



IPM-0360

# Peanut

Insect, Disease, Nematode, and Weed Control  
Recommendations for 2019



## INSECT CONTROL

### IPM Insect Control in Peanuts

Always follow integrated pest management (IPM) tactics for insect management. Apply insecticides only if needed after scouting for pests and confirming economic damage to crops. Remember that doing nothing when insects are present below the economic threshold level is considered a sound IPM approach. Use pheromone-based insect monitoring systems for estimating population pressure of soil insects like the lesser cornstalk borer.

Familiarize yourself with insect pests (Table 1) as well as beneficial arthropods (Table 3). Use insecticides (Table 2) with low environmental impact in order to conserve natural enemies. Use broad-spectrum insecticides such as pyrethroids in a manner consistent with the insecticide label. Refer to the full insecticide label for identifying use restrictions before applying the product. Rotate insecticides with different modes of action to avoid insecticide resistance and/or resurgence.

### Snail Detection and Management in Peanuts

Late in the year 2018, peanut producers on Alabama experienced a sudden onset of snails in the crop that created crop quality issues close to harvest. Snails are invertebrates with hard shell on the back. Snails are favored by frequent rainfall and high organic matter in soil. Peanut foliage may also provide a refuge to the snails that may be active at certain parts of the day and hide during other times. Prevention is much more important in case of snail outbreak compared to the therapeutic use of molluscicides. Most common prevention tactics include tillage to disturb the snails hiding in soil and breakdown of some organic matter to allow drying of soil. Few molluscicide for row crops include Bug-N-Sluggo (Certsis USA) with peanuts on the label and Deadline M-P (Amvac Chemical) that does not have peanuts on the label. Insecticides do not work against snails. The Alabama Peanut IPM program is initiating studies on snail identification and management with funding from the National Peanut Board. Updates will be posted on the Alabama IPM Communicator blog ([www.aces.edu/peanutipm](http://www.aces.edu/peanutipm)) and the Peanut IPM website.

### Thrips Management

Thrips are the most common early season insect pest in peanuts. Thrips spread spotted wilt virus to susceptible plants. Good thrips control requires preventive treatment. You can use either (1) an in-furrow systemic insecticide like phorate (Thimet) and Velum Total; (2) a foliar application of synthetic

pyrethroids or spinetoram (Radiant); or (3) a hopper-box seed treatment with acephate. If foliar sprays are used, make the first application when the first true leaf is present and a second application 7 to 10 days later.

Using an in-furrow systemic insecticide at planting is usually the most effective method for thrips control and the least detrimental to beneficial insects. As the effect of systemic insecticide wears off, producers may start noticing increased thrips activity and disfigured terminal leaves with some virus pressure (depending on variety). Use of spinetoram (Radiant) before outbreak can effectively reduce thrips with minimum need for additional sprays and protect the natural enemies. Radiant will not flare up spider mites, which is an added benefit.

### Cowpea Aphid Alert

In 2012 several acres of peanuts in the sandy soil regions of Florida were found to be infested with cowpea aphids (*Aphis craccivora*). Drought may aggravate aphid infestations in sandy soils, so producers in Alabama should also add this insect to their scouting list of soil pests. Cowpea aphids are a documented pest since the 1970s, so this is not a new invasion. In 2012 cowpea aphids were found feeding in masses of 25 to 30 adults and nymphs clustered on the developing peg, resulting in loss of growing point and poor pod formation.

Adult aphids are large shiny black insects with white legs; they also have a pair of dark cornicles protruding from the abdomen. Nymphs are grayish. Infested pegs may have numerous white molted skin (exuviae) attached to them, indicating prior infestation. Cowpea aphids inject a powerful toxin through their piercing-sucking mouthparts, causing darkening and deformation of the pegs.

At present there is no economic threshold for aphids on peanut pegs. Constant monitoring of peanut pegs is the only way to detect aphid infestation early. Once detected, it is advisable to check fields randomly twice every week since populations can increase rapidly in certain weather conditions. Insecticides containing imidacloprid (Sherpa) are effective against many sucking insect pests like aphids and leafhoppers. In 2012, peanut fields treated with Sherpa insecticide (17 percent imidacloprid at 3.5 ounces per acre) directed at the plant base provided excellent control of cowpea aphids. Two insecticide applications five days apart may be necessary to

get proper aphid control. Scout peanut fields three to four days after the first treatment to assess the need for a second application. Note the 14-day preharvest interval on the label. If you are in doubt regarding insect identification, please send a sample of the insect along with the affected peg to your nearest agricultural Extension agent and treat fields only after proper identification.

### **Burrower Bug Alert**

Reports regarding burrower bug damage increased in dry years (2010 and 2011), so producers should pay special attention to the description of the insect, injury symptoms, and scouting methods.

Burrower bugs are small (1/3 to 1/4 inch) black, oval-shaped insects that feed on peanut pods. They are closely related to stinkbugs and produce a musky smell. They feed underground when peanut seeds begin to form in the pod. Excessive pod damage is usually associated with strip-tilled peanut or peanuts planted into soil with high organic residue. Feeding injury on kernel is known as “pitting” and is seen as yellow to dark brown spots. Numerous outbreaks of burrower bugs were noted in southwest and southeast Alabama peanut fields in 2010 and 2011 along with reports of outbreaks from Georgia. Movement of some burrower bug species is known to be affected by soil moisture. For detecting activity of burrower bugs, pit-fall traps can be used to collect insects.

There are several species of burrower bugs, but based on published literature, only one species appears to be associated with injury to the peanut crop. Please seek help from a regional Extension agent to correctly identify the pest before taking any control measures. Remember that burrower bugs may not be controlled with late season insecticide applications; cultural control tactics are the best way to manage them.

### **Lesser Cornstalk Borer Alert**

In the 2014 growing season, lesser cornstalk borer was noted early in the season in certain dry and sandy regions. Mid-season drought can increase the activity of lesser cornstalk borers. Caterpillars live inside sand tunnels that stick to peanut stems, pegs, and pods. Use the monitoring procedure for adult moths described in Table 1 and consult a regional Extension agent before using insecticides. Remember that lesser cornstalk borers may not be consistently controlled with late season insecticide applications.

Insect growth regulator products (Table 2) are effective on larval stages of this borer after thorough application. Follow all label instructions for use of these reduced-risk insecticides.

### **Monitoring and Scouting Techniques for Soil Insect Pests**

Use of multiple monitoring and scouting techniques can increase the chance of encountering insect pests in any habitat. When preparing soil before planting peanuts, check for below-ground insect infestations by spade sampling or by using germinating seed bait. Germinating-seed baits can also be deployed postemergence by placing them within planted peanut rows. Use a shovel to dig soil at several locations to sample pests within crop rows. Increase sampling accuracy by drawing samples from several locations in an unbiased manner. Late-season scouting may require digging beyond 6 inch depth since insect larvae in soil may be moving away from the root zone for overwintering. Peanut vines could be pulled back to reveal some pegs and pods for direct examination. As the vines are folded back, some pods and pegs will be pulled out of the soil. Examine

these for damage. If you find larvae or fresh damage from either of these soil insects at three or more of the ten locations, apply a recommended insecticide.

