

# Agronomy Notes

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## Features . . .



*Pearl Millet Field near Chiefland in North Central Florida (see article on Page 2.)*

*Photo: Y. Newman*

### Forage

- Pearl Millet, A Summer Annual* .....Page 2  
*Plating Vegetative Material and Exposure Time* ..... Page 3

### Weed Control

- Chaparral™ - A New Herbicide For Pastures*.....Page 4  
*Broadcast Applications Of Arsenal PowerLine™ For  
Cogongrass Control* ..... Page 4  
*Protecting Water Resources From  
Agricultural Pesticides* ..... Page 6

### Miscellaneous

- Conservation Tillage Into Cover Crops* ..... Page 2  
*Rotate Crops Even When Prices Are Low*..... Page 2  
*Calendar, Field Day And Other Resources* ..... Page 5



*A grass buffer zone protects this waterway from pesticide invasion (see article on Page 6.)*

*Photo: F. Fishel*

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## Conservation Tillage Into Cover Crops



Conservation tillage has become a common practice for many row crops farmers in Florida. Cover crops are a very important part of conservation tillage and can be especially important without irrigation. Some of our research has shown soil temperatures to be 25-30 degrees cooler with cover crops as compared to bare soil. This has a tremendous impact on plant stress; in most years, research has shown from five to 10 % increase in yields with a good cover crop. A close up view of a row stripped off for cotton planting in an oat cover crop is shown in the picture below.

Dr. David Wright  
Extension Crop Agronomist

## Rotate Crops Even When Prices Are Low

Good rotations often get thrown out when the price for one commodity is higher than the normal rotated crops. If no crop appears profitable, use crops that will set the following crop up for higher yields the next year. Good rotations are one of the keys to high yields, low pest pressure, reduced risks, and farm profitability. Rotations usually become limited due to high prices for a commodity or ease of growing crops such as with Roundup Ready technology. We have learned over the years that crop yields for legume crops like soybean and peanut decline rapidly if planted for more than one year without rotation. Cotton and corn yields also decline without proper rotation but at a slower pace than for the legume crops. Good rotations have always been a key to good production practices and will reduce pests (diseases, insects, nematodes) if proper crops are used in the right sequence as well as legumes supplying nitrogen for grass crops.

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## Pearl Millet, A Summer Annual

Pearl Millet produces high quality forage for growing or lactating animals. It is adapted to well drained soils with pH from 5.5 to 7.0. When to plant it? In May if you get a break from dry conditions and while you have some moisture, or as soon as soil moisture conditions are right; the window for planting goes from mid March to June, and the production season is June through September depending on when you planted. Seeding rates recommended are 12 to 15 lbs/acre if planted in rows, or 30 to 40 lbs/acre if broadcasting the seed. Apply 30 lb N/A, 50% of the K<sub>2</sub>O, and all of the P<sub>2</sub>O<sub>5</sub> fertilizer recommended, from the soil test recommendation, in a pre-plant or at-planting application. Apply 50 lb N/A and the remaining K<sub>2</sub>O after the first grazing period. Apply an additional 50 lb N/A after each subsequent grazing period. Graze when the forage is 14 to 24 inches tall, and stop when the stubble is at 6 to 8 inches.

Check with your county agent for assistance with soil test or how to locate the seed.

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# Planting of Vegetative Material and Exposure Time

Rhizoma peanut (also known as perennial peanut) and bermudagrasses are typically spread using vegetative material. In the case of bermudagrasses, vegetative planting uses plant parts such as rhizomes or sprigs (underground stems/roots), stolons (above ground runners), or tops (mature stems). Only common, giant, and seed types (several brands) can be planted by “seeds.” (We are currently evaluating some seeded bermudagrasses throughout Florida, and preliminary information should be available at the end of the season). Perennial peanut does not produce enough viable seed, therefore planting is done using mainly plant parts.

Vegetative material can be used at different rates. If you want a fast stand, the more material (sprigs, for rhizoma peanut; and sprigs, runners, or tops in the case of bermudagrass) should be planted. The closer the spacing between plant parts on the field, the faster the vegetative material will close in and cover the planted area.

If still digging rhizomes for planting or when cutting tops, keep in mind that weathering of the material is a major factor in the viability of the planting material, and one that is responsible for many failed plantings.

<i>Exposure Time</i>	<i>% Sprigs Alive at Planting</i>
No exposure	100
2 hours (9 a.m. - 11 a.m.)	94
4 hours (9 a.m. - 1 p.m.)	72
2 hours (12 noon - 2 p.m.)	30
4 hours (12 noon - 4 p.m.)	3
8 hours, shade and moist (9 a.m. - 5 p.m.)	100

*This chart shows the relationship of exposure time to sun and wind after digging the planting material and the effect on viability due to dissection of the vegetative parts.*

## *Planting Tops:*

Tifton 85 and Jiggs are easier to root by tops than other hybrid bermudagrasses. Some tips for increasing the chance of successful establishment are:

**A** Cut tops with a sickle bar mower, baling immediately, and plant before the bales become hot enough to kill the grass. When planting in small areas, “forking or pitching” the newly cut material or grass is adequate.

