

# *Agronomy Notes*

Volume 33:4

April 2009



## *Features . . .*

### *Forage*

<i>What is 'Teff' And Can It Grow In Florida? .....</i>	<i>Page 2</i>
<i>Bahiagrass Target pH.....</i>	<i>Page 3</i>
<i>Forage Growth And Stubble Height .....</i>	<i>Page 3</i>
<i>Bahiagrass: Protocol For Submitting A Plant Tissue Sample.....</i>	<i>Page 4</i>

### *Peanut*

<i>Tifguard: A Nematode Resistant Peanut Variety .....</i>	<i>Page 5</i>
--	---------------

### *Weed Control*

<i>2007 Pesticide Date Program's Summary Released .....</i>	<i>Page 6</i>
<i>Palmer Amaranth Control: Comparing the Preemergence Options.....</i>	<i>Page 7</i>

### *Miscellaneous*

<i>Status of Small Grain Crops .....</i>	<i>Page 4</i>
<i>Crops That May Be Planted In Dry Weather .....</i>	<i>Page 5</i>
<i>Calendar &amp; Field Days .....</i>	<i>Page 6</i>

# What is 'Teff' and Can it Grow in Florida?



Teff is warm-season (C4) annual bunch grass, a species of lovegrass (*Eragrostis tef*) that originated in the northern highlands of Ethiopia in northeastern Africa, in ancient times (BC). Despite being a warm-season grass, it is best adapted to uplands in tropical areas where temperatures are cooler than in low lands and range from 50 to 80°F; this plant can not handle frost.

The main use is as a cereal grain for human consumption. It is used in African countries because of the attractive nutrition profile of the grain (with an excellent amino acid composition, and lysine levels higher than wheat or barley.) It contains no gluten and is high in dietary fiber, iron, phosphorus, copper, aluminum, barium, and thiamin. It has a sour taste and is similar to millet. In Ethiopia, where

it is thought to have originated, Teff provides over 2/3 of the nutrition in that country. The economic importance of this grass is mainly as a human food (cereal). It has been used also for environmental purposes in erosion control in Africa.

**Teff straw from threshed grains in Ethiopia is considered an excellent forage, superior to straws from other cereal species.**

In the US small acreages of Teff are grown for grain production and sold to Ethiopian restaurants. More recently (since 2007), it has been promoted by seed companies ('Tiffany' Teff) for use as a late planted forage in northern latitudes such as Missouri and Pennsylvania where some growers are finding it as a mite-free alternative to timothy and orchard grass. Experimental data is being generated at those locations and preliminary results show production of only 3 1/2 to 4 tons/acre for the season.

Although this grass has not been tested in Florida, it has been tested in Georgia, where preliminary reports show a forage productivity of less than 1/3 of most other summer annual forages. In addition it had very weak seedling vigor in locations as far north as Athens. There is no reason to believe that it would be adapted to the southern most latitudes of Florida.

**In summary, this grass is not recommended as a forage crop in Georgia or in Florida.**

It requires latitudes where the summer season is cooler than in these southern locations. The nutritive value of the hay is high and offers an alternative comparable to timothy and orchardgrass hay for the horse hay market.

Dr. Yoana Newman  
Forage Specialist  
ynew@ufl.edu

# Bahiagrass Target pH



The updated recommendation and target pH for bahiagrass production is now 5.5 or higher. Liming should be recommended if soil pH test is at 5.3 or lower, in which case a lime test should be conducted. If the lime test calls for a lime application apply it 3 to 6 months before the growing season comes into play. Soils should be tested for pH every 2-3 years.

Dr. Yoana Newman  
 Extension Forage Specialist  
 ycnew@ufl.edu

## Forage Growth and Stubble Height

Different grasses have different growth forms. Some are sod types, like bahiagrass. They store the energy reserves in thick rhizomes or underground stems right under the soil level. In these sod-type (decumbent) grasses, tillers grow through the leaf sheath to form a sod that creeps or spreads with further development of rhizomes and stolons, common in bermudagrass and limpograss. In addition, the growing points are low allowing the plant to be persistent under close grazing or defoliation.