If white grubs, wireworms, whitefringed beetle larvae, or bahiagrass borer larvae are expected to be a problem, they may be present before planting. These insects are much more likely to cause problems where peanuts follow sod crops. For these insect pests, crop rotation and other cultural practices should be used to prevent pest buildup.

In areas with a history of whitefringed beetle damage to the crop, check soil closely for active larvae in soil up to a depth of 4 to 8 inches. Control measures for these soil pests must be applied and incorporated into the soil before the crop is planted. This is because eggs are laid when adults feed, and the small larvae will be present when land is prepared.

After peanut seedlings have emerged from the ground, check fields at least once a week to estimate the level of pest and predatory insect populations before making treatment decisions. At ten locations in each field, carefully examine 3 feet of row by walking diagonally across and around the field, including border rows. Sketch a layout of the field and establish a scouting pattern; then record on paper the number of insects encountered to determine their spatial distribution. Insect populations are generally clumped or non-uniform, so spot treatment could be effective in some cases.

In each 3-foot section, shake the vines thoroughly and fold them back to count any foliage-feeding pests falling on the surface of the soil. Insects can also be collected in a plastic pan or other containers for counting. Identify and record numbers of insects of each kind seen during scouting. Look for any abnormal plants or plant parts, and if any are found, try to determine the cause. Also, look for any discolored leaves and examine the underside closely to determine if spider mites are present. Carefully examine the undersides of the plants for signs of lesser cornstalk borer damage. Silken tunnels at the base of plants or pegs or around peanut pods are the most visible sign of lesser cornstalk borer.

To detect soil insects, you may have to uproot a few plants and dig around the base to find the larvae.

### **Monitoring Activity of Winged Insect Pests (Moths)**

IPM pheromone traps (Table 3) are modern insect detection devices that can provide early warning about pest presence and activity. The Alabama Cooperative Extension System (ACES) has maintained a statewide insect monitoring program since 2009 that uses commercial insect pheromone traps with two objectives: developing a database of insect species distribution and encouraging growers to use traps for site-specific IPM strategy. Growers can use pheromone traps in conjunction with actual crop scouting since traps alone cannot indicate level of economic damage to the crop. Results from past insect monitoring and IPM studies have been reported in the Alabama IPM Communicator newsletter, which can be found at [www.aces.edu/ipmcommunicator](http://www.aces.edu/ipmcommunicator).

### Spotted Wilt Virus Management

Selection of a TSW-resistant cultivar should be a major component of a management program. Georgia Green peanut cultivar is moderately susceptible to TSW compared to the older varieties like Florunner. Recently released peanut cultivars offer significant improvements for TSW management. These include Tifguard, FL07, AP-3, Ga03L, Ga02C, etc. With any of these new peanut varieties, follow the agronomist's recommendations about seeding rates and planting time. The goal is to have a uniform plant stand with minimum stress. Twin-row planting and strip-tilled planting are production practices that have also been shown to reduce incidence of TSW.

### Spider Mite Management

Spider mites should be controlled as soon as they are detected. If they are confined to small areas within a field (hot spots), acceptable control can be obtained by treating only the infested areas or hot spots. Carefully examine the infested areas for the presence of live mites at least 3 to 4 days following the first treatment. If any live mites are found, make a second application of a recommended miticide. Let no more than 5 days elapse between the two treatments. Spider mites and lesser cornstalk borer activities can increase in hot, dry years. Carefully plan insecticide rotations to reduce spider mite buildup in crops and reduce number of synthetic pyrethroid sprays (see adjoining graph that shows insecticide rotation to avoid midseason spider mite outbreaks). Provide irrigation to the crop when feasible to reduce moisture stress on plants. As a general cultural practice, reduce number of spray passes and tractor movement across the fields in hot, dry years. Excessive field passes with equipment and mowing close to the field edges can lead to spider mite hot spots.

### Foliar Insect Pest Management

Foliage-feeding caterpillars should be controlled when an average of four or more per foot of row are found in a field. Broad-spectrum insecticides used in early or mid-season may cause resurgence (sudden increase) of foliage-feeding caterpillars later in the season due to removal of natural predators.

Some selective and/or reduced-risk insecticides are available to manage caterpillar pests in peanuts. These include flubendiamide (Belt), spinetoram (Radiant, also controls thrips), diflubenzuron (Dimilin), novaluron (Diamond), and chlorantraniliprole (Prevathon, Besiege). These are excellent for including in IPM programs to minimize nontarget effects.

Leafhoppers are small insects that suck plant juices by feeding on the mid-vein of the peanut leaflet. Their feeding produces a toxic reaction in the leaflet, causing it to turn yellow. This damage is referred to as "hopper burn." Leafhoppers often move into peanut fields from grassy or weedy field borders. If more than 20 percent of foliage in a field has hopper burn and adults or nymphs are found when scouting, a recommended

insecticide should be applied.

Three-cornered alfalfa hoppers (TCAH) are small, green rectangular insects that girdle the main stem, lateral stems, and even the leaf stems. Their damage is most obvious when the foliage above the girdled stem turns yellow and the stem turns a purplish color. This girdled area is usually a thickened calloused ring around the damaged area. In recent years, the damage to Alabama peanuts caused by TCAH has increased considerably. In 2009 and 2010, several scouted peanut fields in southwestern counties of Alabama were treated with synthetic pyrethroid insecticides to control rapidly rising populations of TCAH. Excessive girdling by adults or feeding on the crowns (terminal leaves) by nymphs can severely stress the plants and affect yields. Unusually high populations of TCAH or early detection of girdling might warrant an insecticide treatment.

### Improving Insect Pest Management

Common reasons for failure of insecticides include delayed application of insecticide, wrong insecticide choice, inappropriate delivery of formulation to the target pest, and poor timing of insecticide applications. Growers can improve insect control by the following techniques:

1. Scout fields early to record pest occurrences and crop injury.
2. Adopt IPM tactics: Use economic threshold to determine need for insecticide application. Use selective or reduced-risk insecticides in order to minimize nontarget effects. Apply only labeled rate of insecticides. Rotate insecticides to avoid development of resistance.
3. Know the beneficial insects and monitor their activity. Learn to identify beneficial insect predators and parasitoids (Table 3) and use environmentally friendly products for pest management.

### Extension Resources for Peanut Producers

Note that the new peanut IPM slide chart is now available to all peanut producers free of charge along with bookmarks and soil pest magnets that can be used in the field for insect pest identification. Please contact an ACES regional Extension agent to receive these materials.