**B** Scatter and disk the tops into a prepared and moist seedbed before tops wilt. Keep in mind that tops can die within minutes, even quicker than below ground material.

**C** With a roller, pack the soil to prevent moisture loss and help the needed soil/plant material contact.

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## Chaparral™ - A New Herbicide For Pastures

A new herbicide, Chaparral™, was recently labeled in Florida. It is formulated as a dry flowable and contains both aminopyralid (Milestone™) and metsulfuron (Cimarron/Escort/Ally™). This product will be in short supply in 2009, but is expected to be in full supply in 2010. Application rates for Chaparral range from 1 to 3.3 oz/acre, but most applications will likely go out in the 2 to 3 oz/acre range. An application of 2 oz/acre of Chaparral would be equivalent to applying 4 fl oz/acre of Milestone and 0.3 oz/acre of Cimarron (See Table 1 for Milestone:Cimarron ratios for allowable use rates of Chaparral).

Table 1. Ratios of Milestone and Cimarron in Chaparral.

Chaparral rate oz/acre	Milestone rate fl oz/acre	Cimarron rate oz/acre
1.0	2.1	0.17
1.5	3.1	0.24
2.0	4.2	0.31
2.5	5.3	0.41
3.0	6.3	0.48
3.3	7.0	0.53

**Strengths :** Chaparral will provide broad-spectrum weed control of many weed species in pastures including tropical soda apple when the application rate is above 1.5 oz/acre. It will suppress or severely injure common and Pensacola bahiagrass in bermudagrass, stargrass, and limpograss pastures. There will be little to no volatility issues with this product and can be applied in areas where 2,4-D and dicamba use is limited due to the presence of sensitive crops.

**Weaknesses:** Chaparral will NOT kill dogfennel. It cannot be used for weed control in bahiagrass as it can suppress the growth of Argentine bahiagrass and severely injure or kill Pensacola bahiagrass. When using this product for bahiagrass suppression in bermudagrass, stargrass, or limpograss, tank mixing with 2,4-D or 2,4-D + dicamba (WeedMaster, etc.) results in reduced bahiagrass control.

**Where it fits:** With the fact that Chaparral can cause some significant injury issues in bahiagrass, its use will be limited to bermudagrass in North Florida and bermudagrass, stargrass, and limpograss in South Florida.

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## Broadcast Applications of Arsenal PowerLine™ For Cogongrass Control

Cogongrass invasion is an ever-increasing problem in Florida pastures. This species is almost totally refused by all grazing animals and will quickly exclude all other desirable forages. Research has been conducted for many years to determine the most effective means of selectively controlling cogongrass in pastures, but success has been limited.

*Essentially, the only way to control cogongrass is to either use tillage or the non-selective herbicides glyphosate or imazapyr to renovate the infested area.*

Broadcast Applications Continued on Page 5 . . .

Many experiments have compared the effectiveness of glyphosate and imazapyr for

cogongrass control. From these trials we have determined that imazapyr is the most effective herbicide option.

There have been two imazapyr products labeled for use on pastures (Arsenal™ and Stalker™), but the label restricts applications to only 10% of the pasture per year. In areas where cogongrass covers significant acreage, this restriction never allows for wide-scale cogongrass control or eradication. This issue was recently addressed when BASF requested a label change for Arsenal PowerLine™.

The new label (submitted as a 24C) is specific to Florida and allows broadcast applications of Arsenal PowerLine™ at 48 oz/A, or as spot spray at a 1% solution.

*If as pasture is treated with Arsenal PowerLine™ then animals should be either*

- 1) Removed from the pasture for 30 days or
- 2) If they remain on the pasture they cannot be sold for slaughter for 30 days.

There is also a 30 day haying restriction after application.

For more information, you may access the 24C label at <http://www.cdms.net/LDat/ld86K007.pdf>.

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## Calendar

- May (Saturdays) [Scott's Spring Corn Fest](#)  
Mount Dora, FL
- May 6-8 **UF/IFAS Extension Symposium**  
UF Hilton, Gainesville, FL
- May 10-12 **Southern Pasture and Forage Crop Improvement Conference**, Lexington, KY
- June 7-9 [FSHS](#) and [SCSSF](#) Joint Annual Meeting  
Wyndham Riverwalk, Jacksonville, FL
- July 20-24 **National Conference on Ecosystem Restoration**  
[NCER](#), Los Angeles, CA
- October 20-22 [Sunbelt Ag. Expo](#)  
Moultrie, GA
- October 28th [2009 Florida Ag Expo](#)  
Gulf Coast REC, Balm, FL

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# Protecting Water Resources from Agricultural Pesticides

Cleanup of water contaminated with one or more pesticides is complicated, time-consuming, expensive and usually not feasible. The best solution is prevention. The following management practices will help to retain pesticides in target areas and keep them out of water resources.

## *Consider the Vulnerability of the Site*

Determine the susceptibility of the soil to leaching. Soil texture, organic matter content, soil moisture and permeability affect pesticide movement. Some pesticides readily move through soils that are well-drained, sandy, or low in organic matter. For example, many of the common soils used for citrus production in Florida have a content of well over 90% permeability of the geologic layers between the soil surface and the ground water. If sinkholes are present, surface water runoff can quickly reach ground water with little natural soil filtering. The slope of the field and the relative location of lakes, ponds, streams, canals, or wetlands to the application site determine the vulnerability of these surface water bodies to contamination from pesticides.



