cull cows. Therefore, strategically managing cull cows and marketing them when cull cow (slaughter cow) prices are higher would be a more economically desirable alternative.

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3) Herd Composition: Managing herd composition relies on future culling decisions and future herd size considerations. Therefore, significant thought needs to be taken into account when making large herd composition changes.

4) Management Factors: These factors make potentially significant economic changes to the culling strategy. Identifying non-pregnant cows as soon as possible after the breeding season allows producers to make culling decisions that will have significant economic impact. In a spring calving herd nonpregnant cows can be eliminated in early fall when cow prices are greater than late fall and producers do not need to feed the cow valuable feed resources for an additional six to ten months before realizing that they have fed $150 to $400 feed to feed a cow that has not produced a calf.

5) Cost of Production Factors: Naturally cost of production should be on the mind of every producer. The culling decision needs to weigh the merits of cost of production on the culling decision.

Making a decision to cull should be calculated to ensure that the optimum economic return can be realized. No culling decision can be made without a sound record keeping system to understand production and fertility history of cows. In addition, culling should not simply be a choice to eliminate poor animals from the herd, but also to enhance the economic return of a valuable income stream, and to plan for future management and market strategies.

Producers should consider the advantages of pregnancy diagnosis, early weaning, and strategic feeding to enhance the value of their cull cows. In addition, they should also focus on the market history and future market trends prior to simply accepting poor cattle markets and submitting cattle to an auction when prices are low. [Cliff Lamb]

The Integration of Beef Cattle Into a Peanut and Cotton Crop Rotation that Involves a Perennial Grass - Preliminary Results

Farmers in the southeastern USA know that the yield of crops such as peanut can be improved following a perennial grass such as bahiagrass (*Paspalum notatum*). Yields following bahiagrass are usually greater than that obtained following an annual row crop such as cotton. Farmers; however, seldom include perennial grass in a rotation since little information is available showing how these grasses can economically fit into a crop rotation system. A long term multi-state and multi-discipline rotation project has been ongoing by the Universities of Florida and Georgia, and Auburn University since 2000. This project examines the impact of short-term (2-year) bahiagrass added to a rotation scheme with peanut and cotton (commonly referred to a sod-based rotation – or SBR). Results to date have been very encouraging in many respects, including improvements in crop yield, water quality, soil health, risk management, and total farm economics.

Since bahiagrass is used in the rotation, it seems logical that beef cattle should be included in the overall rotation as they would be able to utilize the bahiagrass as well as the annual winter cover crops. In much of the previous SBR research, the bahiagrass was harvested as hay. Computer simulations have shown that integrating cattle into the system can increase profit potential, more so than selling bahiagrass (and other forages) as hay. However, there are many questions and concerns about integrating beef cattle into a rotation of perennial grass and row crops. How best to integrate cattle into the rotation and how grazing may influence various aspects of the system have not been extensively studied. Some concerns include education about infrastructure needs, information on year-round forage availability and needs, cattle stocking densities, etc.

Of the seven sites that contribute to the multi-state SBR project, two were developed to evaluate beef cattle integration. These two sites allow us to effectively study and demonstrate the integration of cattle into a sod-based crop rotation system, and to determine the impacts of cattle grazing, cattle traffic, and manure on various soil physical and chemical properties, crop water use efficiency, and subsequent crop growth and yield, as well as cattle carrying capacity and cattle performance.

The two sites are located at Marianna, in northwest FL and at Headland in southeast AL. The irrigated 140 ac field at Marianna and the 50 acre irrigated field at Headland are both divided into four smaller but equal size fields. Both sites follow the same rotation sequence of two years of bahiagrass and one year each of peanut and cotton. The rotation sequence is newly planted bahiagrass the first year (bahia-1), one year old bahiagrass the second year, (bahia-2), peanuts the third year and cotton the fourth, and the cycle repeats. Both sites have three 50 ft by 50 ft areas marked by GPS coordinates within each of the four fields. These areas are fenced to exclude cattle whenever cattle are present in a field in order to evaluate the impact of grazing and cattle traffic have on subsequent crop yields, soil conditions, etc. Both sites have a set number of mature cow/cow calf pairs integrated into the rotation year-round (referred to as testers). Cattle integration started in 2005 and data collection started in 2007. The number of testers for each site was set after the initial two years. Extra cows (cow/calf pairs) are used at both sites to graze excess forage in the spring. Focus for this newsletter is on the Marianna site.

