AGRONOMY NOTES

UNIVERSITY OF FLORIDA
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IN THIS ISSUE

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.

DLW

Corn Planting Date and Pest Problems

Several years of research data with many corn hybrids has shown that higher fall armyworm and corn earworm damage occurs with late planting (May-July). Generally, much less insect damage occurred on the *Bt* hybrids than the non *Bt*, and it is very apparent in both silage and grain yield. Little difference is noted in corn planted in February through early April. There is also a difference in hybrids in their response to southern corn rust. Tropical corn hybrids tested and recommended for Florida have much less rust than temperate hybrids in variety trials. This becomes more apparent with late planting. However, there are differences in rust tolerance of temperate hybrids and some temperate hybrids do much better against southern rust than others with late planting (late April-June). Always get as much variety trial information as possible from as many locations and planting dates as possible before making hybrid selection decisions.

DLW

Strip Till Cotton or Peanut in Fallow Fields

Questions arise about strip tilling into fields that have not had crops grown for a few years. There are usually many hard to control weed species present including broom sedge and horseweed as well as other broadleaf weeds. Soils in these fields are often mellow in the top few inches due to not being tilled or compacted by equipment for several years. The question is often asked if they can plant peanuts and dig them without a problem. The answer is that weeds need to be controlled before planting and 2,4-D is often necessary for some of the hard to control weeds like horseweed and evening primrose. Glyphosate or other similar materials can be used to kill many other weeds a few weeks before planting. The second answer is that if the strip till rig can move through the field at planting without dragging plant material and gouging holes, the peanut plow should not have a problem at harvest time.

Cotton planting depth is a little more critical than peanut and the same principle applies as for peanut, if the strip till rig leaves a smooth seedbed at planting, there should be no problem for planting cotton at the proper depth and with weed control operations later in the season.

DLW

Hay Producers

"Don't get behind on your potassium application". You might be surprised at the amount of potassium that is removed from the soil when hay is harvested and hauled off the hay field. The table below gives estimates of the amount of nutrients removed in various hay crops.

Approximate pounds of nutrients removed by various forage crops at specified yield levels when harvested as hay. [1]				
Species and assumed hay yield, tons/acre				
	Bermudagrass ---- 6 tons ----	Alfalfa ---- 5 tons ----	Sorghum-Sudan ---- 4 tons ----	Tall fescue ---- 3.5 tons ----
Nitrogen	258	280	160	135
Phosphate (P_2O_5) [2]	60	75	61	65
Potash (K2O) [3]	288	300	233	185
Magnesium	18	25	24	13
Sulfur	30	25	25	14

[1] = Source Potash & Phosphate Institute.
[2] = P_2O_5 = P x 2.29; P = P_2O_5 x 0.43.
[3] = K_2O = K x 1.2; K = K_2O x 0.83

The numbers in the table indicate that these hay plants remove as much or more potassium (K2O) than nitrogen.

You may not want to add all of the potassium that is indicated above, if your soil test is medium or high in potassium. Plants can take up and use some of the native potassium that is in the soil. Follow soil test recommendations.

CGC

Legumes That You Can Use to Overseed Your Pasture

Seed of three commonly used summer annual legumes are available for planting in 2005. These are aeschynomene (*Aeschynomene americana*), alyceclover and hairy indigo.

These legumes can provide extra protein for cattle during July, August and September when pasture grasses may be low in protein. Aeschynomene is adapted to wet flatwood sites, and should not be planted on upland sands. Alyceclover and hairy indigo can be planted on flatwood sites with good drainage and on upland sands. They do not like standing water. Since all three are annuals, they are all susceptible to establishment failure due to drought. Most producers wait until the summer rains start before planting. When overseeding an established bahiagrass sod, be sure to graze it short to reduce competition with the legume seedlings. When legume seedlings are found, remove the cattle in order to let the legume plants develop. Start grazing when the legume plants are 12 to 14 inches in height.

CGC

Peanut Contracts

Contract prices being offered for 2005 peanuts are generally below those of last year. Consequently growers need to be careful in the level of inputs they use for the crop without risking loss of yield. Be sure to follow a crop, such as grass, corn, or cotton, that is not susceptible to the same diseases and nematodes as peanuts. Use soil tests to determine the amount of lime, fertilizer, and gypsum that would be needed for the crop. Select a variety that produces high yields and has resistance to the diseases that you expect on your farm. Confirm with your contractor or expected buyer as to an acceptable variety. Buy high quality seed and protect it from damage during handling, improper storage, or during planting. Plant at a uniform depth of 1.5 to 2 inches on

heavy soils and 2 to 3 inches on sands when soil temperatures and moisture are favorable for rapid germination and emergence. If tomato spotted wilt virus is a threat in your area, be sure to follow as many of the techniques as you can for reducing losses to the disease. Know the expected weed problems and plan to use herbicides that will provide effective and efficient weed control. Plan a disease control program that provides application techniques and timing that may provide for reduced costs, while still keeping disease losses at a minimum. Scout fields for insects, diseases, and weeds in order to select products and timing of application for best results. Use the hull-scrape or peanut profile maturity method to predict the optimum date to dig the peanuts. Use care to dig and combine the peanuts to prevent excessive losses in the field. Start drying the peanuts as soon as possible after combining.

