



Agronomy Notes

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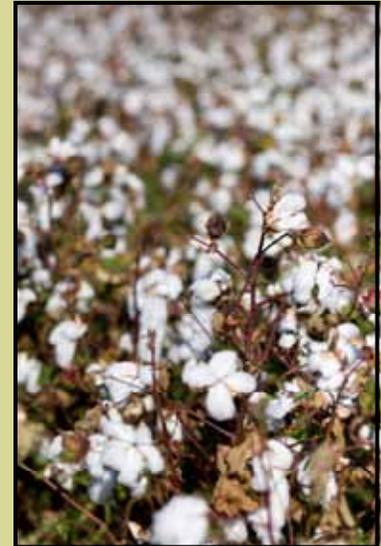
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Late Season Weeds In Cotton

A well-established weed scientist once told me, “you have to keep cotton weed-free until July 4th, or you will lose yield”. This statement is absolutely true and has been validated by numerous research trials.

The reason behind this statement is simple: cotton (and most other crops) is most susceptible to weed competition during the first 6 weeks after planting. During this establishment phase, the crop simply can't tolerate competition and will begin to trade yield in favor of survival. The earlier that weeds establish and the longer they persist, the more yield will be lost.

However, an important change occurs around 6 weeks. At this point, the cotton is well established and is becoming actively reproductive. By and large, weeds that establish after the 6 week mark have little or no effect on yield. This is because the cotton has such a head-start, most weeds simply don't have enough time and opportunity to be destructive.

Of course some weeds, such as morningglory, can infest a field late in the season and cause great harvest difficulty. But, these weeds can be managed during defoliation/dessication and cotton yield will not be decreased. We are nearing the 6 week window for cotton. Continue with an active weed management plan until this point, then you can back off and let the cotton develop and fend off the weeds for the rest of the season.

Forage

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Pasture Fencing Considerations

Proper grazing requires the spreading of animals within a grazed area to obtain uniform use of the forage resource. In large pastures, it is common to find uneven grazing with overgrazed areas near watering sources, and forage with little use in areas distant from water. Fencing is used to subdivide large units into small units, thus making a more efficient use of the forage.

The location, size, and shape of the grazing unit, and the direction of livestock travel, are important considerations in fence placement. The expense of constructing new fences requires careful thought over the basic fencing items. Existing fences that are acceptable should be used, and often the life span of an old fence can be extended by adding electric wires at the top and bottom.

Cattlemen are commonly best served by using a barbed wire or a high tensile wire fence or a combination of these two. However, widely used livestock fences also include electrified tape, various types of woven wire, and specialized types such as board fences. The best choice will depend on the availability and durability of materials, and livestock type. For example, barbed wire is generally avoided for horse pastures because of the natural behavior of horses, which can result in fence-related injuries and in many cases because of the high value of the animals. The production system and the landscape should indicate the need for fencing, and ideally the system should be designed before the fences are built.

Cash Crops As Cover Crops

Most crop land has a crop on it for about 4-6 months of the year (corn, soybean, cotton, peanut) and the soil is often bare for the remainder of the year or crop residue is left and weeds grow adding to the weed seed bank and allowing many of the leachable nutrients to leach below the root zone of following crops. Recent research on a sod based rotation with cotton and peanuts in Florida showed that annual forage crops planted after these crops and grazed can result in as much as \$120/acre of nutrients that are recycled and kept in the top 12" of the soil profile as compared to a cover crop without grazing. There would be even more nutrients lost comparing bare ground to a cover crop. Both grass and legume cover crops can keep nutrients in the soil profile while legume cover crops will decompose quickly after they die.

Cowpea and soybean can be planted after corn for silage or grain and produce N while producing a crop that can be harvested for grain. Millets, sorghum, and sorghum-sudangrass can be planted early or late for grazing or grain after winter annual crops or corn. Likewise, small grains can be planted before most row crops for grazing or can do well for grain ahead of soybean or sorghum. These systems are much more intense than growing just one row crop per season but can be very profitable if niche markets are found for the products or if animals are part of the system and can be sold along with recycling nutrients.

How Does Nitrogen Get Tied-up In The Soil?

