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Determining Defoliation Timing and Defoliation Materials in Cotton

Defoliation timing is often based on percent open bolls, nodes above cracked boll (NACB) or heat unit accumulation after cutout. Generally, once the NACB reaches 4 or if 60 to 70 percent of bolls are open, cotton should be defoliated to prevent quality loss from weathering.

There are many defoliants to choose from and selecting the correct one can be difficult. What works in one year may not be very successful in another year due to weather conditions, crop conditions or both. Harvest aids can be classified as having either a herbicidal or hormonal mode of action. Herbicidal defoliants include materials such as Def, Folex, Harvade and Aim. Hormonal types include Dropp, Leafless, Finish and Ginstar. Boll openers are hormonal types that contain ethephon and include materials such as Prep and Cotton Quik. Since year to year variations can alter the usefulness of either a hormonal or herbicidal defoliant, a tank mix of the two often achieve the most consistent results. The most common program for Florida is to use an herbicide defoliant along with a boll opener 10-14 days before harvest.

D.L. Wright

Peanut Harvest Timing and Grades

One of the most critical parts of growing peanuts is timing harvest to achieve maximum grade and yield. Peanut grade can tell a grower several things. Grading begins by taking a measurement directly out of the drying wagon. One test is for foreign matter (FM), which denotes the amount of plant material, rocks, or soil that is in a load of peanut. FM is increased by digging when soils are too wet or dry, or when peanuts vines have not properly cured. FM can be mitigated by adjusting the peanut combine to blow more or less air to help reduce the trash when harvesting. Another test is to determine percent loose shelled kernels (LSK), or the percent of peanuts that have been shelled during the harvest process. A high LSK may be due to high picker speed, picker fingers being set too aggressively, or too much air flow in the picker resulting in rough handling within the machine.

Another sample is taken and shelled to determine total sound mature kernels (TSMK), sound splits (SS), other kernels (OK), extra large kernels (ELK) and damaged kernels (DK) on a percentage basis. TSMK is the percent of peanuts that are determined to be mature, while SS is the percentage of seeds that are good, but split. An OK value refers to the percentage of kernels that may be immature or have other defects. ELK refers to the percentage of peanuts that ride over a certain screen size, and are preferred by manufacturers for candy production. Certain peanuts have a tendency to have larger seed than others, but growers are seldom paid for a high ELK percentage. DK are kernels that are damaged due to disease, insects or other factors. Although all these values contribute, overall grading is based mostly on total TSMK values.

Digging peanuts too early can often result in lower grades that range in the 60’s and low 70’s. Lower peanut grades also occur after a drought during pegging. This is often referred to as “two” crops of peanuts, with one set early and one set later when moisture returns. This makes it very difficult to determine when to dig since you would have some very mature peanuts along with some very immature peanuts that were set later. In irrigated peanuts, it is usually easier to
determine proper digging date since moisture can be supplied for a continuous set of peanuts. However, other factors like disease control and weather conditions can affect digging date and yield. Vines should be kept disease free as much as possible since healthy vines will retain mature peanuts better than dying, diseased vines.

Grades in the mid 70’s are considered good and often reflect that the grower properly timed the digging. Digging peanuts a week early or late can reduce yield by 500 lb/A, costing the grower approximately $90, as well as reducing grade by several points. Improved grading of the crop also translates into more income. A well timed harvest, or properly set picker, can easily result in a grade increase from 69 and 75 and a produce a net gain by $25/ton. The key for high yields and profit is to keep vines healthy and dig on time.

D.L. Wright and H.E. Jowers

**Aminopyralid Has Been Registered**

Dow AgroSciences has received registration for their first aminopyralid brand herbicide - Milestone.

The U.S. Environmental Protection Agency accepted the registration application for Milestone herbicide on August 10, 2005. Registration was received 14 months after the original submission to the EPA, which is less than half the time this process usually requires. The rapid review and acceptance was due to the toxicology profile of aminopyralid, as well as for the fact that aminopyralid controls several key weeds (tropical soda apple, Canada thistle, and knapweed, among others). Aminopyralid will be sold as Milestone herbicide (2 lb ae/gal) for control of invasive and noxious broadleaf weeds in pastures, IVM, roadsides, and other non-crop areas. Registration in the state of Florida is pending, but expected to occur quickly.

Another product to watch for is Forefront. Forefront is a pre-mix product containing aminopyralid + 2,4-D. In the near future, this herbicide will also receive registration and reach the marketplace.