EBW

Planting Late Maturity Peanuts

Those peanut varieties considered to be late maturity generally require 2 to 3 weeks longer to mature, when planting at the same time, than the more popular medium maturity varieties, such as Georgia Green. The major advantage of the late maturity varieties is that they have higher levels of resistance to the major peanut diseases than earlier maturity varieties, and currently are the only varieties with significant resistance to leaf spot. These varieties also have the highest levels of resistance among all varieties to tomato spotted wilt virus (TSWV), and with resistance to white mold, rust, CBR, and other diseases. Not only does this greater disease resistance reduce losses to disease and therefore increase the chance for a profit due to higher yields, but it can also allow reduced costs of production as fewer fungicide applications for prevention of leaf spot would be required. Four fungicide applications to the late maturity varieties grown in a good rotation can provide as much leaf spot protection as the 7 to 8 applications needed for medium maturity varieties grown under the same rotation. Despite these advantages the late maturing varieties have had only limited acceptance thus far by growers. Much of the reluctance to grow these varieties has been due to instances of poor germination and low vigor during the early stages of growth, especially with early planting. In many other instances there were no problems with germination and vigor. While all of the factors that contribute to the germination and vigor problems are not known, there are a number of practices that can improve the chances for a successful crop. First plant only good quality seed with a high germination test score. Seed that were harvested at full maturity, dried to 8 percent moisture, and stored properly are believed to be especially important to getting a good stand. A second practice would be to plant in late April or early May when soil moisture and temperatures are conducive to rapid emergence and stand establishment. Peanuts planted at this time should mature in late September or early October. Earlier planting could result in poor germination and slow early growth, while later planting would create a risk of getting full maturity in the fall. Since these varieties require 150 or more days after planting to reach maturity, a late May planting might not be mature until late October or later. If cool and dry weather occurs in October, maturity is slowed and lower grades and yields may be obtained.

EBW

Admire for Tobacco

The use of the systemic insecticide Admire in the transplant water for tobacco has been shown to reduce the incidence of tomato spotted wilt virus (TSWV) in addition to control of aphids. The reduced TSWV is not believed due to control of thrips, the insect that transmits TSWV, but rather to a suppressing of the symptoms of the disease. Generally the level of TSWV suppression with Admire is considered to be about 50 percent of the untreated. Admire will normally provide aphid control until

flowering, at which time the insect usually becomes a minor problem. Flea beetles and other insects are also controlled by Admire.

EBW

Cucumber Mosaic Virus in Tobacco

Cucumber mosaic virus (CMV) was identified recently in a Florida tobacco plant bed. This virus is spread by aphids and has been severe in a few locations in recent years, but has not been a common problem in most fields. However the 2004 infections were more widespread than in the past, indicating that there could be many more sites available for early infection in 2005. There are a number of known cultivated plants and weeds that serve as a host to CMV, and perhaps many others that have not yet been identified as hosts. It is possible that there will be more cases reported over the next few weeks.

EBW

Tobacco Transition Payment Program

The Tobacco Transition Payment Program (TTPP) is the USDA's Farm Service Agency (FSA) plan to provide payments to tobacco quota holders and producers as a result of the legislation commonly called the "Tobacco Buyout" that was passed in October. To obtain payments, eligible participants should sign contracts at their local USDA Service Center by June 17, 2005. If a producer grew tobacco in more than one county, a contract must be signed in each county. An eligible quota holder is one that had a tobacco allotment assigned to his or her farm on October 22, 2004, which is the date the legislation became law. An eligible producer is an owner, operator, landlord, tenant, or sharecropper that shared in the risk of growing tobacco in 2002, 2003, or 2004. Quota owners will receive a total $7 per pound of basic quota that was assigned to the farm in 2002, with the payments being made annually for 10 years. Producer payments are for a total of $3 per pound of the 2002 effective quota, again with the payments being in 10 equal payments for 10 years. If there are multiple producers, each share will be based on the information in the form FSA-578, Report of Acreage, for each of the three years, 2002, 2003, and 2004. Producers may change the share percentages, however all producers must agree with the division. Lump-sum payments will not be paid by FSA, but a participant may enter into an agreement with a private party to receive a lump sum in exchange for the annual payments. The participant would need to sign a contract at the FSA office to assign payments to the private party. Further information can be obtained at the FSA website: http://www.fsa.usda.gov/tobacco or from the local FSA office.