*The thicker the rhizomes and the lower the bud sites, the greater the ability of the plant to withstand lower stubble height defoliation.*

Nevertheless, within sod type grasses, there are variations. Some will grow more upright than others (limpograss > stargrass and T-85 bermudagrass > coastal bermudagrass > bahiagrass). This is the order to follow when managing the stubble height: higher for limpograss compared to stargrass or Tifton 85, higher in stargrass and Tifton 85 compared to coastal, and higher in coastal compared to bahiagrass (see table). In some cases, within a grass, there will be differences among cultivars. For example, Tifton 9 has a more upright growth than

Pensacola or Argentine bahiagrass. Or in the case of perennial peanut, Arbrook has a more upright growth than Florigraze. The cultivars with more upright growth are less tolerant of closer defoliation.

This table on the right shows the minimum stubble height recommended for the main forage plants in Florida based on use.

Dr. Yoana Newman  
 Forage Specialist  
 ycnew@ufl.edu

	Hay	Rotational Grazing	Continuous Grazing
	-----INCHES-----		
<b>Warm-season perennials</b>			
Bahiagrass	2	3	5
Bermudagrass (Coastal)	3	3	6
Bermudagrass (Tifton 85)	5	5	8
Stargrass	5	5	8
Limpograss	6	10	16
<b>Warm-season annual</b>			
Pearl millet		6	10
<b>Cool-season grasses</b>			
Annual ryegrass	3	3	4
Rye/oat	3	3	5
Wheat/Triticale	5	5	6
<b>Legumes</b>			
Perennial peanut	4	4	6
Clovers	3	3	5
White clover	1	1	3



# Status of Small Grain Crops

Old corn rows which had been ripped and starter fertilizer applied the previous year. Small grain responds to deeper rooting and residual fertilizer.



Wheat and small grain crops have the potential to do well in dry conditions. There has been some powdery mildew in fields and there are some good looking crops in some areas and some poor looking crops in others. Small grains do respond to deep tillage and is especially noticeable in dry or wet years. This picture shows small grain following a late planted corn crop. Corn was ripped in the row and starter fertilizer applied in the row. Small grain growth is much more vigorous with the deeper root system in a dry year and probably has access to some of the residual fertilizer from previous year's corn crop.

Dr. David Wright, Extension Agronomist  
North Florida REC, Quincy, [wright@ufl.edu](mailto:wright@ufl.edu)

## Bahiagrass: Protocol For Submitting A Plant Tissue Sample

The new bahiagrass Phosphorus recommendations are **now based on tissue and soil tests**. If your soil Phosphorus (P) test results are Medium or High, (16 ppm and above) there is no need for Tissue testing, and there will not be any recommendation to apply P. Soil P that is medium or high shows that there is sufficient P present in the soil.

**The Tissue Phosphorus test is only needed when your soil Phosphorus test results are Low or Very Low (15 ppm and below).**

Below are the different analysis that can be requested and the instructions provided by the analytical lab on how to submit a plant tissue sample.

### How To Take, Prepare, and Submit Plant Tissue Samples (for Analysis B1)

1. Ensure that each sample contains at least a generous handful of plant material (around half a gallon).
2. Do not sample leaves contaminated with soil or sprays. If all tissue is dusty or spray contaminated, wash leaves gently with flowing distilled water.
3. Do not sample disease-, insect-, or mechanically damaged plant tissue.
4. Place tissue samples directly into a clean paper or cloth bag or envelope. Do not use plastic containers. If the plant tissue is wet or succulent, allow plant material to air dry for at least one day, before mailing.
5. When sampling suspected nutrient-deficient plants, two samples are recommended; one sample from normal plants, and another sample from abnormal plants.
6. When sampling, the plant part and plant maturity are important factors. Be sure to collect the proper plant part at the recommended time. A general rule of thumb is to sample the youngest, fully mature leaves during the growth cycle, or just prior to fruit set.
7. Please do not provide any roots along with the sample.

Analysis Test Code	Analysis Name	Determinations Made	Analysis Cost
B1	Standard Soil and Tissue Test	pH, lime requirement, P, K, Ca, Mg	\$15.00
1	Standard Soil Test	pH, lime requirement, K, Ca, Mg and P test value only	\$7.00
2	pH and Lime Requirement	pH and lime requirement	\$3.00
3	Micronutrient Test	Cu, Mn, Zn	\$5.00

The IFAS Analytical Services Laboratory has a new **Bahia Producer Soil Test Submission Form** that can be found at <http://soilslab.ifas.ufl.edu/>

Dr. Yoana Newman, Forage Specialist  
[ycnew@ufl.edu](mailto:ycnew@ufl.edu)

