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SUWANNEE VALLEY—MARIANNA—QUINCY

NFREC NEWS

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Aflatoxin Levels in Corn Grain

Contrary to what one might believe from observing quality of grain from later planting dates, late planting corn has less aflatoxin than early planted corn. Grain quality usually deteriorates as planting season is extended from March into April, May and June. However, aflatoxin usually peaks from April planted corn for both tropical and temperate corn. This may be due to the hot, dry conditions, which favor Aspergillus flavus development, that occur when corn is silking in late May. Corn planted in May silks in June or early July when the humidity is higher and aflatoxin levels are lower in the grain. *Bt* (Bacillus thuringiensis) corn did not differ that much from non *Bt* corn but when it did, it was always lower in aflatoxin than non *Bt* corn and was significantly lower in some years. Tropical corn with the tight shuck coverage did not lessen the incidence of aflatoxin in the grain and in one year of a three year study had significantly more aflatoxin than temperate corn planted in April. May and June planting dates of corn exhibited low levels of aflatoxin in both tropical and temperate corn with or without *Bt*. Germplasm is being developed that has some resistance to aflatoxin development and has been under investigation at UGA's Tifton campus for a number of years. [David Wright]

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Special points of interest:

- **May 14, 2009 - Fruit & Nut Twilight Field Day**, North Florida Research & Education Center - Suwannee Valley, Live Oak, FL. For more information call 386-362-1725 x 101 Karen Hancock or email khancock@ufl.edu or x 102 Laurie Osborne or email Losborne@ufl.edu.
- **August 1 & 2, 2009 - Florida Small Farms & Alternative Enterprises Conference**, Osceola Heritage Park, Kissimmee, FL. For more information on educational program content contact Danielle Treadwell at 352-392-1928 or email ddtreadw@ufl.edu. For general conference information contact Mandy Stage at 352-392-5930 or email mstage@ufl.edu.

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

Does Fertilization for Pine Straw Production Pay on Deep Sandy Soils?

Old-field slash and loblolly pine plantations in the Florida Sand Ridge region are the heart of Florida's pine straw industry, which has an annual value of 79 million dollars, a bigger market than pine pulpwood. Fertilization may enhance pine straw production as well as timber values, but the response is limited on sandy, excessively drained sites such as those common in the Florida Sand Ridge. The sandy soils of this region do not hold nutrients well and water deficits generally limit pine growth and responses to fertilizer (Jokela and Long, 2000). Additionally, when fertilizing these soils the potential for leaching and groundwater contamination is a concern. Morris and others (1992) provide specific fertilization recommendations for old field or cutover sites, different stand ages, raking frequencies, and various site types, but they do not recommend fertilization for Sandhill sites characterized by soils with sandy surface horizons greater than 40 inches deep without fine textured subsoils.

We initiated a demonstration study of pine straw production and fertilization efficiency in slash and longleaf pine stands at the Suwannee Valley Research and Education Center in 2007. The stands had previously been fertilized with near maximum amounts of fertilizer specified by Florida Silviculture Best Management Practices at age two and five. Fertilizer (647 lb/Ac 15:0:15, including 97 lb N/Ac as 50% urea, 50% NH_4NO_3) was applied March 9, 2007 by tractor-drawn centrifugal spreader to 0.5 Ac plots and pine straw raking was done by hand in December 2007 (first raking) and in December 2008. Slash pine fertilization increased straw production by 72 bales per acre in the first raking and by 24 bales in the second; however, in consideration of straw revenues alone the fertilization treatment did not result in a profit (Table 1). Longleaf does not respond well to fertilization, particularly when young stands and sandy sites are fertilized. We observed lower pine straw yields in the fertilized plots, which may have been influenced by the development of herbaceous vegetation in the relatively open understory following fertilization and limitations to raking efficiency. There were small pine volume responses two years post fertilization in slash pine, which had mean height 1.31 ft greater and mean diameter 0.6 inch greater than the unfertilized comparison. Longleaf pine mean height was 3.28 ft greater in the unfertilized plot than for fertilized, with essentially the same mean diameter in fertilized versus unfertilized areas. Replicated research studies on sites with contrasting soil types are underway at the NFREC to examine the impact of pine straw raking on nutrient budgets, leaching potential, pine stand responses, and soil properties. [Pat Minogue]

Table 1. Pine straw yield response to application of 647 lb/Ac 15:0:15 (97 lb N and K) to broadcast application (3/9/2007) in seven-year-old slash and loblolly pine plantations at the Suwannee Valley Research and Education Center near Live Oak, Florida.