EBW

A New 2,4-D Formulation

Amine and ester formulations of 2,4-D are common and have been available for many years. Recently, Helena Chemical Company has developed and released, 'Unison', an acid formulation of 2,4-D. In the past, practical use of acid formulations of phenoxy herbicides was limited due to water insolubility and formulation problems. Helena has overcome these issues by developing a system to dissolve insoluble auxin acid in a water dispersible surfactant system. The benefits of this technology are very low volatility, low odor, 100% water solubility, and 100% liquid fertilizer compatibility.

Preliminary research indicates that when comparing equal lbs acid equivalent, the acid formulation has greater herbicidal activity than amine formulations and is similar in activity to ester formulations. It is important to note that Unison is formulated at 1.74 lbs 2,4-D acid per gallon, while most standard amine and ester formulations contain 3.8 lbs 2,4-D acid per gallon. Unlike some ester formulations, the acid formulation of 2,4-D (Unison) complies with Florida's Organo-Auxin Herbicide Rule. Compared to standard 2,4-D formulations, there is likely to be increased cost associated with this new technology; however, it may be feasible to use Unison when volatility and odor issues are of concern.

For more information on the Florida Organo-Auxin Herbicide Rule please refer to University of Florida EDIS document SS-AGR-12 at http://edis.ifas.ufl.edu

CRR

Reason for Herbicide Failure

Herbicide technology has improved dramatically over the past 25 years. These products are now safer and more effective than ever before. However, herbicide failure is still a relatively common occurrence. For example, have you ever sprayed a herbicide fully expecting a certain outcome, only to receive marginal levels of control? Do your neighbors brag on herbicides that you can't seem to make work on your farm? Although herbicides seem to work almost by magic, there are many factors that impact herbicide effectiveness. Below are a few of the more common scenarios.

Improper sprayer calibration: Many of our herbicides are now applied at rates as low as a few ounces per acre, rather than pounds per acre as was common in the past. Considering these low application rates, small discrepancies in sprayer calibration can result in large differences in amount of herbicide applied. For example, if your target sprayer output is 15 gallons per acre, but your actual output is 10 gallons, your application rate of Cadre® will reduced from 1.44 oz/A to 0.96 oz/A. Although Cadre® applied at 0.96 oz/A will still control a number of weed species, other weeds such as hairy indigo, large morningglory, Florida beggarweed, and bristly starbur will not likely be controlled. On the other hand, sprayer output that is greater than expected will result in applying herbicides at elevated rates. This will often lead to greater herbicide cost and possible crop injury due to improper application. Considering that the sprayer calibration process requires little time to perform, it is important to routinely check your sprayer output to ensure that herbicide application rates are not less, or more, than required.

Drought at time of application: Postemergence herbicides work by penetrating into the leaf and then inhibiting some essential process within the plant that eventually leads to plant death. During periods of dry weather, plants will begin to grow slowly and the leaves harden off in an attempt to conserve water. This hardening off process makes it much more difficult for postemergence herbicides to enter the plant and large portion of the chemical will dry on the leaf surface without ever entering the plant. Reduced herbicide uptake, of course, leads to reduced levels of weed control. Conversely, plants growing in areas of adequate soil moisture are succulent, rapidly growing, and herbicide penetration into the leaf is rapid and much more effective. Therefore, applying herbicides in times of hot, dry weather can be the reason for herbicide failure. If possible, delaying herbicide applications until the weeds are actively growing can often lead to much greater levels of weed control.

Adjuvants: The purpose of adjuvants (non-ionic surfactants, crop oils, etc) is to improve herbicide uptake into plant leaves. Non-ionic surfactants work primarily by making the spray droplet flatten out on the leaf surface, decreasing evaporation time, and decreasing the potential for the spray droplet to runoff the leaf. Crop oils have many of the same properties as surfactants, but they also help dissolve leaf surfaces and can dramatically increase herbicide penetration into the leaf. Omitting the proper adjuvant from the spray tank can dramatically reduce the effectiveness of many herbicides such as Classic, Cadre, and Select.