# Tifguard: A Nematode Resistant Peanut Variety

The release of the root-knot nematode resistant variety Tifguard in 2008 was a significant advance in managing root-knot nematodes in peanut production. Tifguard is a USDA release and the first root-knot nematode resistant peanut variety adapted to the southeastern US production area. The variety combines major disease resistances, including tomato spotted wilt, and the root-knot nematode resistance gene. The nematode resistance in Tifguard is conferred by a single dominant gene, and nematode numbers are reduced after growing this variety. The incorporation of this resistance into adapted varieties adds a powerful tool for managing nematodes and will significantly reduce grower costs for nematicide treatment (currently \$60-100/acre). More varieties that contain this resistance will be available in the coming years from peanut breeding programs, including a number of releases from our Florida breeding program. In the meantime, growers who have nematode problems may want to test this new nematode resistance in their fields. Our data from a 2008 field trial using nematode resistant Tifguard and four other non-resistant varieties are shown below. Data show a range of reactions of these varieties to the peanut root-knot nematode (Jim Rich, Barry Tillman, Melvin Barber, and Wayne Branch)

Variety	Root-Knot /100 cm <sup>3</sup> soil at-harvest	Yield in lbs/A
Tifguard (R)	99 a**	4562 a
AP-3 (T)	178 bc	3423 b
Florida 07 (T)	120 ab	3197 b
York (I)	237 c	2085 c
GA Green (I)	163 abc	1175 d

\*R = resistant, T = tolerant, I = intolerant

\*\*Column means followed by the same letter are not significantly different ( $P \leq 0.05$ ).

Dr. Jimmy R. Rich, Nematology Specialist  
North Florida REC, Quincy, jimmyr@ufl.edu

## Crops That May Be Planted In Dry Weather

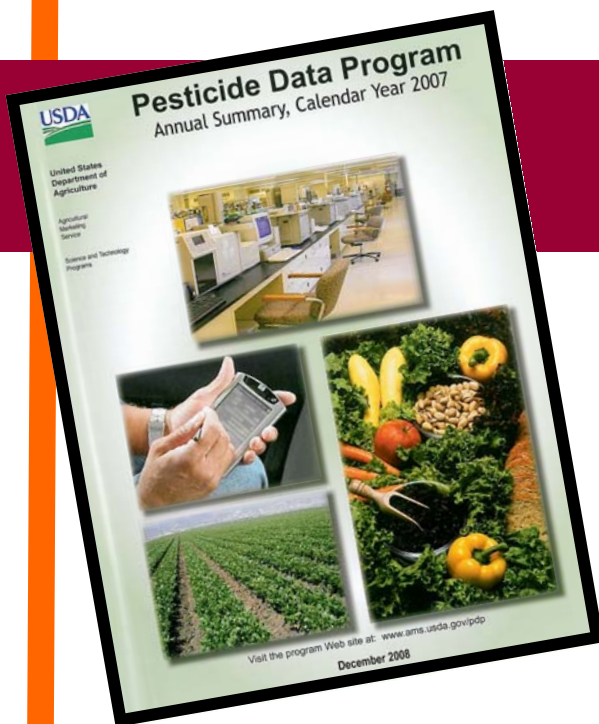
**Price aside, What Crops Can We Plant in Dry Weather?** Row crop farmers without irrigation face a dilemma this year with extremely dry conditions. Not only is surface soil moisture limited but so is subsoil moisture in much of the state. The best dry land crops for our area are cotton and peanut. Cotton is at a disadvantage at planting since it has to be planted no more than 1 ¼ inch deep. Once it gets established, it is a deep rooted crop that can withstand extended periods of drought and still produce good yields if there is rain at some time during the bloom period of July and August (typically rainy months). Getting a stand of cotton by early June is critical.

Peanuts, on the other hand, can be planted deep (even as much as 3 inches), a depth at where there is often moisture for germination. Peanuts need good moisture in the pegging period which corresponds to late summer that often brings afternoon showers. Prices are not good for either of these crops at this time; however, they may have more profit potential than a non irrigated crop of corn or soybean.

Soybean may be the third choice since the critical period of moisture for this crop is during the reproductive period which corresponds to August and September for most maturity groups. Weather conditions may change by that time resulting in a good crop.

Corn may be a problem for those areas that have not had adequate rain up to now (end of March). The western counties of the panhandle have had decent rain in the last few weeks and may be OK with corn on the heavier soils.