Table 1 of this publication provides insecticide recommendations for peanut insect management. A full list of registered peanut insecticides in Alabama is provided in Table 2. Growers can also refer to Extension publication ANR-0598, "Peanut Pest Management Scout Manual," for complete recommendations and techniques for scouting peanuts. Publications ANR-0990, "Sucking Pests of Peanuts"; ANR-0752, "Foliage Feeders on Alabama Peanuts"; and ANR-1351, "Soil Insect Pests of Peanuts in Alabama" provide additional information to aid in the identification of peanut insect pests. Contact the nearest county Extension office to get a copy of IPM Extension publications or to schedule more training on crop scouting and integrated pest management.

### Want to Get Pest Alerts and Event Updates?

For more IPM information, please subscribe to the IPM Communicator newsletter by visiting the [www.aces.edu/ipmcommunicator](http://www.aces.edu/ipmcommunicator). Readers can also subscribe to the Facebook page called "Alabama Peanut IPM" and receive live updates about pest detection and movement.

PEANUT SCOUTING CALENDAR							
	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER
Thrips							
Corn earworm							
Tobacco budworm							
Beet armyworm							
Fall armyworm							
Loopers							
Green cloverworm, velvetbean caterpillar							
Spider mite							
TCAH							
Rootworm							
Lesser cornstalk borer							
Burrower bug							

Normal activity period – weekly crop scouting or monitoring
  Peak activity period – intensive crop scouting needed

**Disclaimer:** The list of products may change over time. Please inquire directly with the company about available products and package units. Mention of company name and products does not mean endorsement of those products. Read the insecticide label before use.

Table 1. Peanut Insect Control				
Insecticide and Formulation	Amount of Formulation per Acre	Minimum Days/Hours <sup>1</sup> from Last Application to: Harvest Reentry		Comments
<b>BEET ARMYWORMS*</b>				
<i><b>Caterpillar appearance:</b> Many thin, white wavy lines on back and a broad greenish-white line on each side of body; a dark spot on each side above the second pair of legs behind the head; larval head is not dark.</i>				
<i><b>Economic threshold:</b> Apply foliar insecticide when infestations of four or more caterpillars per foot of row are present.</i>				
<i><b>Monitoring technique:</b> Commercial pheromone traps are available from various companies (Table 3); traps are useful in distinguishing among various armyworm species.</i>				
bifenthrin BRIGADE 2EC	2.1–6.4 fl.oz.	14	12	Maximum use is 32 fluid ounces per acre per year.
chlorantraniliprole PREVATHON 0.43SC	14–20 oz.	2	4	Make no more than 4 applications per year; do not exceed 60 fl.oz. per acre per year.
diflubenzuron DIMILIN 2L	4–8 fl.oz.	28	12	<b>DO NOT</b> make more than three applications per season. <b>DO NOT</b> exceed 24 fluid ounces per acre per season. The minimum application interval is 14 days. Apply when larvae are small. Since Dimilin is an insect growth regulator, larvae must ingest treated peanut foliage. Control of larvae may not be seen for 5 to 7 days after application.
indoxacarb STEWARD 1.25SC	9.2–11.3 oz.	14	12	<b>DO NOT</b> apply more than 45 fluid ounces per acre per season. Will not control velvetbean caterpillars.
lambda-cyhalothrin + chlorantraniliprole BESIEGE 1.25SC	10 fl.oz.	7	14	Maximum application equals 31 fluid ounces per acre per year.
methomyl LANNATE 2.4LV	1.5–3 pt.	21	48	<b>DO NOT</b> make more than eight applications per crop per season or exceed 12 pints per acre per season. <b>DO NOT</b> feed treated vines.
LANNATE 90SP	0.25–0.38 lb.	21	48	<b>DO NOT</b> apply more than 4 lb./acre/crop of Lannate SP.
methoxyfenozide INTREPID 2F	6–10 oz.	7	4	<b>DO NOT</b> apply more than 64 fluid ounces per acre per year. <b>DO NOT</b> make more than three applications per acre per year.
novaluron DIAMOND 0.83EC	6–12 fl.oz.	28	12	Diamond is an insect growth regulator and effective on small caterpillars. <b>DO NOT</b> use Diamond in rotation with other GR15 insecticides. <b>DO NOT</b> feed treated peanut hay or vines to livestock.
spinosad BLACKHAWK 36WDG	1.7–3.3 oz.	3	4	<b>Grazing Restrictions: DO NOT</b> feed hay until 14 days after last application. <b>DO NOT</b> make more than three applications per season. <b>DO NOT</b> apply more than a total of 9 fluid ounces per season.
spinetoram RADIANT 1SC	3–8 oz.	3	24	<b>DO NOT</b> exceed 24 fluid ounces of Radiant SC per acre per year. Do not allow grazing of peanut hay.
spinetoram + methoxyfenozide INTREPID EDGE 3F	4–8 oz.	7	4	24 oz. max, no more than 3 applications per year, 7 days apart

<sup>1</sup> Days refers to minimum time from last application to harvest; hours refers to minimum time from last application to reentry.

\* Belt 4SC (flubendiamide) registration has been canceled. Existing stocks of Belt can be used for caterpillar control per the insecticide label.

**Table 1. Peanut Insect Control (cont.)**

Insecticide and Formulation	Amount of Formulation per Acre	Minimum Days/Hours <sup>1</sup> from Last Application to:		Comments
		Harvest	Reentry	
<b>BURROWER BUGS</b>				
<i><b>Identification:</b> Black body; oval shaped with spiny legs; looks similar to stink bugs but much smaller (less than 0.3 inch).</i>				
<i><b>Economic threshold:</b> Apply soil insecticide when infestation level is two bugs per 3 feet of row at pod stage.</i>				
<i><b>Monitoring technique:</b> Pheromone traps are not available; bugs are attracted to light traps or insects may be collected in pit-fall traps (ground traps placed within planted row early in the season).</i>				
chlorpyrifos LORSBAN 15G	13.3 lb.	21	24	Band over the row when more than two bugs per 3 row feet are found on or in the soil during early pod fill. <b>DO NOT</b> feed peanut forage or hay to meat or dairy animals. Do not exceed 4 pounds active ingredient per acre of clorpyrifos per season. Do not apply by air.
<b>CORN EARWORM</b>				
<i><b>Identification:</b> Caterpillars vary in color, have light and dark stripes on top and a number of black spots or warts that bear a spine; head capsule is light brown with a dark area behind the head. See ANR-0752, "Foliage Feeders on Alabama Peanuts," for more information.</i>				
<i><b>Economic threshold:</b> Apply foliar insecticide when infestations of four or more caterpillars per foot of row are present.</i>				
<i><b>Monitoring technique:</b> Pheromone traps are available from many vendors (Table 3) and are very effective in identifying corn earworm and tobacco budworm moths.</i>				
acephate ORTHENE 75S ORTHENE 97SP	1–1.33 lb. 12–16 oz.	14 14	24 24	<b>DO NOT</b> feed forage or hay treated with acephate to livestock or graze treated areas.
beta-cyfluthrin BAYTHROID XL 1EC	1.8–2.4 fl.oz.	14	12	
bifenthrin BRIGADE 2EC	2.1–6.4 oz.	14	12	This product is extremely toxic to fish and aquatic invertebrates, so growers in coastal areas should not use this product if chances of runoff are high. This product is highly toxic to bees. Do not apply more than 0.5 lb ai per acre per season. <b>DO NOT</b> feed green immature plants and peanut hay to livestock.
carbaryl SEVIN 4F	1–1.5 qt.	14	12	<b>DO NOT</b> apply more than 8 quarts or pounds of carbaryl per acre per season.
chlorantraniliprole PREVATHON 0.43SC	14–20 oz.	1	4	Make no more than 4 applications per year; do not exceed 60 fl.oz. per acre per year.
cyfluthrin TOMBSTONE, BAYTHROID XL 1EC	1.8–2.4 fl.oz. See label.	14 See label.	12 See label.	<b>DO NOT</b> make more than three applications of cyfluthrin and/or beta-cyfluthrin per season.
esfenvalerate ASANA XL 0.66EC	2.9–5.8 oz.	21	12	<b>DO NOT</b> feed or graze livestock on vines treated with enfenvalerate. <b>DO NOT</b> exceed 0.15 pound active ingredient of esfenvalerate per season.
fenpropathrin DANITOL 2.4 EC	10.66–16 fl.oz.	14	24	