Although there are several choices in the adjuvant market, there are a few simple guidelines to follow. Any non-ionic surfactant that contains greater than 80% active ingredient will work fine, generally, regardless of the brand or price. However, some products will contain surfactants, compatibility agents, buffering agents, anti-drift agents, etc., all in one jug. But, herbicide labels rarely, if ever, require the addition of these products and their usage may

prove to be more costly and less effective. Bottom line - using the proper high quality adjuvant at the proper rate can mean the difference between excellent and mediocre weed control.

Tank mixes: Tank mixing different herbicides is a simple way to broaden the weed control spectrum of any single herbicide. This is a common practice in peanut weed control with combinations such as Gramoxone + Basagran or Cadre + 2,4-DB. Although tank mixing is important in some situations, it is easy to get carried away and add too many herbicides/fungicides to the spray tank in an attempt to control any conceivable pest. These "Witch's Brew" combinations of herbicides can often result in incompatibility in the spray tank (herbicides may begin to fall out of solution) or, more commonly, they result in herbicide antagonism (reduces effectiveness). It is important to note that not all herbicides work well together. For example, Basagran is a good herbicide that works well in peanut for broadleaf weed control. However, the addition of Basagran to Select, a commonly used grass herbicide, can result in reduced grass control. These products can be successfully used together, but the application rate of Select should be increased to compensate for the antagonism of Basagran.

If you plan to tank mix different herbicides, keep the combinations as simple as possible. The addition of three or four herbicides and/or fungicides to a single spray tank can often result in antagonism and reduced herbicide effectiveness. It is important to note that both Select and Cadre are easily antagonized by many different herbicides/fungicide combinations.

Conclusion: The herbicides we are currently using in crop production are powerful and highly effective, but they are not immune to failure. Although the scenarios listed above are some commonly observed reasons for lack of herbicide performance, there are other situations that affect weed control as well. Regardless, being attentive to the environment and reading the product label can dramatically improve your chances of success.

JAF

Red Sorrel Biology and Control

We often see red when we look at our financial situations, but we can also see red in our pastures and along our roadsides right now. The reddish hue we see is from a plant that is currently flowering and setting seed. This plant is commonly known as red sorrel, but other common names include: sheep sorrel, sour-grass, Indian cane, field sorrel, horse sorrel, sour weed, red-top sorrel, cow sorrel, red-weed, and mountain sorrel. Another common pasture weed, curly dock, also has this characteristic reddish hue, but this plant is a simple perennial and spread is primarily by seed.

Red sorrel has a creeping root system and spreads aggresively by underground roots and rhizomes. The stem is somewhat woody at the base of the plant and plant height ranges from ½-foot to 2 feet tall, with little to no branching. Lower-leaf blades are somewhat arrow-shaped with one to two basal lobes. Upper leaves are more slender and sometimes without these basal lobes. Plants are dioecious (either male or female), with male plants having orange-yellow flowers and female plants with red-orange flowers. Only female plants produce seed and seed can remain viable for extended periods. However, spread by seed is less extensive than by the creeping rootstock.

Red sorrel is native to Europe, but it has become adapted throughout the U.S. and southern Canada. Presence of red sorrel in a pasture may indicate low pH as this plant thrives under acidic conditions, but it has adapted to other conditions as well. Therefore, presence of the weed in a pasture that has not been limed in many years may necessitate a soil test.

Red sorrel control can be achieved with several herbicides labeled for pastures. These herbicides include Cimmaron, Banvel,

Weedmaster, Remedy, and Crossbow. Refer to the latest recommendations (EDIS publication: SS-AGR-08, Weed Management in Pastures and Rangeland -2005) for specific rates and precautions. Care should be taken to avoid forage injury. Cimmaron should not be applied to Pensacola bahiagrass and some injury could be observed on other bahiagrass cultivars at Cimmaron rates greater than 0.3 oz/acre. Weedmaster contains 2,4-D and should not be applied to limpograss pastures. Since red sorrel is setting seed right now, it would be best to wait until next year to spray a herbicide. Make a note of the infested areas of your pasture and apply your herbicide next January or February before stem elongation begins.

BAS

New Publication

A new publication "Alfalfa - The high-quality hay for horses" can be obtained from the following web site, www.alfalfa.org. A copy can be down loaded and printed or hard copies can be purchased. Although sponsored by the "National Alfalfa Alliance"which promotes the sale of alfalfa hay, the publication was written by qualified university faculty and contains valuable information about the use of alfalfa in a horse's diet.

For example: "Myth: The excess protein in alfalfa hay will damage the kidneys. Reality: Normal healthy horses can metabolize and excrete the extra protein in alfalfa hay without damaging their kidneys. However, horses consuming high-protein diets may drink more water and produce more urine as part of the normal excretion process. All horses should have access to clean water at all times."

CGC

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