The crop rotation system for summer and winter at Marianna is given in the Table 1 below. Headland follows a similar system. The cattle graze bahia-2 starting in May, continue grazing until Aug., graze bahia-1 until frost (Nov.), and are then fed hay (rye/oat or bahiagrass) until calving (Jan. thru Mar.). After calving, cows and calves graze winter cover crops (oat and rye mix) until May, and the cycle repeats. Calves are weaned in Aug. Hay is harvested from Bahia-2 in Oct. and this field is planted into rye and

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oat mix (sod-seeded) which is harvested for hay in April. The aim of the cattle portion of the system is to minimize the importation of outside feeds and forage. So far, only cattle mineral supplements have been imported.

Average forage yields (dry basis) by month for the first two years of the study at the Marianna site are summarized in Figure 1 below. As expected, available forage for grazing peaked in early spring and mid-summer. The forage yields for the winter-spring represented two quadrants whereas the summer represented one quadrant, thus the large spike in forage availability in early spring. In all, we are able to support 55 mature beef cows (or cow calf pairs) year round at the Marianna site. Stocking density is 1.5 cow/cow calf pairs per acre at Marianna. We had as many as 90 cow/calf pairs during early spring – 55 tester plus 35 extras. There were two time periods in which hay was fed each year – late fall to early winter and a short period during late spring. More than enough hay was produced at the Marianna site to support the 55 year-round tester cows. In the SBR system, there appears to be ample forage, especially during the spring, for the cows/cow calf pairs. High quality cool-season forage (rye/oat) was available during peak cow nutrient demand (early lactation).

We presently have only the first year of cow and calf results. With the possible exception of one cow, all were able to maintain good body condition at the Marianna site without any outside supplement feeds. We do not have enough information in regards to cow pregnancy rate at this time. The cows are checked for pregnancy in July and any open cows are replaced with pregnant mature cows from the Marianna Beef Unit cow herd. This is done to have a constant number of calves from year to year and to simulate what is typically done on cattle farms (open cows are usually culled). For the first year, a total of 54 calves with an average adjusted 205 day (weaning) weight 535 +/- 40 pounds were produced at the Marianna site (one calf died before weaning). Additionally, we were able to average an additional 1225 grazing days for the first two years during early spring (35 head x 35 days). Thus income can be derived from the extra available grazing as well as from the sale of calves.

We plan to continue the study for at least two more years thereby completing one rotation cycle. Information in regards to the effect of grazing and cattle traffic on subsequent crop yields in the rotation will be presented in future newsletter articles. Further info about the SBR system can be found on the following web site (http://nfrec.ifas.ufl.edu/programs/sod_rotation.shtml) (Bob Myer and Cheryl Mackowiak)

Table 1. The sod-based rotation scheme at the Marianna site.

Quadrant 1 (SW field)		Quadrant 2 (NW field		Quadrant 3 (NE field)		Quadrant 4 (SE field)	
Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter
Bahia-1 H[a]	Bahia-1 D[c]	Bahia-2 G	Rye/Oat H	Peanut	Rye/Oat G	Cotton	Rye /Oat G
Bahia-2 G[b]	Rye/Oat H	Peanut	Rye/Oat G	Cotton	Rye/Oat G	Bahia-1 H	Bahia-1 D
Peanut	Rye/Oat G	Cotton	Rye/Oat G	Bahia-1 H	Bahia-1 D	Bahia-2 G	Rye/Oat H
Cotton	Rye/Oat G	Bahia-1 H	Bahia-1 D	Bahia-2 G	Rye/Oat hay	Peanut	Rye/Oat G

[a]H = Hayed, [b]G = grazed, [c]D = Dormant.