<sup>1</sup> Days refers to minimum time from last application to harvest; hours refers to minimum time from last application to reentry<sup>2</sup> See Table 2 for a list of other trade names.

Table 1. Peanut Insect Control (cont.)				
Insecticide and Formulation	Amount of Formulation per Acre	Minimum Days/Hours <sup>1</sup> from Last Application to:		Comments
		Harvest	Reentry	
<b>CORN EARWORM (cont.)</b>				
gamma-cyhalothrin DECLARE 1.25SC	1–1.5 fl.oz.	14	24	<b>DO NOT</b> apply more than 0.06 pound active ingredient of gamma-cyhalothrin per acre per season.
lambda-cyhalothrin KARATE Z 2.08CS	1.28–1.92 oz.	14	24	<b>DO NOT</b> apply more than 0.12 pound active ingredient of lambda-cyhalothrin per acre per season.
lambda-cyhalothrin + chlorantraniliprole BESIEGE 1.25 SC	10 fl. oz.	7	14	Max. application = 31 fl. oz. per acre per year.
methomyl LANNATE 2.4LV LANNATE 90SP	0.75–1.5 pt. 0.25–1 lb.	21 21	48 48	<b>DO NOT</b> feed vines treated with methomyl. <b>DO NOT</b> make more than eight applications of methomyl per season or exceed 12 pints per acre. <b>DO NOT</b> apply more than 4 lb. Lannate SP per acre per crop.
methoxyfenozide (for suppression only) INTREPID 2F	6–10 oz.	7	4	<b>DO NOT</b> apply more than 64 fluid ounces per acre per year. <b>DO NOT</b> make more than three applications per acre per year.
spinosad BLACKHAWK 36WDG	1.7–3.3 oz.	3	4	<b>DO NOT</b> feed hay until 14 days after last application. <b>DO NOT</b> make more than three applications or apply more than a total of 9 fluid ounces per season.
spinetoram RADIANT 1SC	3–8 oz.	3	24	<b>DO NOT</b> exceed 24 fluid ounces of Radiant SC per acre per year. Do not allow grazing of peanut hay.
spinetoram + methoxyfenozide INTREPID EDGE 3F	4–8 oz.	7	4	
zeta-cypermethrin MUSTANG MAXX 0.8EC	3.2–4 fl.oz.	7	12	<b>DO NOT</b> apply more than 0.15 pound active ingredient per acre per year. <b>DO NOT</b> graze livestock in treated area. <b>DO NOT</b> use treated vines or hay for animal feed.
<b>COWPEA APHID</b>				
<p><b>Identification:</b> This insect was detected on large peanut acres in 2012. Adults are shiny black with white legs. Nymphs are smaller than adults and grayish. Adults and nymphs have a pair of cornicles (tail-pipes) protruding from the abdomen. A good hand lens should be used to look for aphids. All life stages feed on peanut pegs and can cause deformations along with blackening of the growing point.</p> <p><b>Economic threshold:</b> There is no economic threshold for cowpea aphids on peanuts.</p> <p><b>Monitoring technique:</b> Aphids may be problematic during drought in sandy areas. During peg formation, check the pegs every week. If aphids are detected, scout twice every week to monitor population growth and assess the need for insecticide treatments.</p>				
imidacloprid SHERPA	3.5 fl.oz.	14	24	Treatments should be directed toward the plant base. There should be a minimum of 5 days between applications. The maximum insecticide allowed on peanuts is 10.5 fluid ounces per acre per season. Consult the insecticide label for other restrictions.

<sup>1</sup> Days refers to minimum time from last application to harvest; hours refers to minimum time from last application to reentry<sup>2</sup> See Table 2 for a list of other trade names.

**Table 1. Peanut Insect Control (cont.)**

Insecticide and Formulation	Amount of Formulation per Acre	Minimum Days/Hours <sup>1</sup> from Last Application to:		Comments
		Harvest	Reentry	
<b>CUTWORMS (MANY SPECIES)</b>				
<i><b>Identification:</b> Caterpillars are greasy, plump, and shiny in appearance; they curl into a 'C' when disturbed. Caterpillars hide in soil during the day and feed on crop at night; they overwinter as larvae in soil near weedy host plants. Variegated cutworm climbs and feeds on soft plant stem.</i>				
<i><b>Economic threshold:</b> Apply foliar insecticide when infestations of four or more caterpillars per foot of row are present.</i>				
<i><b>Monitoring technique:</b> Commercial pheromone traps are available from various companies (Table 3); traps are useful in identifying various cutworm species.</i>				
bifenthrin BRIGADE 2EC	2.1–6.4 oz.	14	12	This product is extremely toxic to fish and aquatic invertebrates, so <b>growers in coastal areas should not use this product if chances of runoff are high.</b> This product is highly toxic to bees. Do not apply more than 0.5 lb ai per acre per season. <b>DO NOT</b> feed green immature plants and peanut hay to livestock.
cyfluthrin TOMBSTONE	1–1.8 fl.oz.	14	12	<b>DO NOT</b> make more than three applications of cyfluthrin or beta-cyfluthrin per season.
beta-cyfluthrin BAYTHROID XL 1EC	1.0–1.8 fl.oz.	14	12	
gamma-cyhalothrin DECLARE 1.25LC	1–1.5 fl.oz.	14	24	<b>DO NOT</b> apply more than 0.06 pounds active ingredient of gamma-cyhalothrin per acre per season.
indoxacarb STEWARD 1.25SC	9.2–11.3 oz.	14	12	<b>DO NOT</b> apply more than 45 fluid ounces per acre per season.
lambda-cyhalothrin KARATE Z 2.08CS	1.28–1.92 fl.oz.	14	24	<b>DO NOT</b> apply more than 0.12 pounds active ingredient of lambda-cyhalothrin per acre per season.
lambda-cyhalothrin + chlorantraniliprole BESIEGE 1.25SC	10 fl. oz.	7	14	Maximum application equals 31 fluid ounces per acre per year.
methomyl LANNATE 2.4LV	1.5–3 pt.	21	48	<b>DO NOT</b> feed vines treated with methomyl. <b>DO NOT</b> make more than eight applications per crop per season or exceed 12 pints per acre per season. <b>DO NOT</b> apply more than 4 lb. Lannate SP per acre per crop.
LANNATE 90SP	0.5–1 lb.	21	48	
zeta-cypermethrin MUSTANG MAXX 0.8EC	1.28–4 fl.oz.	7	12	<b>DO NOT</b> apply more than 0.15 pound active ingredient per acre per year. <b>DO NOT</b> graze livestock in treated area. <b>DO NOT</b> use treated vines or hay for animal feed.