Information on the use patterns and weed control spectrum of these two products will be provided in coming months.

J.A. Ferrell

**Tropical Soda Apple or Just Plain ‘Soda Apple’?**

Every now and then, you might see a plant that looks much like tropical soda apple (TSA), but something just does not look right. Then you see the ripe fruit, and its red, not the customary yellow or mottled green like that of TSA. Most ranchers agree that they have seen this red-fruited ‘soda apple’ all their lives. In fact, there are two soda apples in the state, TSA and just plain ‘soda apple’, or cockroach berry. For simplicity, I will refer to the red-fruited soda apple as cockroach berry in the rest of this article. Both plants are native to South America and are members of the nightshade family.
Cockroach berry (*Solanum capsicoides*) is an annual or short-lived perennial. In south Florida, it likely survives as a perennial. Cockroach berry can grow to heights of approximately 3 feet, with numerous prickles on stems, petioles, leaves and veins. Leaves are as wide as they are long, may or may not be lobed, and have a waxy appearance. Upon inspection of the leaf, scattered ¼-inch long hairs can be seen. Like TSA, cockroach berry is covered in prickles on the stems, petioles, and both sides of the leaves. The fruit is about the size of a cherry tomato fruit, but are solid green when immature and bright red at maturity. The seeds are flat with a paper-like wing that is a little less than 1/16 of an inch wide, with the seed being a little smaller than 1/8 of an inch in diameter.

TSA (*Solanum viarum*), as most of you know, is a perennial plant that can grow quite tall (up to 6 feet tall). TSA leaves appear somewhat fuzzy due to glandular hairs on the leaf surface. These glandular hairs are found throughout the plant. If you can touch the stem and leaves, while avoiding the sharp prickles and spines, you will be left with a sticky substance on your hands. The fruit of TSA are a mottled green when they are immature. The fruits are yellow when ripe and emit a somewhat sweet smell. The seeds inside the fruit are brown and all seeds are covered with a sticky, mucous-like substance.

A third plant, called sticky nightshade (*Solanum sisymbriifolium*), also has red fruit when mature. However, the leaves of this plant are much more deeply lobed than either cockroach berry or TSA. Additionally, sticky nightshade leaves are substantially longer than they are wide. This plant is also armed with prickles, but not as numerous as TSA or cockroach berry.

Cockroach berry and TSA, indeed, are quite similar in appearance. Why is cockroach berry then not the nuisance that TSA is? Although not confirmed, it appears that cockroach berry does not produce as many seeds per fruit as TSA. Additionally, it is not known if wildlife consume the fruits of cockroach berry as they do TSA. Consider also that TSA is a perennial, while cockroach berry is considered an annual in most environments. In most cases, seeing a cockroach berry or sticky nightshade plant is quite rare relative to finding a TSA plant. If your pasture is infested with a large population of cockroach berry, it is likely that it can be controlled with the same herbicides as TSA. Remedy at 2 pints per acre has been the standard treatment for TSA. Now, Milestone (aminopyralid), a new herbicide that will be available in 2006, will likely become the new standard for TSA control at 5 to 7 fluid ounces per acre.

B.A. Sellers

**Experimental Use Permits**

Experimental use of pesticides refers to formal research efforts conducted to scientifically assess the pest control potential of a registered pesticide or an experimental pesticide. Experimental pesticides include:

- unregistered pesticides,
- unregistered uses of registered pesticides, and
- pesticides or pesticide uses being evaluated under an Experimental Use Permit issued by the U.S. Environmental Protection Agency (EPA) or by the Florida Department of Agriculture and Consumer Services (FDACS).
Compounds exempted from registration by Section 25(b) of the Federal Insecticide Fungicide and Rodenticide Act (FIFRA) are not considered experimental pesticides.

The EPA may grant an Experimental Use Permit (EUP) to researchers wishing to gather data necessary to grant registration under Section 3 of FIFRA for

- a pesticide not registered with the Agency, or
- a new use of a registered pesticide (i.e., one not previously approved).

The EPA has determined an EUP is not required when:

- experimental work is limited to laboratory or greenhouse tests, and
- the researcher neither intends nor confers pest control benefit to those conducting it.

For limited replicated field (or other) tests, conducted only to determine a chemical’s pesticidal potential, its toxicity, or other properties, in which the persons conducting the test do not expect to receive any benefit in pest control from its use, the EPA has determined that an EUP is not required for:

1. Land use – The cumulative area treated per site, per crop, per experimental compound is less than 10 terrestrial acres (up to 250 acres for pheromones), provided:

   - When testing for more than one target pest occurs at the same time and in the same locality, the 10-acre limitation must encompass all of the target pests.

