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Agronomy Notes

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Weed Science

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Don't Wait on the Weeds

Palmer amaranth is a tough weed that continues to march across the peanut belt. While imazapic (e.g. Cadre, Impose) was our main line of defense against this weed for many years, some populations are now resistant. In this case, we have very few options for postemergence if the weeds are greater than 4" tall. Considering that Palmer amaranth can grow in excess of 1" per day, this is not a very wide window for timing a postemergence application.

Palmer amaranth is a highly competitive weed that roots very deeply and pulls water from several feet away, provides deep shade to the peanut crop, and drops up to 400,000 seeds per plant. These facts indicate that Palmer can decimate a peanut field in a short amount of time and cause lasting effects due to the heavy seed rain.
Peanut is particular sensitive to weed competition. In the absence of weeds, peanut can harvest a large amount of light energy and efficiently convert it to yield. But when weeds are present, the peanut enters a defensive mode and become more interested in survival than high yield.

Top: Palmer amaranth infestation. Bottom: Palmer amaranth removal. Photo by Jay Ferrel

Even if the weeds are removed, the peanuts never recover and stay in the defensive mode for the rest of the season. Many states have labels that allow the use of Gramoxone Inteon in wiper-type applicators. These applicators must wipe the herbicide solution on approximately 50% of the plant in order to be effective. In most cases this will not occur until late in the season when the weeds are quite tall. Although it can be important to use the wiper to remove Palmer and reduce their seed production, by this time peanut yield has already taken a hard hit.

Controlling Palmer amaranth is a difficult proposition that requires a high level of pre-season planning and dedication. It is essential to use a strong preemergence herbicide program followed by timely postemergence applications. If escapes occur, then the weed wipers should be employed to kill these plants before they make seed.

Just remember, Palmer that is greater than 6" tall is difficult, if not impossible, to stop. Even if we eventually control these large plants, they have already done severe damage. Prevention is the key.

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Pasture Rest and Adequate Stocking Rate

The challenge for forage production is the management of pastures under the onset of warm season conditions when pastures have been affected by overstocking conditions during the winter. In some cases, in addition to overgrazing, the pastures may have had freeze damage or they may encounter early in the spring season pasture pests such as chinch bugs or mole crickets. Whichever the case, the road to recovery requires pasture rest and adequate stocking rate.

There are many considerations for pasture recovery but the most critical include doing things in the right order—weed control first, forage fertilization second, and next comes pasture rest and proper stocking rate. When plants are overgrazed, there is a reduction in the shoots and root development of the plant (see figure below). The root extension or elongation stops within 24 h after removal of 40-50% of the forage shoot mass, and some fine roots may also die soon after grazing. Resting pastures allows for leaf and root recovery. Providing enough rest from grazing defoliation allows the required re-growth of leaves. First, the plant is able to start photosynthesis (process where the plant uses sunlight and converts it to green leaves). Over time the photosynthesis process increases, and the new leaf area continues light capture and conversion to carbohydrate (energy) that will be stored in the roots.

The proper stocking rate is the one that leaves a good portion of the above ground basal forage (Photo below). In many cases this represents the lower 1/3 of the plant. Within sod type grasses, there are variations. Some will grow more upright than others (limpograss>stargrass and T-85 bermudagrass > coastal bermudagrass > bahiagrass).

Figure. Plant root growth as affected by grazing.

Left: Not grazed. Middle: Proper grazing stubble. Right: Overgrazed plant.

Photo adapted from: H.E. Dietz, RCS, 1989.

The rule to follow when managing stubble height for Florida grasses should be 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.

It is fairly simple. Allow the grass to grow (by temporarily resting the pasture), pasture shoots and leaves will re-grow, and the leaves will help recover the overgrazed root system.

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Postemergence Control of Annual Broadleaf Weeds in Sugarcane with Callisto

Annual broadleaf weeds need to be controlled in sugarcane because they negatively affect growth and development of the crop by competing for light, nutrients, water, and space. Common lambsquarters, common purslane, common ragweed, spiny amaranth, and smooth pigweed are the commonly occurring broadleaf weeds in sugarcane in the Everglades Agricultural Area (EAA). These weed species will emerge during the winter months and be prevalent in many fields in the spring if no control measures are carried out (Top picture).

Top: Common lambsquarters invading sugarcane field. Bottom: Postemergence control with Callisto. Photo by D. Calvin Odero

Atrazine has been the foundation for broadleaf weed control in sugarcane in the EAA for several years. Generally, up to 8 pints per acre of atrazine applied postemergence is used to control these weeds species. However, atrazine does not provide much residual activity because it is rapidly dissipated in the high organic matter soils of the EAA thus necessitating repeat herbicide applications.

Currently, a low rate use herbicide Callisto is labeled for use in sugarcane to provide excellent postemergence control of many broadleaf weeds. Postemergence applications of Callisto can be over-the-top or post-directed spray to the base of sugarcane at 3 fluid ounces per acre. This implies that it takes one gallon of Callisto compared to 31.5 gallons of atrazine to treat 42 acres. The low use rate of Callisto greatly reduces chemical storage, transportation, and handling. An addition of either crop oil concentrate (1% v/v), nonionic surfactant (0.25% v/v), or ammonium sulfate (8.5 lb/100 gallons) to the spray solution is required to maximize on weed control.

Callisto can be safely tank mixed with a low rate of atrazine (1 quart per acre) to broaden the spectrum and efficacy of weed control. Herbicides such as Evik, Envoke, and Asulam can also be tank mixed with Callisto. Additionally, Callisto provides an effective tool for management of triazine and ALS resistant weed biotypes.