<sup>1</sup> Days refers to minimum time from last application to harvest; hours refers to minimum time from last application to reentry<sup>2</sup> See Table 2 for a list of other trade names.

Table 1. Peanut Insect Control (cont.)				
Insecticide and Formulation	Amount of Formulation per Acre	Minimum Days/Hours <sup>1</sup> from Last Application to: Harvest Reentry		Comments
<b>FALL ARMYWORMS</b>				
<i><b>Identification:</b> Caterpillars may be green to nearly black with several bright lines on their back; a pale inverted 'Y' mark is present on the dark head capsule. Larvae overwinter as pupae in soil at shallow depths.</i>				
<i><b>Economic threshold:</b> Apply foliar insecticide when infestations of four or more caterpillars per foot of row are present. Karate, Declare, and Baythroid are effective on first and second instar larvae only.</i>				
<i><b>Monitoring technique:</b> Commercial pheromone traps are available from various companies (Table 3); traps are useful in identifying various armyworm species.</i>				
acephate ORTHENE 75S ORTHENE 97SP	1–1.3 lb. 12–16 oz.	14 14	24 24	<b>DO NOT</b> graze or feed vines treated with acephate.
bifenthrin BRIGADE 2EC	2.1–6.4 fl.oz.	14	12	Maximum use is 32 fluid ounces per acre per year.
cyfluthrin TOMBSTONE	2.4–2.8 fl.oz.	14	12	<b>DO NOT</b> make more than three applications of cyfluthrin and/or beta-cyfluthrin per season.
beta-cyfluthrin BAYTHROID XL 1EC	2.4–2.8 fl.oz.	14	12	
chlorantraniliprole PREVATHON 0.43SC	14–20 oz.	1	4	Make no more than 4 applications per year; do not exceed 60 fl. oz. per acre per year.
diflubenzuron DIMILIN 2L	4–8 fl.oz.	28	12	<b>DO NOT</b> make more than three applications per season. Do not exceed 24 fluid ounces per acre per season. The minimum application interval is 14 days. Apply when larvae are small. Since Dimilin is an insect growth regulator, larvae must ingest treated peanut foliage. Control of larvae may not be seen for 5 to 7 days after application.
fenpropathrin DANITOL 2.4 EC	10.66–16 oz.	14	24	
gamma-cyhalothrin DECLARE 1.25 CS	1–1.5 fl.oz.	14	24	<b>DO NOT</b> apply more than 0.06 pound active ingredient of gamma-cyhalothrin per acre per season.
indoxacarb STEWART 1.25 SC	9.2–11.3 fl.oz.	14	12	<b>DO NOT</b> apply more than 45 fluid ounces of indoxacarb per acre per season.
lambda-cyhalothrin KARATE Z 2.08 CS	1.28–1.96 oz.	14	12	<b>DO NOT</b> apply more than 0.12 pound active ingredient of lambda-cyhalothrin per acre per season.
lambda-cyhalothrin + chlorantraniliprole BESIEGE 1.25 SC	10 fl. oz.	7	14	Maximum application equals 31 fluid ounces per acre per year.
methoxyfenozide INTREPID 2F	6–10 oz.	7	4	<b>DO NOT</b> apply more than 64 fluid ounces per acre per year. <b>DO NOT</b> make more than three applications per acre per year.
novaluron DIAMOND 0.83EC	6–12 oz.	28	12	Diamond is an insect growth regulator and effective on small caterpillars. <b>DO NOT</b> use Diamond in rotation with other GR15 insecticides. <b>DO NOT</b> feed treated peanut hay or vines to livestock.
methomyl LANNATE 2.4LV LANNATE 90SP	0.75–1.5 pt. 0.25–1 lb.	21 21	48 48	<b>DO NOT</b> feed vines treated with methomyl. <b>DO NOT</b> make more than eight applications of methomyl per season or exceed 12 pints per acre per season. <b>DO NOT</b> apply more than 4 lb. of Lannate SP per acre per crop.

<sup>1</sup> Days refers to minimum time from last application to harvest; hours refers to minimum time from last application to reentry<sup>2</sup> See Table 2 for a list of other trade names.