Species	Raking	Unfertilized (bales/Ac)	Fertilized (bales/Ac)	Response (bales/Ac)	Value[1] ($/Ac)	Cost[2] ($/Ac)	Profit[3] ($/Ac)
Slash	First	542	614	+72	36	160.43	-124.43
	Second	382	406	+24	12		-112.43
Longleaf	First	382	346	-36	-21.60	160.43	-182.03
	Second	351	330	-21	-12.60		-194.63

[1]Value based on $0.50 per bale slash pine and $0.60 per bale longleaf pine.

[2]Costs include $115.43 fertilizer plus $45 application costs per acre.

[3]Profit is cumulative for slash or longleaf pines, without time valuation.

Jokela, E.J. and A.J. Long. 2000. Using Soils to guide fertilizer recommendations for southern pines. University of Florida. Institute for Food and Agricultural Sciences. Circ. 1230. 13 pp. http://edis.ifas.ufl.edu/FR053

Morris, L.A., E.J. Jokela, and J.B. O'Connor, Jr. 1992. Silvicultural guidelines for pine straw management in the southeastern United States. Georgia Forestry Commission. Georgia Forestry Research Paper No. 88. 11 pp.

http://www.gfc.state.ga.us/Resources/Publications/ForestMarketing/GFRP88.pdf

A Citrus Industry Based on Satsuma Mandarin (*Citrus unshiu* Marc.) is Increasing Across North Florida

Satsuma acreage in our neighboring states of Alabama and Louisiana has reached an estimated 100 and 500 acres, respectively. Florida's acreage is growing and is fast approaching this 100-500 acre range. I want to call your attention to several reference documents produced by our colleagues from Auburn University. The first is a crop profile on satsuma production in Alabama by H. Fadamiro et al. from Auburn University available online at http://www.ipmcenters.org/CropProfiles/docs/ALsatsumamandarin.pdf. This document characterizes satsuma production with emphasis on pest management. Most of you know that citrus production in Florida started around the Jacksonville area and once

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extended west all the way to Texas at the latitude of north Florida. A series of spring freezes in the 1930's killed the trees and the industry moved south. Two interesting publications by R. Ebel et al. of Auburn University (2005. J. Am. Soc. Hort. 130:500-7; Ebel et al. 2008 HortSci 43:287-9) (note Dr. Ebel is now at the SWFREC in Immokalee) discuss a temperature model to estimate longterm freeze risk and mitigation strategies for satsuma production along the Gulf of Mexico. Two other publications - Nesbitt et al. (2008, HortSci 43:290-2) and Nelson et al. (2008, HortSci 43:293-7) discuss satasuma production practices and marketing. Anyone producing satsumas, considering satsuma production or advising producers about satsuma production should read these documents.

Satsuma has relatively fewer pests in comparison to other crops such as peaches and nectarines. Satsuma shares its pests with other types of commercially-grown citrus, so much is known about pest biology and management, including the availability and efficacy of pesticides. However, very little of the research on pest biology, phenology and damage has been done in north Florida. Although the Auburn scientists have conducted some studies in Fairhope, AL, even there some pests are different. For example, the exotic leaffooted bug *Leptoglyssus zonatus* is a problem in Alabama and Louisiana, but has not yet become a problem in Florida. Therefore, one should proceed with caution when basing decisions about pests on information collected in central and south Florida and other states. While the same species of white flies, mites and aphids may occur on citrus in north Florida, they will likely behave very differently and their importance as pests will change accordingly. In addition, the production environment is now clouded by the potential occurrence of citrus greening disease and its vector the citrus psyllid, which is the subject of stringent regulatory scrutiny. Citrus greening is a devastating tree-killing disease and no reliable suppression tactics are available to manage it. Both the disease and the vector occur in south Florida and Louisiana. The vector, but not the disease, has been detected in most of the states in the southern coastal plain. I have not detected any citrus psyllids at NFREC-Quincy but will be monitoring for them this season.