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Pesticide Use Trends in the U.S.: Agricultural Pesticides

The EPA, in cooperation with the USDA and FDA, is responsible for regulating the production and use of pesticides in the U.S. The most recent report, released in early 2011, provides data on volumes used and sales of pesticides from the latest EPA survey data available, 2006 – 2007.

The data summary reported in this article is based upon EPA estimates. EPA does not have a program devoted specifically to estimating pesticide use; rather, they use the best available information from the public domain and proprietary sources. The data are approximate values and not statistically precise. The sources that EPA consults for compiling this information include the following:

- The Pesticide Data Center in the Biological and Economic Analysis Division of EPA's Office of Pesticide Programs;
- Several database services for compiling agricultural pesticide use data, including the USDA; and Others from private pesticide marketing research companies.

U.S. agricultural pesticide expenditures totaled more than $7 billion in 2006 and 2007. The expenditure data separate broad classes of pesticides – herbicides, insecticides, and fungicides and other pesticides. The "herbicide" data combine plant growth regulators (PGR) with them, while "fungicides and other" include sulfur, petroleum oil, nematicides, fumigants, and other miscellaneous conventional pesticides. Expenditures on herbicides/plant growth regulators accounted for the largest portion of total expenditures (more than 50% both years), followed by expenditures on insecticides, fungicides, and other pesticides, respectively. There was little change in relative quantities of pesticide expenditures for each class of pesticide both years. Total expenditures for agricultural pesticides as a whole were down in 2006 compared to 2007.

U.S. pesticide amount used in 2006 and 2007 exceeded 600 million pounds of active ingredients both years. The largest portion of U.S. agricultural pesticides used each year was herbicides, followed by nematicides and fumigants, insecticides and miticides, fungicides, and other pesticides. Total volume of agricultural pesticides used was down in 2006 compared to 2007.

The report also contains the most commonly used conventional agricultural pesticide active ingredients in 2007 and selected earlier years back to 2001. Glyphosate was the most used active ingredient in 2007, totaling between 180 million and 185 million pounds. Of the top twenty-five active ingredients, thirteen are herbicides; three are fungicides; three are insecticides; five are fumigants; and one is a plant growth regulator.
More details, including data tables, may be viewed in the following EDIS Document: http://edis.ifas.ufl.edu/pi176.

For the full EPA report, see http://www.epa.gov/opp00001/pestsales/07pestsales/market_estimates06-07.pdf

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Corn Planting Date—April

Corn planting has been underway since early March. Corn usually has less disease and insect pressure when planted in March but can suffer from drought if not irrigated during silk and tassel period of mid May. Dryland corn often does better when planted in late April due to summer rains in June when silk and tassel period begins. Corn planted in late April will normally start silking in about 45 days while corn planted in early March takes 60 days or longer depending upon temperature. Growers with irrigation may want to plant early so that there is time for another summer crop such as soybean or a second crop of corn or summer grazing. Corn will be ready to harvest in late July or August leaving time for a second crop. The field needs to be utilized after harvest to prevent weeds from going to seed.

Dry Spring Leads to Early Kill of Cover Crops

Cover crops have value in producing nitrogen, controlling erosion, reducing evaporation losses from the soil surface, and moderating temperature for the subsequent crop. However, cover crops can dry out the soil for the spring crop if it is not killed timely when rainfall has been limited. Cover crops act as a reservoir for maintaining nutrients in the topsoil after it is killed and does increase water holding capacity of the soil if it is killed prior to dry periods. As the cover crop degrades it provides energy for microorganisms and releases carbon dioxide. Cation exchange capacity of the soil can be increased and soil structure improved by cover crops. It is important to kill out the cover crop at least 3 and preferably 4 or 5 weeks in advance of planting the summer crop to help eliminate soil insects and to keep soil from drying out. It is much easier to plant through dried cover crops than those that are wilted and tough when coulters slice through the soil ahead of the subsoil shank .

Non grazed small grain cover crop inside the cage killed 2 weeks earlier with Roundup.

Photo by David Wright

Crops

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Camelina as a Biofuel Crop

Little is known about camelina in Florida. Several producers throughout Florida planted acreage of the crop for oil. All of the fields seem to have survived the record cold in December and January when planted in October or November. One study at NFREC in Quincy planted during several days of 16-19 degree mornings had stand failure due to frost heaving of the soil. However, plantings made in January and February survived the cold weather and those plants that were blooming during the freeze appear to have successfully set pods. Mid October planted camelina will be harvested in late March this year and was probably delayed in maturing with the cold weather. More information will be available on the crop by the summer when yield data will be available.

Camelina with pods late in the season which is about 4 weeks away from harvest. A few plants are still blooming.

Photo by David Wright

Calendar

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May 4-6 **60th Annual Florida Beef Cattle Short Course,** Gainesville, FL
http://www.animal.ufl.edu/extension/beef/short.shtml

May 17-18 **65th Southern Pasture and Forage Crop Improvement Conference,** Aiken, SC
http://spfcic.okstate.edu

June 20-24 **2011 Florida Cattleman's Association Convention.**. Marco Island, FL
http://www.floridacattlemen.org/convention.html

Jul. 3-9 **Caribbean Food Crops Society meeting**, Two Mile Hill, St. Michael, Barbados,.
http://www.cfcs2011barbados.org/

Oct. 3-5 **Southeast Herbicide Applicator Conference**, Panama City Beach, FL
http://conference. ifas.ufl.edu/sehac/index.html