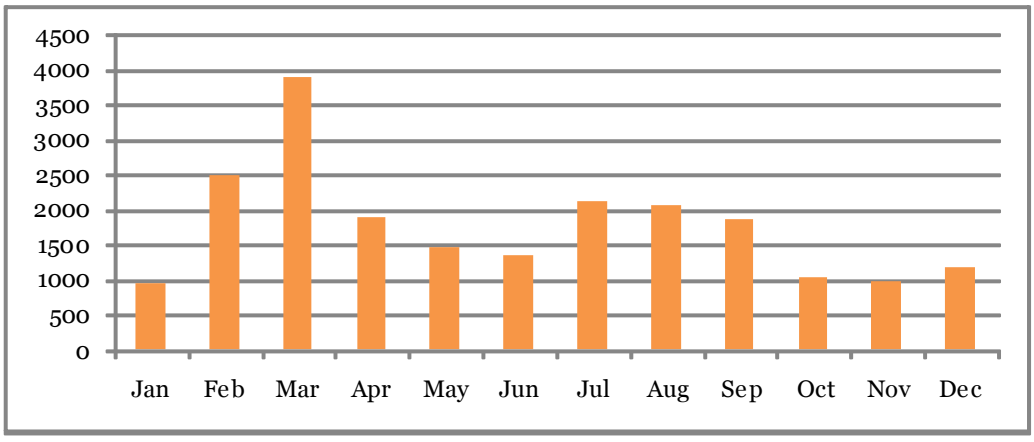

Figure 1. Estimated average total amount of forage available for grazing in the sod-based rotation over the first two years at Marianna (lbs of dry forage per 1 acre from Jun. through Oct and lbs per 2 acres from Nov through May; two yr avg.; mainly bahiagrass from May to Nov. and cool-season annual cover crops of rye/oat mix from Nov to May; hay was also harvested – 3800 lb/ac avg. of bahia in Oct and 3790 lb/ac avg. of oat/rye in Apr of each year; the hays were fed during times of low pasture forage availability).

Protecting Wakulla Spring's Water Quality: A Natural Way to Reduce the Footprint of a Tallahassee Waste Water Treatment Facility

A team of NFREC scientists is conducting research at the Tallahassee waste water treatment facility in order to protect regional groundwater. The research is titled "Forage and Tree Systems for Biological Filtration of Tertiary Municipal Waste Effluent." This is part of a larger effort to protect Wakulla Springs and associated springshed.

North central Florida is well known for having the world's highest occurrence of freshwater springs (FDEP, 2008). Approximately 700 known springs have been reported in this region. Millions of people visit these springs each year to enjoy the cool, clear water on a hot summer day, to swim with manatees, and to watch abundant wildlife in a pristine environment. However, water quality in these springs has been rapidly declining since the early 1970s. Average nitrate-nitrogen concentrations have increased from less than 0.2 mg/L to above 1.0 mg/L over the past 30 years (FDEP, 2008).

The Wakulla Springs area is home to one of the largest Florida springs. It discharges approximately 252 million gallons of water every day. The surrounding area is also known for its rich wildlife diversity (Florida Springs Task Force, 2000). However, water nitrate-nitrogen has been increasing from 0.25 mg/L in the early 1970s, to 0.89 mg/L in 2000, with a peak of 1.5 mg/L in the early 1990s (1000 Friends of Florid, 2009). This excess nitrogen also contributed to an explosion of the invasive aquatic plant, hydrilla (*Hydrilla verticillata*). Overall eutrophication "greening up" of spring water has become an urgent issue because of nitrogen and phosphorus pollution coming from various sources.

The high recharge area of the Wakulla Springs springshed encompasses the southern part of greater Tallahassee, which includes the industrial parks, three university/colleges, municipal airport, and the city waste water treatment facility (Davis, 2009). A recent Wakulla Springs Restoration Workshop report (1000 Friends of Florid, 2009) indicated that the city waste water treatment facility tertiary effluent sprayfield (Southeast Farm) was one of the largest nitrate contributors. The city of Tallahassee, as well as all levels of governments, is committed to reducing nutrient inputs to the groundwater system.

Spraying municipal tertiary effluent on agricultural fields is a common practice. Such facilities are typically established on deep, moderately- to well-drained soils to ensure sufficient water drainage. However, because water passes rapidly through these sandy soils, groundwater contamination is a potential problem.

In order to reduce nutrient leaching from municipal sprayfields and to provide the land leasee a sustainable economic return, marketable crops are often grown. Biofiltration is a term used to describe the process of using plant growth to take up nutrients and to filter potential contaminants. Row crops or grasses, particularly bermudagrass (summer) and ryegrass (winter) are typically used to provide income from the biomass while also recovering soil nutrients. However, forage or forage combinations used under sprayfield conditions may be improved for more effective biofiltration systems that extract nutrients from a greater depth.

In 2008, NFREC and City of Tallahassee partnered in order to develop and manage a more efficient biofiltration system. Objectives are three fold: 1) to test different forage species and combinations to optimize N and P removal while also decreasing N leaching to the aquifer, and 2) to evaluate agroforestry systems (forage vs. tree vs. tree/forage or alley cropping systems), and 3) to conduct an economic evaluation of the different biofiltration systems.