   - Food or feed crops involved in or affected by the tests (including crops subsequently grown on this land, if such crops may reasonably be expected to contain residues of the compound) must be destroyed or consumed only by experimental animals, unless an appropriate tolerance or exemption from a tolerance has been established.

2. Aquatic use – Tests involving use of a particular experimental compound are conducted on a total of not more than one surface-acre of water, provided:

   - When testing for multiple target pest species occurs at the same time and in the same locality, the one surface-acre limitation encompasses all target pest species.

   - The waters involved in or affected by the tests will not be used for irrigation, drinking water supplies or body-contact recreational activities.

   - The tests may not be conducted in waters which contain or affect any fish, shellfish, other animals, or plants taken for recreation or feed unless an appropriate tolerance or exemption from a tolerance has been established.

3. Animal treatments – Tests are conducted only on experimental animals. No animals receiving test treatments may be used in food or feed unless an appropriate tolerance or exemption from a tolerance has been established.
Important note - Termiticides and experimental pesticide applications in structures do not fall under the land-use exemption stipulations of federal and state regulations. If unsure whether proposed work is covered by the exemptions described, contact FDACS.

FDACS adopted and upholds the federal regulations that stipulate the conditions for land use, aquatic use, and animal treatments for which no experimental use permit is required. These conditions are described above.

Florida’s adoption of the federal EUP regulations notwithstanding, FDACS imposes state-specific requirements for EUP work that involves either unregistered pesticides or unregistered uses of a registered pesticide. There are three circumstances where FDACS imposes additional, state-specific requirements on EUP work:

1. Research conducted in Florida under a federal EUP must also be covered by a state-issued EUP or EUP exemption. The FDACS letter issuing the EUP (or exemption) will reflect any additional requirements (a copy may be obtained from the EUP permit holder or FDACS).

2. Where there is no federal or state-specific EUP, and experimental uses of pesticides are evaluated in small replicated studies under the federal land-use exemptions described above, FDACS must be notified of experimental trials conducted on cumulative areas equal to or greater than 1 acre but less than 10 acres, per site, per crop, per experimental compound. This notification must be provided within 60 days of the initiation of the trial and must include the:

- Name of the experimental compound and its EPA registration number if federally registered.

- Name and mailing address of the experimental compound’s manufacturer.

- Activity of the compound (e.g., insecticide, herbicide, fungicide, etc.)

- Amount of experimental compound used.

- Total area treated including the number of replicate applications.

- Name of crop treated. Location of the treated area.

- Agency and contact person responsible for the experimental use study.

3. State-specific EUPs (where there is no federal EUP). FDACS may issue a state-specific experimental use permit to:

- Any person for the purpose of gathering data necessary to support FIFRA section 24(c) registrations.

- Any agricultural research agency or educational institution conducting experimental use work within Florida for any purpose not directly intended to result in the registration of a specific pesticide product.
Florida-specific EUPs are assigned a Florida EUP number. These permits are issued with an authorization letter that outlines the requirements and restrictions for the Florida EUP. In such cases, FDACS-approved EUP labeling must be followed. Somewhat relatedly, two additional points merit mention:

- Experimental use of aldicarb in Florida must be authorized by the EPA or FDACS.

- FDACS should be consulted prior to initiating experimentation involving registered pesticides subject to regulation under Florida’s Organo-Auxin Herbicide Rule.

UF/IFAS Policy on Experimental Uses of Pesticides (this section applies only to those employed by UF/IFAS)

1. Use of a pesticide under an EUP must be consistent with the terms of the EUP, including any additional restrictions imposed by FDACS, and the experimental protocol.

2. All food or feed derived from a pesticide’s experimental use must be destroyed or fed only to experimental animals for testing purposes, unless an appropriate tolerance or an exemption from a tolerance has been specifically granted for residues of pesticide on the food or feed crop(s).

3. An experimental pesticide may be used only in accordance with its experimental use permit or any federally registered use permitted by its labeling. If an experimental pesticide does not have federally registered uses, at the study’s conclusion, return any excess compound to its original provider.