Nitrogen is assimilated into plant material as it grows, upon decomposition it is released to following crops. Legume crops, such as cowpea, soybean, etc. "fix" significant amounts of nitrogen for use by subsequent crops through symbiotic association with *Rhizobium* bacteria which convert atmospheric nitrogen into a form that the legume can use. When grasses or legumes die, or are incorporated into the soil, microorganisms start decomposing the residue. In a process called mineralization, the N in the plant tissue is converted by soil microbes to nitrates that the next crop can use. Legume crops (peanut and soybean) can generally contribute anywhere from 40-60 lb of N per acre. This nitrogen is mineralized over an extended period of time, with an average of 50% of the total N contained in the legume crop being available to the next crop.

The ratio of carbon to nitrogen (C:N) in the decomposing plant material affects how much and when the N will be available for subsequent crop uptake. The microbial population that decomposes the plant material is made up of 10 parts carbon to 1 part nitrogen. When a cover crop is killed or incorporated into the soil, the population of soil microorganisms increases in response to the added food source. As the population of these microbes increase, this 10:1 carbon to N ratio must be maintained. Consequently, as the microbial population increases, N contained in the decomposing crop and the soil may be immobilized or "tied up" as part of the physical structure of the microbes. N is then not available for the following crop so additional N may need to be added after a crop that has a high C:N ratio. For example, a mature forage sorghum crop may have a relatively high C:N ratio of 50:1. This ratio supplies about 20% of the N needed by the microorganisms when they utilize this carbon source. As the soil microbial population increases in response to the incorporation of the sorghum into the soil, maintenance of a microbial C:N ratio of 10:1 requires the immobilization of all the N contained in the sorghum crop as well as additional available soil N. If a corn crop follows the decomposing grass crop, additional N would be required to insure adequate crop growth. Keeping crop residue on the soil surface instead of incorporation into the soil will slow decomposition requiring less additional N for the next crop. When the microbes die, the N is "mineralized" and becomes available for subsequent crop use.

Legumes have relatively low C:N ratios and little immobilization occurs upon decomposition. Legume mineralization often occurs in the first 15-30 days after they die or are killed and releases the N before the next crop has a high demand which subjects this N to leaching.

Long term build up of organic matter often occurs with perennial grass crops since they decompose slowly and much of the Corn Belt soil organic matter was built from native perennial grasses. The more mature legumes usually have more stems and a higher C:N ratio, which slows the decomposition. Most grass crops have a peak uptake period starting about 35-45 days after planting so timing N mineralization from previous crops with low rainfall periods or irrigating to prevent water movement through the soil profile will help prevent N runoff and leaching.

Late Season Management Of Row Crops

Much of the management of the row crops occurs during the first 2 months of growing season. Herbicides, fertility, row spacing plant population, etc., is decided on early in the season. However, as soon as summer rains start weed management decisions have to be made along with insect and disease control that occur late in the season.

Weeds and insects are treated as they occur while disease problems are anticipated and treatments are made in advance since they are often difficult to control once it reaches a certain level. July and August are often the peak periods for pest development so scouting is very critical to all of the row crops during this period as well as treating timely and appropriately. Since seed costs have gotten higher with many crops due to genetic technology (often \$40-55/acre), and the insect or herbicide resistance is bought in the seed, it is critical to protect the investment through good scouting and treating as needed.



Reaching The Masses: More Than 1,000 Applicators Attend IFAS CEU Day

Applicators of restricted use pesticides are mandated by law to become certified and licensed. In order to keep the license valid, they must accumulate continuing education units (CEUs) during the license cycle. Traditionally, Extension has played a key role in hosting educational events that are approved by FDACS for CEU credit. Over the years, these events have consisted primarily of face-to-face classroom activities.

Although retesting is an option for license renewal, the vast majority of applicators opt to attend programs to earn CEUs. The number of CEUs that must be earned during the 4-year life of agricultural licenses varies from a minimum of 8 to more than 20, depending on the type of work engaged in by the applicator. A large number of licensed applicators are required to earn a significant number of CEUs and can potentially spend considerable sums of money and time in order to meet their requirements. With advances in distance communication technology, new educational delivery methods are being utilized and evaluated for providing effective programs for pesticide applicators. One such means is through polycom, which provides an efficient and cost effective manner of reaching distant audiences in essentially every UF/IFAS county extension office and research and education center.