**Table 1. Peanut Insect Control (cont.)**

Insecticide and Formulation	Amount of Formulation per Acre	Minimum Days/Hours <sup>1</sup> from Last Application to: Harvest Reentry		Comments
<b>FALL ARMYWORMS (cont.)</b>				
spinosad BLACKHAWK 36 WDG	1.7–3.3 oz.	3	4	<b>DO NOT</b> feed hay until 14 days after last application of spinosad. <b>DO NOT</b> make more than three applications nor apply more than 9 fluid ounces of spinosad per season.
spinetoram RADIANT 1 SC	3–8 oz.	3	24	<b>DO NOT</b> exceed 24 fluid ounces of Radiant SC per acre per year. Do not allow grazing of peanut hay.
spinetoram + methoxyfenozide INTREPID EDGE 3F	4–8 oz.	7	4	24 oz. max., no more than 3 applications per year; do not exceed 60 fl.oz. per acre per year.
<b>GRASSHOPPERS (MANY SPECIES)</b>				
<i><b>Identification:</b> Nymphs do not have wings; adults fly readily and can be quite large. They are generalist feeders.</i>				
<i><b>Economic threshold:</b> Apply foliar insecticide when defoliation exceeds 25 percent.</i>				
<i><b>Monitoring technique:</b> Pheromone traps unavailable for this pest; simply use a sweep net to sample insects directly from foliage.</i>				
acephate ORTHENE 75 S ORTHENE 97 SP	0.33–0.67 lb. 0.25–0.5 lb.	14 14	24 24	<b>DO NOT</b> feed forage or hay treated with acephate to livestock or graze treated areas.
bifenthrin BRIGADE 2EC	2.1–6.4 fl.oz.	14	12	Maximum use is 32 fluid ounces per acre per year.
chlorantraniliprole PREVATHON 0.43 SC	8–20 oz.	1	4	Make no more than 4 applications per year; do not exceed 60 fl.oz. per acre per year.
cyfluthrin TOMBSTONE	1.8–2.4 fl.oz.	14	12	<b>DO NOT</b> make more than three applications of cyfluthrin and/or beta-cyfluthrin per season.
beta-cyfluthrin BAYTHROID XL 1EC	1.8–2.4 fl.oz.	14	12	
gamma-cyhalothrin DECLARE 1.25CS	1–1.5 fl.oz.	14	24	<b>DO NOT</b> apply more than 0.06 pound active ingredient of gamma-cyhalothrin per acre per season.
lambda-cyhalothrin KARATE Z 2.08CS	1.28–1.92 fl.oz.	14	24	<b>DO NOT</b> apply more than 0.12 pound active ingredient of lambda-cyhalothrin per acre per season.
lambda-cyhalothrin + chlorantraniliprole BESIEGE 1.25SC	10 fl.oz.	7	14	Maximum application equals 31 fluid ounces per acre per year.
zeta-cypermethrin MUSTANG MAXX 0.8EC	3.2–4 fl.oz.	7	12	<b>DO NOT</b> apply more than 0.15 pound active ingredient per acre per year. <b>DO NOT</b> graze livestock in treated area. <b>DO NOT</b> use treated vines or hay for animal feed.

<sup>1</sup> Days refers to minimum time from last application to harvest; hours refers to minimum time from last application to reentry<sup>2</sup> See Table 2 for a list of other trade names.

Table 1. Peanut Insect Control (cont.)				
Insecticide and Formulation	Amount of Formulation per Acre	Minimum Days/Hours <sup>1</sup> from Last Application to: Harvest Reentry		Comments
<b>LEAFHOPPERS</b>				
<p><b>Identification:</b> Small wedge-shaped body, pale green, about 0.1 inch long; head is broad and mouthparts are sucking type. They hide underneath leaves.</p> <p><b>Economic threshold:</b> Apply as a foliar spray when damage (hopper burn) is evident on 20 percent or more of plants and insects are present.</p> <p><b>Monitoring technique:</b> Pheromone traps unavailable for this pest; simply use a sweep net to sample insects directly from foliage.</p>				
acephate ORTHENE 75S ORTHENE 97SP	1–1.3 lb. 12–16 oz.	14 14	24 24	<b>DO NOT</b> graze or feed vines treated with acephate.
bifenthrin BRIGADE 2EC	2.1–6.4 fl. oz.	14	12	Max. use is 32 fl. oz. per acre per year.
carbaryl SEVIN 4F	1 qt.	14	12	<b>DO NOT</b> apply more than 8 quarts or pounds of carbaryl per acre per season.
cyfluthrin TOMBSTONE BAYTHROID	1–1.8 fl.oz. See label.	14 See label.	12 See label.	<b>DO NOT</b> make more than three applications of cyfluthrin and/or beta-cyfluthrin per season.
beta-cyfluthrin BAYTHROID XL 1EC	1–1.8 fl.oz.	14	12	
gamma-cyhalothrin DECLARE 1.25 LS	1–1.5 fl.oz.	14	24	<b>DO NOT</b> apply more than 0.06 pound active ingredient of gamma-cyhalothrin per acre per season.
lambda-cyhalothrin KARATE Z 2.08CS BESIEGE 1.25SC	0.96–1.6 fl.oz. 5–8 fl.oz.	14 7	24 14	<b>DO NOT</b> apply more than 0.12 pound active ingredient of lambda-cyhalothrin per acre per season. Besiege is a broad-spectrum pramex insecticide.
zeta-cypermethrin MUSTANG MAX 0.8EC	1.76–4 fl.oz.	7	12	<b>DO NOT</b> apply more than 0.15 pound active ingredient per acre per year. <b>DO NOT</b> graze livestock in treated area. <b>DO NOT</b> use treated vines or hay for animal feed.
<b>LESSER CORNSTALK BORERS</b>				
<p><b>Identification:</b> Very active larva that wriggles when touched; larvae have alternate brown and purple bands. They construct sand tunnels that become attached to plant structures like roots, pegs, and pods.</p> <p><b>Economic threshold:</b> Apply soil insecticide when fresh damage or borers are found at 30 percent of sites scouted in a field.</p> <p><b>Monitoring technique:</b> Growers can use the Aflatoxin Risk Index model on the Alabama Weather Information System website for updated information on lesser cornstalk borer and the risk of contamination due to pathogens. Pheromone traps are available from various companies (Table 3). They are a very effective monitoring technique for estimating moth activity even when the larvae are difficult to locate in soil.</p>				
chlorpyrifos LORSBAN 15G	13.3 lb.	21	12	Apply granules in a band over the row and pegging zone. <b>DO NOT</b> feed forage or hay to meat or dairy animals.
diflubenzuron DIMILIN 2L	4–8 fl.oz. See label.	28	12	Make applications when larvae are small, and target the spray to the base of the plant. Dimilin is an insect growth regulator, so it only acts on larval stages of insects and takes up to 7 days to show effects.
novaluron DIAMOND 0.83EC	6–12 fl.oz.	28	12	Diamond is an insect growth regulator and effective on small caterpillars. <b>DO NOT</b> use in conjunction with another GR15 insecticide.

<sup>1</sup> Days refers to minimum time from last application to harvest; hours refers to minimum time from last application to reentry<sup>2</sup> See Table 2 for a list of other trade names.