Pesticide Research and Demonstrations on Non-UF/IFAS Property

Often, research or demonstration efforts involving pesticide use require a site where a particular target pest is present. To meet this criterion, such work is sometimes conducted on non-UF/IFAS property. Whenever non-UF/IFAS property becomes a site for pesticide-related research or demonstration, UF/IFAS employees must fully inform the property owner, cooperator, or other party responsible for the land, about the research or demonstration project’s pesticide chemical subject(s), its work activity schedule, and its land use requirements. The following policies address these:

1. The project leader shall provide copies of the research or demonstration plot plans to the property owner, cooperator, or other party responsible for the non-UF/IFAS land.

2. The project leader shall inform the property owner, cooperator, or other party responsible for the non-UF/IFAS land, if there will be crop destruction requirements, grazing restrictions, or crop rotation restrictions associated with the research or demonstration plots. He or she shall obtain a signed agreement of understanding that the property owner, cooperator, or other party responsible for the non-UF/IFAS land has received this information. Copies of the signed agreement shall be kept by the project leader and the UF/IFAS unit and provided to the property owner, cooperator, or other party responsible for the non-UF/IFAS land.
3. If the research or demonstration project entails applying registered pesticides to crop plants produced on a farm, nursery, or greenhouse, the project leader shall provide Worker Protection Standard (WPS) information about these pesticides to the property owner, cooperator, or other party responsible for the non-UF/IFAS land. The project leader shall ensure pesticide-specific WPS information is provided before each application of any registered pesticide on the non-UF/IFAS land. The intent is to both fulfill the federal rule and make certain the property owner, collaborator, or other party responsible for the non-UF/IFAS establishment can take appropriate measures to properly notify his or her employees about the upcoming pesticide application. Accordingly, the project leader shall provide:

- The specific location and description of the crop plants that are to be treated with a pesticide.
- The time and date the pesticide is scheduled to be applied.
- The trade name of the pesticide product, its EPA registration number, and the common name(s) of its active ingredient(s).
- The restricted-entry interval for the pesticide.
- Whether the pesticide labeling requires both treated-area posting and oral notification.
- Any other product-specific requirements on the pesticide labeling concerning protection of workers and other persons during or after applications.

4. The project leader shall also provide a copy of an MSDS to the property owner, cooperator or other responsible party for each pesticide used on the non-UF/IFAS land.

Additional Information

Pesticide Registrations:
Florida Department of Agriculture and Consumer Services
Bureau of Pesticides
3125 Conner Blvd., (L-29)
Tallahassee, FL 32399-1650

F. Fishel

Reasons for Crop Rotation

Crop rotation is an important cultural practice that has been shown to reduce the effects of crop pests (disease, nematode, insects, and weeds). In many cases, low value crops are the only alternative for rotating with high cash value crops like peanuts. In other cases, good profitability is possible, but crop rotation is not used due to logistical problems (fencing, etc) or other costs associated with production.

Extensive crop rotation research has been conducted for most cropping systems and the impacts of such rotations on pests have been documented. Tomato spotted wilt virus has become the main driving force behind peanut variety selection and planting date. After that, leaf spot is usually the most critical aspect of peanut management that must be considered. Leaf spot control is usually accomplished with the use of a chemical program, but there is much data showing that rotation with cotton or corn can
reduce the amount and severity of the disease. Recent data shows that rotations with bahiagrass can reduce leaf spot even further while boosting peanut yields. In one study, peanut yield was 19% higher after 2 years of corn and 41% higher after 2 years of bahiagrass. Data from Georgia indicated that growers often use shorter rotations under pivots due to the large capital investments required for irrigation systems. However, when compared to continuous peanut production with irrigation, a one, two, and three year rotation under the pivot resulted in a 7, 36, and 34% yield increase. Under these same three rotation intervals, peanut yield increased by 11, 25, and 28% without irrigation compared to peanut grown continuously without irrigation. Rotations work, produce more profit, and reduce the amount of management needed and capital inputs.

D.L. Wright

Scheduling Harvest for Cotton and Peanut

September is a critical time for growers in the Southeast. Most of the heavy rains from the summer are over and growers start harvesting the crops that they sweated over all spring and summer. However, the Deep South has a tradition of harvesting peanuts ahead of cotton. Even when cotton is ready to defoliate, peanuts take precedent. Since growers often make good yields with this system of priority, timely harvest cotton has not been as urgent as is necessary.

Southeast cotton quality has dramatically decreased in recent years. Timely defoliation and harvest is critical to keeping the quality high and can make a difference in market price. Late season hurricanes can cause tremendous losses in lint and quality, so some of growers will finish harvesting in December knowing that quality has already suffered. However, timely harvest is just as important for cotton as it is for peanuts and both should be managed to harvest on time.

D.L. Wright

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.
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