Dr. David Wright, Extension Agronomist  
North Florida REC, Quincy, wright@ufl.edu



## 2007 Pesticide Data Program's Summary Released

The most recent Pesticide Data Program's (PDP) annual summary was published for data collected during 2007. These data continue to demonstrate that the food supply in the U.S. is among the safest in the world.

PDP analyzed 11,683 samples of fresh and processed food commodities in 2007. Overall, the percent of residues detected was 1.9%. More than 99% of the samples analyzed did not contain residues above the tolerances established by the U.S. Environmental Protection Agency (EPA) and 96.7% of the samples analyzed did not contain residues for pesticides that had no tolerance established.

Since the PDP's establishment by the USDA in 1991, a wide range of commodities in the U.S. food supply have been tested. Stringent statistical and laboratory procedures have been used by the PDP to test fresh and processed fruit and vegetables, grains and grain products, milk and dairy products, beef, pork, poultry, corn syrup products, honey, pear juice concentrate, almonds, barley, oats, rice, peanut butter, bottled water, groundwater, and treated and untreated drinking water for pesticide residues. PDP data are essential for the implementation of the 1996 Food Quality Protection Act that directs the Secretary of Agriculture to collect pesticide residue data on foods that are highly consumed by infants and children. The EPA uses PDP data as a critical component for dietary assessments of pesticide exposure. Results provide realistic exposure information to the EPA assessment process.

PDP cooperates with State agencies for responsible sample collection and analysis. During 2007, 12 states participated in the program, representing all regions of the U.S. and over half of the U.S. population.

More information about PDP and the full report may be reviewed at <http://www.ams.usda.gov/pdp>.

Dr. Fred Fishel  
Pesticide Information Director  
[weeddr@ufl.edu](mailto:weeddr@ufl.edu)

The Institute of Food and Agricultural Sciences (IFAS) is an Equal Employment Opportunity-Affirmative Action Employer 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. For information on obtaining other extension publications, contact your county Cooperative Extension Office. Florida Cooperative Extension Service/Institute of Food and Agricultural Sciences/University of Florida/Larry Arrington, Dean.

"Agronomy Notes" is prepared by: J.M. Bennett, Chairman and Yoana Newman, Extension Forage Specialist ([ycnew@ufl.edu](mailto:ycnew@ufl.edu)); J. Ferrell, Extension Weed Specialist ([jferrell@ufl.edu](mailto:jferrell@ufl.edu)); F.M. Fishel, Pesticide Coordinator ([weeddr@ifas.ufl.edu](mailto:weeddr@ifas.ufl.edu)); J. Rich, Nematology Specialist ([jimmyr@ufl.edu](mailto:jimmyr@ufl.edu)); and D. Wright, Extension Agronomist ([wright@ufl.edu](mailto:wright@ufl.edu)). Designed by Cynthia Hight ([chight@ufl.edu](mailto:chight@ufl.edu)). The use of trade names does not constitute a guarantee or warrant of products named and does not signify approval to the exclusion of similar products.



# Palmer Amaranth Control: Comparing the Preemergence Options

Palmer amaranth is becoming an increasingly common and troublesome weed in the southeast. With its rapid growth rate and enormous capacity to produce seed, this weed can go from limited to severe infestation in one or two seasons.

Several herbicides have activity on Palmer amaranth, but season-long control can still be tricky. The millions of seeds produced will germinate throughout the entire growing season. It has been observed that, “a new flush of seedlings will come after every rainfall.” But generally speaking, Cadre is highly effective, easy to apply, controls small and large plants alike. However, every year brings new reports of Palmer amaranth resistance to Cadre. With the loss of Cadre, we will be forced to rely on preemergence herbicides such as Valor and Dual Magnum or early postemergence contact herbicides such as Cobra or Ultra Blazer. Though Cobra and Ultra Blazer are effective options, they must be applied to Palmer amaranth that is approximately 2 inches in height for reliable control. Considering that these herbicides have no residual activity, and must be applied within a narrow window of effectiveness, it is imperative that we document which preemergence herbicides are most effective. Additionally, we also need to understand approximately how long each of the preemergence herbicides will likely last so we can better plan our postemergence application.

Table 1. Length of time each herbicide provided satisfactory control of Palmer amaranth.