From a pest management perspective, I highly recommend that you proceed with caution in recommending and applying insecticides. Be very sure that pest damage levels warrant the investment required. Other species of citrus pests such as mites, aphids, whiteflies and thrips are often made far worse by insecticide use in other crops. Satsumas do not appear to have a large number of pest problems and judicious use of available chemical tools will help maintain this advantage. [Dr. Russ Mizell]

Two New Perennial Peanut Forage Varieties Evaluated for Nutritional Quality

Perennial peanut (*Arachis glabrata*) is a warm-season legume that grows well in the lower southeastern United States. This legume is grown for hay, silage and pasture, and as ornamental ground cover. Perennial peanut fills a unique niche in this region because there is no other perennial warm-season legume that rivals its forage quality, persistence, and broad spectrum of uses. Presently, it is produced commercially primarily in north Florida and south Georgia. Most of this production is for hay, in particular, for horses.

Florigraze, released by the University of Florida in 1979, is the most widely distributed commercially grown perennial peanut cultivar (variety) today. This variety is grown on approximately 30,000 acres in the lower SE USA. Arbrook was released in 1986. Arbrook is less cold hardy than Florigraze and best suited to dry sites. Researchers at the University of Florida are continuing to search for higher yielding, well-adapted perennial peanut cultivars. This effort has led to the recent releases of "UF-Tito" and "UF-Peace".

As part of the release procedure, these two new varieties were evaluated to insure that they at least have the nutritional quality of current varieties. Since most of the perennial peanut production is for hay for horses, these two new varieties were tested for hay quality for horses. The best method to determine nutritional quality of hay for horses is to do a digestibility study using horses. However, digestibility studies using horses are very labor intensive, time consuming and expensive. Procedures are available that can simulate digestion by animals in the laboratory. These procedures are referred to as "*in vitro*", which is Latin for "within the glass". The most common *in vitro* digestibility procedures were developed to simulate digestion by cattle. There are now procedures to simulate digestion by horses. We used one such procedure to evaluate the new perennial peanut varieties as potential hays for horses.

Results of the horse specific *in vitro* digestibility of the two new varieties as compared to both Florigraze and Arbrook are presented in Figure 1 below. The digestibility procedure utilized measured *in vitro* true digestibility (IVTD) of dry forage (or the total amount digested). Good quality alfalfa hay (early bloom) was also tested for comparison. Both new varieties, Tito and Peace, had IVTD values that were actually slightly better than IVTD for Florigraze or for Arbrook. The IVTD of Tito was actually statistically higher, but the IVTD of Peace was not statistically different from the IVTD obtained for Florigraze. In comparison to alfalfa, IVTD of all the perennial peanut varieties were statistically similar to, or for Tito, statistically higher. It should be pointed out that all IVTD values obtained were high, but this was expected as legume forages are typically well digested by horses.

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Composition of the perennial peanut varieties and alfalfa was also determined and is presented in Table 1 below. Crude protein concentrations were similar across the perennial peanut varieties and alfalfa. The concentrations were high indicating that perennial peanut, like alfalfa, would be a good source of supplemental protein for horses. This high protein was expected as legume forages are typically high in protein. Fiber concentrations, as measured by acid detergent fiber (ADF) and neutral detergent fiber (NDF), followed closely with IVTD. Varieties with high IVTD tended to have lower ADF and NDF, and vice versa. Again this inverse relationship was expected as fiber is not as well digested as other forage components such as sugars, starch ,and protein.

The IVTD and composition results above indicates that both Tito and Peace varieties of perennial should produce hay that is at least as nutritious as the current varieties, Florigraze and Arbrook. (Appreciation is expressed to Juliet Eckert, a former Animal Sciences graduate student, for doing the analyses.) (Bob Myer and Ann Blount).