**Table 1. Peanut Insect Control (cont.)**

Insecticide and Formulation	Amount of Formulation per Acre	Minimum Days/Hours <sup>1</sup> from Last Application to: Harvest Reentry		Comments
<b>LOOPERS (TWO SPECIES)</b>				
<i><b>Identification:</b> Caterpillars of cabbage and soybean loopers are bright green and have two pairs of abdominal prolegs; they move by looping and may drop off plants when disturbed.</i>				
<i><b>Economic threshold:</b> Apply foliar insecticides when infestations of four or more caterpillars per foot of row are present.</i>				
<i><b>Monitoring technique:</b> Pheromone traps are available from various companies (Table 3); moth identification is easy with traps, but always scout the crop directly.</i>				
bifenthrin BRIGADE 2EC	2.1–6.4 fl.oz.	14	12	Max. use is 32 fluid ounces fl. oz. per acre per year.
chlorantraniliprole PREVATHON 0.43SC	14–20 oz.	1	4	Make no more than 4 applications per year; do not exceed 60 fl. oz. per acre per year.
indoxacarb STEWARD 1.25SC	9.2–11.3 fl.oz.	14	12	<b>DO NOT</b> apply more than 45 fluid ounces per acre per season.
methomyl LANNATE LV LANNATE 90SP	1.5–3 pt. 0.5–1 lb.	21 21	48 48	<b>DO NOT</b> make more than eight applications per crop per season or exceed 12 pints per acre per season. <b>DO NOT</b> feed treated vines. Soybean looper may be difficult to control with Lannate.
methoxyfenozide INTREPID 2F	6–10 oz.	7	4	<b>DO NOT</b> apply more than 64 fluid ounces per acre per year. <b>DO NOT</b> make more than three applications per acre per year.
novaluron DIAMOND 0.83EC	6–12 fl.oz.	28	12	For <b>suppression</b> only. <b>DO NOT</b> feed treated vines or peanut hay to livestock.
spinosad BLACKHAWK 36WDG	1.7–3.3 oz.	3	4	<b>DO NOT</b> feed hay nor graze for 14 days after application. <b>DO NOT</b> make more than three applications nor apply more than 9 fluid ounces total per season.
spinetoram RADIANT ISC	3–8 fl.oz.	3	24	<b>DO NOT</b> exceed 24 fluid ounces of Radiant SC per acre per year. Do not allow grazing of peanut hay.
spinetoram + methoxyfenozide INTREPID EDGE 3F	4–8 oz.	7	4	24 oz. max per year; no more than 3 applications per year.
<b>REDNECKED PEANUT WORM</b>				
<i><b>Identification:</b> Caterpillars are pale green with dark brown head and a red band behind the head. Larvae are active when disturbed.</i>				
<i><b>Economic threshold:</b> Apply foliar insecticide when terminal damage is excessive.</i>				
<i><b>Monitoring technique:</b> Pheromone traps are not available for this insect; use a sweep net to estimate infestation level.</i>				
bifenthrin BRIGADE 2EC	2.1–6.4 fl.oz.	14	12	Maximum use is 32 fluid ounces per acre per year.
cyfluthrin TOMBSTONE BAYTHROID	1–1.8 fl.oz. See label.	14 See label.	12 See label.	<b>DO NOT</b> make more than three applications of cyfluthrin and/or beta-cyfluthrin per season.
beta-cyfluthrin BAYTHROID XL 1EC	1.8–2.4 fl.oz.	14	12	
esfenvalerate ASANA XL	2.9–5.8 oz.	21	12	<b>DO NOT</b> feed or graze livestock on vines treated with esfenvalerate. <b>DO NOT</b> exceed 0.15 pound active ingredient of esfenvalerate per season.
gamma-cyhalothrin DECLARE 1.25 LS	1–1.5 fl.oz.	14	24	<b>DO NOT</b> apply more than 0.06 pound active ingredient of gamma-cyhalothrin per acre per season.

<sup>1</sup> Days refers to minimum time from last application to harvest; hours refers to minimum time from last application to reentry.<sup>2</sup> See Table 2 for a list of other trade names.

<b>Table 1. Peanut Insect Control (cont.)</b>				
Insecticide and Formulation	Amount of Formulation per Acre	Minimum Days/Hours <sup>1</sup> from Last Application to: Harvest Reentry		Comments
<b>REDNECKED PEANUT WORM (cont.)</b>				
lambda-cyhalothrin KARATE Z 2.08 CS	0.96–1.6 oz.	14	24	<b>DO NOT</b> apply more than 0.12 pound active ingredient of lambda-cyhalothrin per acre per season.
lambda-cyhalothrin + chlorantraniliprole BESIEGE 1.25 SC	10 fl. oz.	7	14	Maximum application equals 31 fluid ounces per acre per year.
spinosad BLACKHAWK 36 WDG	1.7–3.3 oz.	3	4	<b>DO NOT</b> feed hay nor graze for 14 days after application. <b>DO NOT</b> make more than three applications nor apply more than 9 fluid ounces total per season.
spinetoram RADIANT 1 SC	3–8 oz.	3	24	<b>DO NOT</b> exceed 24 fluid ounces of Radiant SC per acre per year. Do not allow grazing of peanut hay.
zeta-cypermethrin MUSTANG MAX 0.8 EC	1.28–4 fl.oz.	7	12	<b>DO NOT</b> apply more than 0.15 pound active ingredient per acre per year. <b>DO NOT</b> graze livestock in treated area. <b>DO NOT</b> use treated vines or hay for animal feed.
<b>SOUTHERN CORN ROOTWORM</b>				
<i><b>Identification:</b> Immature stages are creamish white, slender insects that are difficult to locate in soil. Heavy, poorly drained soils are favorable to rootworm infestation.</i>				
<i><b>Economic threshold:</b> Apply soil insecticide when fresh damage or borers are found at 30 percent of sites scouted in a field.</i>				
<i><b>Monitoring technique:</b> Traps are available from many vendors (Table 3) but monitoring kits can be expensive. The trap design is excellent and traps are reusable. Adult beetles can be sampled by sweep netting from foliage.</i>				
bifenthrin (for adults only) BRIGADE 2EC	2.1–6.4 fl.oz.	14	12	Maximum use is 32 fluid ounces per acre per year.
chlorpyrifos LORSBAN 15G	13.3 lb.	21.	12	Apply as a banded application over the row at early pegging through pod fill. <b>DO NOT</b> feed forage or hay to beef or dairy animals.
lambda-cyhalothrin + chlorantraniliprole (for adults only) BESIEGE 1.25SC	10 fl.oz.	7	14	Maximum application equals 31 fluid ounces per acre per year.
<b>SPIDER MITES (MANY SPECIES)</b>				
<i><b>Identification:</b> Spider mites have four pair of legs and are actually closely related to ticks. Mites are microscopic arthropods (less than 1/20 inch). Species may have to be identified by Extension specialists. Two-spotted spider mites are effectively controlled with insecticides listed below.</i>				
<i><b>Economic threshold:</b> Extensive bronzing of leaves indicates an outbreak of mites since they live in dense colonies on the underside of leaves.</i>				
<i><b>Monitoring technique:</b> Look on the underside of leaves with a hand-held magnifying glass for tiny moving specks or tap the leaves on white paper and record number of mites.</i>				
COMITE II	2.25 pt.	14	7 days 48 hr., if protective equipment is used	<b>DO NOT</b> apply more than once per season. May cause foliar burn, especially if air temperature is greater than 90°F. <b>DO NOT</b> graze or feed livestock on treated areas or cut treated forage for hay.

<sup>1</sup> Days refers to minimum time from last application to harvest; hours refers to minimum time from last application to reentry.<sup>2</sup> See Table 2 for a list of other trade names.