*A grass buffer zone is between this waterway and mixing/loading site and acts as a filter.*

*Photo: F. Fishel*

Construct a berm or bank between the application site and surface water bodies to prevent or reduce the amount of water running off the field into the surface water following a heavy rainfall. Develop a buffer zone, such as a grass border, between the field or the mixing and loading site and surface water-sensitive areas (*see photo on left*). Water should pass through a grass "filter" strip when draining off fields into canals or other water conveyances.

## *Evaluate Location of Water Sources*

Pesticide contamination of water frequently is associated with pesticide handling practices in the vicinity of wells and other water sources. Pesticide spills near wells can move directly and quickly into ground water. Wells should be properly cased, capped, and grouted. Avoid mixing, storing, or disposing of pesticides within 100 feet of a well. Some pesticide labels may recommend specific distances that pesticides should not be mixed and loaded within various surface water bodies, such as intermittent streams and rivers, natural or impounded lakes, and reservoirs.

## *Consider Weather and Irrigation*

Delay the pesticide application if heavy or sustained rain is anticipated. Pesticide runoff and leaching are favored by rainfall soon after application. Do not apply pesticides before scheduled irrigations, unless the product must be activated by moisture. Control the quantity of irrigation water to minimize leaching and runoff.

## *Use Integrated Pest Management (IPM)*

The practice of IPM combines chemical, cultural, and biological control into one program to manage pest populations. Fields must be scouted to identify pests, their population levels, and extent of damage. Make pesticide applications only when necessary, using the lowest rate required for adequate control. Reduction in the amount of pesticide use lowers potential movement to sources of water, protects the environment and reduces costs.

Select pesticides that are less likely to leach. Pesticides that have the greatest potential to leach to ground water are highly water soluble, relatively persistent and do not adsorb to soil. Some pesticides are classified as restricted use and have label statements because of concerns over water contamination (*see example below*). Read the label before you purchase, use, or dispose of a pesticide. You are

required by law to follow label directions. Be aware that there are several Florida-specific laws that place limitations on use of certain pesticides, including aldicarb and bromacil. Label language will alert users of such limitations.

**RESTRICTED USE PESTICIDE  
DUE TO GROUND AND SURFACE WATER CONCERNS**

For retail sale to and use only by certified applicators or persons under their direct supervision, and only for those uses covered by the certified applicator's certification.

This product is a restricted use herbicide due to ground and surface water concerns. Users must read and follow all precautionary statements and instructions for use in order to minimize potential for atrazine to reach ground and surface water.

*Measure Pesticides Carefully*

Accurately calculate the amount of pesticide needed to treat the site to assure you are staying within the label rate. Careful calculations help eliminate disposal problems associated with excess spray mix.

*Calibrate Sprayer*

Calibrate application equipment frequently to assure the desired amount of pesticide is being applied (Figure 3). Check the equipment for leaks and malfunctions.

*Mix and Load Carefully*

If possible, mix and load on a permanent or portable containment pad to avoid saturating the soil with pesticide. If the water source (well, canal or pond) used for filling a spray tank is not protected by a concrete pad, berm, or wall to prevent runoff into the source, fill the spray tank as far as possible from the water source or fill the tank in the field from a nurse tank. Nurse tanks are used to transport clean water for mixing and loading. Add the pesticide concentrate to the sprayer in the field. Use a check valve (anti-siphon device) or an air gap between the end of the water supply hose and the highest water level in the spray tank to prevent back-siphoning from the spray tank into the water supply. Never place a hose into a tank while filling (*see photo on left*); always leave an air gap to prevent back-siphoning. Anti-siphon devices are required for chemigation equipment in Florida. Do not leave the spray tank unattended when filling. Do not allow tanks to drain at mixing and loading sites. Close the tank opening to prevent spills when transporting the sprayer to the field.



*Store Pesticides Safely*

Store pesticides in a facility with restricted access and away from all water resources. Use a facility with a concrete floor that has been sealed to facilitate clean-up in the event of a spill or leak. Inspect containers regularly for leaks and corrosion. Bulk pesticide storage tanks should be placed on concrete pads with dikes built around them to prevent movement of pesticide should a spill or leak.

*Dispose of Wastes Carefully*

Follow the label when disposing of pesticides. Triple or pressure rinse empty pesticide containers and add the rinse to the spray tank. Apply excess spray mix and rinse water from equipment cleaning to crops or sites listed on the label. Don't drain it on the ground. Mount a tank of fresh water on the sprayer to rinse the tank and sprayer. Where practical, excess spray mix or rinses can be held in a tank for use in a later spray mix. Take empty, rinsed plastic pesticide containers to pesticide container recycling facilities or to sanitary landfills. Excess pesticide concentrates can be given to another qualified user, safely stored for hazardous waste collection days, or disposed of by a firm licensed to dispose of hazardous waste.

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