Figure 1. *In vitro* true digestibility of four prennial peanut cultivars and alfalfa, % of dry forage (SE = 2).

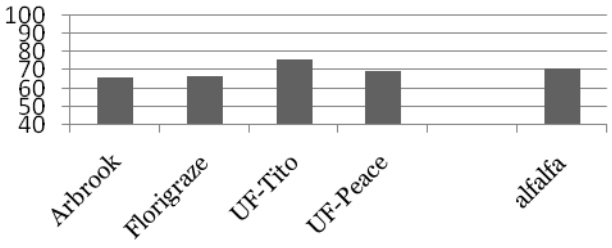

Table 1. Composition of four perennial peanut cultivars and alfalfay, % of dry forage (ADF = acid detergent fiber and NDF = neutral detergent fiber).

Cultivar	Dry matter	Crude protein	ADF	NDF
Arbrook	87	19	40	49
Florigraze	87	19	35	46
UF-Tito	87	20	35	40
UF-Peace	88	20	36	44
Alfalfa check	90	21	32	40

Know Our Staff

Donna's was hired in 2004 and her responsibilities include managing all fiscal related issues. She handles all State, Federal and Grant accounts as well as cash-based accounts for the three centers that comprise NFREC. Donna keeps faculty members informed with up to date information concerning their accounts. She regularly meets with and makes recommendations to the Center Director and Administrative Assistant to enable the most of our budget. Donna is the recipient of the 2008 NFREC Distinguished Service Award for Administrative personnel.

Donna lives in Chattahoochee with her husband Rocky Fels. They enjoy fishing, hunting, and wildlife observation on their 54 acre ranch and are currently raising cattle, hogs, chickens and rabbits. Donna also enjoys weekend rides on their Harley Davidson "Trike" and entertaining friends and family.

Donna Durgin, Accountant

Peach and Nectarine Cultivars for North and Central Florida

The most commonly known peach and nectarines cultivars such as Elberta and Redhaven cannot be grown successfully in subtropical climates such as Florida because they are high chill cultivars and do not receive enough winter chilling to satisfy dormancy requirements. For the past 50 years the University of Florida has developed cultivars that require much less chilling than the more traditional cultivars. Chilling hours are calculated by the total cumulative number of hourly temperatures below 45 F that are required to satisfy dormancy requirements. The best peach and nectarine cultivars for trial in north (350-525 chill hours), north central Florida (225-350 chill hours) and central Florida (100-225 chill hours) are presented in Table 1. [Pete Andersen]

Table 1. Fruit characteristics of low-chill peach and nectarine cultivars recommended for trial from the University of Florida breeding program.

	Chill hrs	Fruit Dev. (days)	Size (g)	Pit Free-ness[Z]	Flesh type[Y]	Flesh color[X]	Overred (%)	Back-ground[W]	Shape[V]	Firm-ness[V]	Taste[V]	Flesh browing[V]	Attrac tive-ness
Peaches													
Flordadawn	300	58	75	SC	M	Y	80	BY	8	9	9	8	
Flordaking	350	68	96	SC	M	Y	50	DY	7	7	7	99	5
Flordaprince	150	78	82	SC	M	Yo	80	Y	9	8	8	8	8
Flordabest	250	82	138	C	M	Y	100	Y	9	9	8	9	7
Flordacrest	350	75	92	SC	M	Y	80	BY	7	9	8	9	9
Flordaglo	150	78	94	SC	M	W	80	CW	9	9	8	9	9
Gulfcrest	525	78	106	SC	NM	W	90	Y	8	9	9	9	8
Gulfcrimson	400	92	135	SC	NM	Y	80	Y	8	9	8	8	8
Gulfking	350	75	120	SC	NM	Y	85	Y	9	9	9	8	8
Gulfprince	400	100	150	SC	NM	Y	50	DY,O	9	10	8	10	9
Tropicbeauty	150	89	100	SC	M	Y	80	BY	10	9	9	9	10
UF2000	300	97	150	SC	NM	Y	60	OY	9	10	8	10	10
UFBeauty	200	83	110	SC	NM	Y	95	Y	9	9	9	9	9
UFBlaze	300	83	110	SC	NM	Y	95	Y	9	9	10	9	9
UFOne	150	95	140	SC	NM	Y	40	Y	9	9	9	9	9
UFSharp	325	102	70	SF	NM	Y	60	Y	8	9	9	9	8
UFO	250	95	70	SF	NM	Y	60	DY	..	10	9	10	..
UFSun	100	90	130	SC	NM	Y	30	OY	9	9	10	9	9
Whiterobin	500	90	120	SF	M	W	70	Y,CW	6	7	9	9	8
Nectarines													
Sunbest	225	83	95	SF	M	Y	95	Y	9	9	9	9	9
Suncoast	375	77	110	SC	M	Y	90	Y	8	9	9	8	9
Sunraycer	250	85	110	SC	M	Y	90	BY	9	9	9	8	9
UFRoyal	250	85	138	SC	NM	Y	100	Y	9	9	10	9	8