The research is still in the development and early testing stage, but thus far, vegetation establishment (bermudagrass, ryegrass, and baldcypress tree) has been successful. The summer forage trial includes three cultivars of bermudagrass, two cultivars of bahiagrass, and perennial peanut. The winter forage trial includes rye and ryegrass. Baldcypress was added to the forage system to enhance the nutrient capturing capacity since tree roots are typically more extensively deeper than those of grass roots. These forage and tree species were selected so that their habitat preference and water tolerance are compatible with the general study site conditions. Through monitoring the vegetation growth, plant and soil nutrients, and nutrient leaching, the team is developing the best combination of forage and/or tree covers for maximum nutrient capture. [Masato Miwa, Cheryl Mackowiak, and Patrick Minogue]

References:

1000 Friends of Florid. 2009. Follow-up Report to the Wakulla Spring Restoration Workshop. Tallahassee, FL. Feb. 25-26, 2009. http://www.1000friendsofflorida.org/water/WakPowerPoits/WakullaWkshopReportMaterials2009.doc.pdf (confirmed on Sep. 29, 2009).

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Florida Department of Environmental Protection. 2008. Integrated Water Quality Assessment for Florida: 2008 305(b) Report and 303(d) List Update. FDEP. Tallahassee, FL.

Florida Springs Task Force. 2000. Florida's Springs: Strategies for protection & restoration. FDEP. Tallahassee, FL.

FACAA Outstanding Specialist

Dr. Steve Olson, Extension Specialist, Professor of Horticultural Sciences has received the 2009 Florida Association of County Agriculture Agents (FACAA) Outstanding Specialist Award in Orlando. This award is presented annually at the Extension Professional Association of Florida (EPAF) annual meeting. All nominations for this award are submitted by county faculty. A selection committee reviews all nominations, and selects a winner. The recipient of this prestigious award must be an extension specialist who demonstrates exceptional work as a specialist in their field of study.

Collin Adcock, Horticulture Extension Agent with Washington County, nominated Dr. Olson for this award. In part, his reasoning Dr. Olson's deserving of this award is:

"Dr. Olson is a great extension specialist and researcher. He produces outstanding variety trials each year on all types of vegetables that are extremely beneficial to all vegetable growers. He has a wealth of knowledge on vegetable production and is extremely willing to share his knowledge and expertise with all county faculty".

Dr. Olson joined the University of Florida after receiving his Ph.D. in Plant Physiology from Clemson University in 1981. His current projects include Alternative Vegetable Crops, Tomato Spotted Wilt Management, and Variety Evaluations. The mission and goals of his position is to generate and disseminate needed knowledge in vegetable production to growers, other scientists and extension personnel.

For more information on Dr. Steve Olson and his programs, visit the NFREC website at http://nfrec.ifas.ufl.edu/ and click on Faculty/Staff.

Know Our Staff

Gina Arnett was hired in May 2008 at NFREC, Marianna. She has many responsibilities including but not limited to greeting visitors, answering incoming calls, approving UF Purchasing Card charges for the Marianna Center, handles incoming and outgoing mail and shipments. Gina orders all office supplies and assists the faculty and staff with their secretarial needs.

NFREC, Marianna has a history of outstanding events in which Gina's assistance greatly contributes to their success. She is a pleasure to work with and is an immense asset to NFREC.

Mrs. Arnett lives in Marianna, FL with her husband, Timmy and their two children Julee and Dylan.

Gina Arnett, NFREC - Marianna

Coming Events Calendar

October 21 & 24, 2009 - Plantaholic Party and Plant Sale Extravaganza, North Florida REC - Quincy, FL. For more information visit the GFBB website www.thegfbb.com or contact Sue Watkins, stwakins@nettally.com, 850-524-1329 or Jill Williams, B419@aol.com, 850-663-2280.

October 28, 2009 - 2009 Florida Ag Expo, Gulf Coast Research and Education Center, Balm, FL. For More information visit http://flagexpo.ifas.ufl.edu.

November 5, 2009 - Agricultural Enterprise Workshops for North Florida, North Florida REC - Suwannee Valley. For more information contact Karen Hancock at 386-362-1725 x 101, khancock@ufl.edu or Laurie Osbonre, 386-362-1725 x 102 , losborne@ufl.edu.

November 13 or 14, 2009 - Advanced Topics in Hydroponcis, North Florida REC - Suwannee Valley, Live Oak, FL. Classes are limited to 30 participants per day, cost of registration is $100 per attendee. For more information contact Karen Hancock at 386-362-1725 x 101, email khancock@ufl.edu or Wanda Laughlin at 386-362-1725 x 104, email solus@ufl.edu.

December 3, 2009 - Suwannee Valley Watermelon Meeting, Branford, FL. For more information call Karen Hancock 386-362-1725 x 101 or Laurie Osborne 386-362-1725 x 102.

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