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Reaching The Masses...*Continued from Page 4*

Organizing the Event

In late fall 2009 Drs. Fred Fishel and Ken Langeland began planning and setting up an agenda of topics and speakers to meet FDACS approval for CEU credit. The program was approved for a total of 6 CEUs in 12 various applicator categories. After soliciting county extension offices and research and education centers, a total of 51 host sites were organized to participate in the statewide March 30 event. With one exception, all presentations were delivered via polycom from the main UF campus in Gainesville. A survey was developed with 2 primary objectives to determine: 1) audience acceptance and comfort levels with distance technology; and, 2) knowledge gained.

Selected Results and Impacts

A total of 1,028 applicators attended at least some portion of the program and 667 surveys were returned for a response rate of 65%. The license classifications of audience members attending included 52.5% public, 31.8% commercial, and 15.7% private applicators. The majorities of applicators worked in either aquatic, natural areas, or rights-of-way weed management and ornamental and turf pest control. Many of these applicators worked in more than one of these areas. For most of these applicators (68.6%), attending a polycom event for obtaining CEUs was a first. When asked if they would attend a similar event in the future, the response was overwhelmingly positive (97.8%). This reaction was encouraging from an extension educator's point of view. Audience acceptance and comfort levels and knowledge gained are presented in Table 1. Responses are based upon a Likert scale rating where 5=strongly agree; 4=agree; 3=neutral; 2=disagree; and, 1=strongly disagree. From the responses, applicators perceive this type of environment to be conducive to presenting information and learning, although there was not strong agreement it was as effective as traditional face-to-face learning. Also importantly, they were comfortable with using this type of venue. At least in the short-term, the information presented increased applicators' knowledge of herbicide use and weeds, and most notably remarked that the information gained would help in their job performances.

Table 1. IFAS CEU Day audience acceptance and comfort levels and knowledge gained.

Acceptance and comfort levels	
Statement	Likert scale rating
I found the format of this event to be an effective method of presenting information.	4.19
I found this format to be an effective method of learning.	4.09
I found this format to be just as effective for learning as traditional "face-to-face" learning.	3.56
I feel comfortable attending an event using this format.	4.20
Knowledge gained	
Statement	Likert scale rating
My knowledge of herbicide use increased.	4.05
My knowledge about weeds increased.	4.01
My knowledge gained today will help my job performance.	4.07

Conclusions

Distance technology will continue to make advanced improvements. The format provides an efficient means for information dissemination while in a comfortable setting. As budgets continue to decline, the use of distance technology will continue to increase and will enhance the applicators' ability to seek and obtain CEUs for keeping the license valid.

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Refer to the calendar for Florida Small Farms conference (July 31) and other events this summer.

Photo: Tyler L. Jones
IFAS Communications

- July 11-17 [Caribbean Food Crops Society](#) meeting, Boca Chica, Dominican Republic
- July 12-16 [Greater Everglades Ecosystem Restoration Meeting](#), Naples
- July 13-15 [American Peanut Research and Education Society Meeting](#) Clearwater, 979-845-8278
- July 15 [Bioenergy Crop Field Day](#), Plant Science REC, Citra
- July 22-24 [Southern Peanut Growers Conference](#), Edgewater Beach Resort, Panama City Beach
- July 31 - Aug. 1 [Florida Small Farms & Alternative Enterprises Conference](#) Osceola Heritage Park, Kissimmee
- Aug. 1-5 [Ecosystem Restoration Conference](#) (NCER), Baltimore, MD
- Sept. 12-15 [National Goat Conference](#), Leon Civic Center, Tallahassee
- Sept. 14-17 [International Citrus & Beverage Conference](#), Clearwater Beach
- Oct. 11-14 [UF-CTA Potential Invasive Pests Workshop](#) Coconut Grove (Miami), Mayfair Hotel
- Nov. 16-18 [Tomato Disease Workshop](#), Balm (Gulf Coast REC)

UF IFAS Plant Science Research and Education Unit invites you to:

Bioenergy Crop Field Day

July 15, 2010

8:30 a.m. - 1:00 p.m.

Citra, FL

Event is Free; Register by July 8

Link to: [Registration](#)

Link to: [Directions](#)

Focus on Grasses:

Elephantgrass

Energycane

Miscanthus

Sugarcane

Sweet Sorghum

Field Tours of Ongoing Bioenergy Grass Crop Research

Most Recent Data From Statewide Experiments

Updates on Bioenergy Crop Breeding Efforts

IFAS Scientists on-hand for Small Group and One-on-one Interaction

Complimentary Lunch Provided so please register