[Z]SC = Semicling, SF=Semifree, F=Freestone

[Y]M = Melting NM=nonmelting

[X]Y = Yellow W = White

[W]BY = Bright Yellow, Y = Yellow, DY = Dull Yellow, CW = Cream White, OY = Orange Yellow,

[V]1 = Least desirable to 10 = Most desirable

Coming Events Calendar

April 24, 2009 - Wildlife Working for You, North Florida Research and Education Center - Suwannee Valley, Live Oak, FL. To pre-register, contact Pam Burke at 386-362-2771 or email peburke@ufl.edu.

April 28, 2009 - NFBFG Horse Management School, Suwannee County Extension Service, Live Oak, FL. Call 386-362-2771 to register.

April 30, 2009 - Marketing Strategies for Bradford County Producers, Starke, FL. For more information call 904-966-6299.

May 5, 2009 - Peach Field Day, Citra, FL. For more information contact Jeff Williamson at 352-392-1928 x 303 or email jgrw@ufl.edu.

May 5, 2009 - Embracing Change - Adopting Alternative Enterprises, Providence, FL. To register for this program contact the Union County Extension Service at 386-496-2321.

May 14, 2009 - Fruit & Nut Twilight Field Day, North Florida REC - Suwannee Valley, Live Oak, FL. For more information ca 386-362-1725 x 101 Karen Hancock or email khancock@ufl.edu or x 102 Laurie Osborne or email Losborne@ufl.edu.

June 6, 2009 - Be a Hobby Beekeeper Short Course, Clay County Agriculture Center, Green Cove Springs, FL. For more information call 904-269-6355, 284-6355 or 473-3711.

June 7-9, 2009 - Florida State Horticultural Society Meeting, Jacksonville, FL. For more information contact Mary Lamberts at 305-248-3311 x 234 or email to lamberts@ufl.edu.

June 23, 2009 - Palm Production Seminar, Jasper, FL. To register call Allen Tyree at 386-792-1276, email ATyree@ufl.edu or Linda Landrum at 386-362-1725 x 105, email LLandrum@ufl.edu.

July 9 - 12, 2009 - Southeastern Equestrian Trails Conference, Gainesville, FL. For more information call 352-317-0273 or email to setc2009@aol.com.

July 10-11, 2009 - Tractor Short Course, North Florida Research and Education Center - Quincy, FL. For more information call 850-875-7100.

July 13-16, 2009 - American Society for Plasticulture Meeting, Penn State University. Save the date.

July 29-31, 2009 - Farm to Fuel Summit, Rosen Shingle Creek, Orlando, FL. For more information visit http://www.floridafarmtofuel.com/summer_2009.htm

August 1 & 2, 2009 - Florida Small Farms & Alternative Enterprises Conference, Osceola Heritage Park, Kissimmee, FL. For general conference information contact Mandy Stage at 352-392-5930 or email mstage@ufl.edu. For educational program content contact Danielle Treadwell at 352-392-1928 x or email ddtreadw@ufl.edu.

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