Herbicide	Rate	Duration of Palmer Amaranth Control* (in days)	
		Rye cover	No cover
Prowl H <sub>2</sub> O	2 pt/A	4	2
Solicam	1.5 lb/A	11	8
Dual Magnum	1.33 pt/A	20	28
Valor	3 oz/A	60	>60
None		2	1

\*Duration of control refers to the length of time (in days) that each herbicide held Palmer amaranth populations below 1 plant per 3 feet of row.

The herbicides listed in *Table 1* (see left) were all applied the day after peanut planting. After the applications were made, we visited the treated areas weekly and counted how many weeds were present in each plot. We considered that each herbicide had lost its effectiveness when the Palmer amaranth population reached 1 plant per 3 feet of peanut row. We set this threshold since that is when we considered that a postemergence herbicide application would be necessary.

We found that the effectiveness of different preemergence herbicides on Palmer amaranth control can vary

greatly. Prowl H<sub>2</sub>O and Solicam were the least effective with control ranging between just a few days and approximately 1 week. Dual Magnum was better with 3 to 4 weeks of control, but Valor provided control for up to 2 months. We also found that the rye cover crop at this location did little to suppress Palmer amaranth growth. However, the rye at this location was relatively thin. Other research has shown that dense rye cover can greatly enhance weed control.

Prowl H<sub>2</sub>O is highly effective on annual grasses, Florida pusley, and many of the pigweed species. However, we have observed over the past several years that it is largely ineffective against Palmer amaranth. Therefore, if Prowl H<sub>2</sub>O is the only preemergence herbicide in the program, plan to treat for Palmer amaranth escapes within the first week after planting. Conversely, Valor will generally provide excellent preemergence control, while also being somewhat cheaper to apply than Dual Magnum.

But for all preemergence herbicides it is important to remember that rainfall or irrigation within 7 to 10 days after application is essential to activate the herbicide. We had excellent incorporation at this location, but prolonged drought will likely result in each of these products totally failing to control Palmer amaranth.

Dr. Jason Ferrell, Weed Specialist  
jferrell@ufl.edu

Michael Dobrow  
UF IFAS Agronomy MS Candidate



## Calendar & Field Days

*Planting saplings at the recent Forest and Wildlife workshop in Live Oak.*

*Photo by Tyler Jones, UF IFAS Communications*

- April 4**                      **Performance Horse Short Course**, Okeechobee Agri-Civic Center  
For those who use their horse for ranch work or competitive events.  
8:30am - 3:00pm. (863) 674-4092 or [horse1@ufl.edu](mailto:horse1@ufl.edu)
- April 16**                      **Cattle and Forage Field Day**, Ona, FL  
UF Range Cattle REC, 863-735-1314, ext. 201
- April 21**                      IFAS CEU Day to earn pesticide applicator CEUs  
UF Campus G001 McCarty Hall, Gainesville, FL, (352) 392-4721  
Host polycom sites for the event: Everglades REC (Belle Glade); Gulf Coast REC (Balm); North FL REC (Quincy)
- April 29-May 1**              **Florida Beef Cattle Short Course**. Hilton UF Conference Center, Gainesville, FL
- May 4-7**                      [UF Aquatic Weed Control Short Course](#), Coral Springs, FL
- May 16-19**                    [Florida Phytopathological Society Meeting](#), Orlando, FL
- May 22**                      **Digital Soil Mapping and Monitoring** lecture  
UF IFAS [Soil and Water Science's Distinguished Seminar](#),  
UF Campus J. Wayne Reitz Union 282, 10 - 11:00 a.m.  
Featuring: Dr. Alex B. McBratney, University of Sydney Australia
- May 24-28**                    [AIAEE Conference](#), InterContinental San Juan Resort, Puerto Rico
- June 7-9**                      [FSHS and SCSSF Meeting](#), Jacksonville, FL
- June 7-10**                    [Meeting: In Vitro Biology](#), Charleston, SC
- July 13-15**                    **Short Course: Applications & Analyses of Mycorrhizal Associations**  
Information or registration call (352) 392-1951 email: [aaag@ufl.edu](mailto:aaag@ufl.edu)
- July 20-24**                    **National Conference on Ecosystem Restoration** ([NCER](#))  
Los Angeles, CA
- July 22-23**                    [Workshop: Breeding for Resistance to Whitefly-transmitted Viruses](#), Orlando, FL
- Sept. 22-24**                    [Southeast Herbicide Applicator Conference](#) Panama City Beach, FL