**Table 1. Peanut Insect Control (cont.)**

Insecticide and Formulation	Amount of Formulation per Acre	Minimum Days/Hours <sup>1</sup> from Last Application to: Harvest Reentry		Comments
<b>THREE-CORNERED ALFALFA HOPPER</b>				
<i><b>Identification:</b> Adult hoppers are wedge-shaped, ¼ inch long and green with broad head and tapering abdomen.</i>				
<i><b>Economic threshold:</b> One adult per 6 foot row with more than 75 days to digging OR one adult per 3 feet of row within 25 to 75 days to digging (suggested by University of Georgia).</i>				
<i><b>Monitoring technique:</b> No pheromone traps are available; use a sweep net for detection and monitoring.</i>				
bifenthrin BRIGADE 2EC	2.1–6.4 fl.oz.	14	12	Maximum use is 32 fluid ounces per acre per year.
carbaryl SEVIN 4F	1 qt.	14	12	<b>DO NOT</b> apply more than 8 quarts or pounds of carbaryl per acre per season.
cyfluthrin TOMBSTONE BAYTHROID	1.8–2.4 fl.oz. See label.	14 See label.	12 See label.	<b>DO NOT</b> make more than three applications of cyfluthrin and/or beta-cyfluthrin per season.
beta-cyfluthrin BAYTHROID XL 1EC	1.8-2.4 fl.oz.	14	12	
gamma-cyhalothrin DECLARE 1.25CS	1–1.5 fl.oz.	14	24	<b>DO NOT</b> apply more than 0.06 pound active ingredient of gamma-cyhalothrin per acre per season.
lambda-cyhalothrin KARATE Z 2.08CS	0.96–1.6 fl.oz.	14	12	<b>DO NOT</b> apply more than 0.12 pound active ingredient of lambda-cyhalothrin per acre per season.
lambda-cyhalothrin + chlorantraniliprole BESIEGE 1.25SC	10 fl. oz.	7	14	Maximum application equals 31 fluid ounces per acre per year.
<b>THRIPS (MANY SPECIES)</b>				
<i><b>Identification:</b> Submicroscopic insects less than 1/20 inch long, adult have wings that are narrow and hairy. Tobacco thrips and western flower thrips are two common species.</i>				
<i><b>Economic threshold:</b> No action threshold for insect management. Use spotted-wilt-tolerant varieties to reduce crop losses in endemic areas.</i>				
<i><b>Monitoring technique:</b> Pheromone traps are not available; yellow or blue sticky cards may be used but require high maintenance. Use a sheet of white paper or cardboard and tap terminal leaves or flowers to dislodge insects and estimate numbers. Place small plants in Ziploc bags and shake vigorously for 10 seconds to dislodge; then count thrips inside bag.</i>				
acephate ORTHENE 75S ORTHENE 97SP	0.5–1 lb. 0.4–0.75 lb.	14 14	24 2	Apply as a foliar spray in seedling stage. <b>DO NOT</b> feed forage or hay to livestock or graze treated areas.
aldicarb AGLOGIC 15 G	7 lb.	90	48	<b>DO NOT</b> exceed 7 lb. per acre per year. <b>DO NOT</b> feed hay or vines to livestock.
gamma-cyhalothrin DECLARE 1.25CS	1–1.5 fl.oz.	14	24	Apply as a foliar spray in seedling stage. <b>DO NOT</b> apply more than 0.06 pound active ingredient of gamma-cyhalothrin per acre per season.
imidacloprid VELUM TOTAL (PREMIX)	18 fl.oz.		12	Direct spray below the seed. Use of imidacloprid may increase spotted wilt virus. Use virus resistant varieties of peanuts (Clemson University recommendation).
ADMIRE PRO LEVERAGE	10 fl.oz. 2.8 fl.oz.	14	12 12	May increase spotted wilt virus. Spray below seed. Maximum allowed use is 8.3 fl.oz. per year.
lambda-cyhalothrin KARATE Z 2.08CS	1.28–1.96 fl.oz.	14	24	Apply as a foliar spray in seedling stage. <b>DO NOT</b> apply more than 0.12 pound active ingredient of lambda-cyhalothrin per acre per season.

<sup>1</sup> Days refers to minimum time from last application to harvest; hours refers to minimum time from last application to reentry.<sup>2</sup> See Table 2 for a list of other trade names.

Table 1. Peanut Insect Control (cont.)				
Insecticide and Formulation	Amount of Formulation per Acre	Minimum Days/Hours <sup>1</sup> from Last Application to: Harvest Reentry		Comments
<b>THRIPS (MANY SPECIES) (cont.)</b>				
lambda-cyhalothrin + chlorantraniliprole BESIEGE 1.25SC	10 fl.oz.	7	14	Maximum application equals 31 fluid ounces per acre per year.
novaluron DIAMOND 0.83EC	6–12 fl.oz.	28	12	For suppression of immature thrips. Will not control adults. <b>DO NOT</b> use Diamond in rotation with other GR15 insecticides. <b>DO NOT FEED</b> treated vines or peanut hay to livestock.
phorate THIMET 20G	5 lb. on 36-in. rows	90	48	Apply granules in seed furrow at planting. <b>DO NOT</b> graze or feed treated hay or forage to livestock. Available only in closed handling systems (lock 'n load). Do not apply more than 5.8 total pounds per acre on twin rows.
spinetoram RADIANT 1SC	3–8 oz.	3	24	<b>DO NOT</b> exceed 24 fluid ounces of Radiant SC per acre per year. Do not allow grazing of peanut hay.
<b>TOBACCO BUDWORM</b>				
<i><b>Identification:</b> This is a native insect whose immature stages look identical to corn earworm caterpillars; microscopic examination is needed to confirm species (budworm larvae have numerous microspines on tubercles or warts). See ANR-0752, "Foliage Feeders on Alabama Peanuts," for more information.</i>				
<i><b>Economic threshold:</b> Apply foliar insecticide when infestations of four or more caterpillars per foot of row are present.</i>				
<i><b>Monitoring technique:</b> Pheromone traps are available from many vendors (Table 3) and are very effective in separating corn earworm and tobacco budworm moths.</i>				
chlorantraniliprole PREVATHON 0.43 SC	14–20 oz.	1	4	Make no more than 4 applications per year; do not exceed 60 fl.oz. per acre per year.
indoxacarb STEWARD 1.25SC	9.2–11.3 oz.	14	12	<b>DO NOT</b> apply more than 45 fluid ounces per acre per season.
methomyl LANNATE 2.4LV	0.75–1.5 pt.	21	48	<b>DO NOT</b> exceed 12 pints per acre per season. <b>DO NOT</b> feed treated vines.
spinetoram + methoxyfenozide INTREPID EDGE 3F	4–8 oz.	7	4	24 oz. max per year; no more than 3 applications per year, 7 days apart.
spinosad BLACKHAWK WDG	1.7–3.3 oz.	3	4	<b>DO NOT</b> feed hay until 14 days after last application. <b>DO NOT</b> make more than three applications per season. <b>DO NOT</b> apply more than a total of 9 fluid ounces per acre per season.
<b>VELVETBEAN CATERpillARS (VBC), GREEN CLOVERWORMS (GCW)</b>				
<i><b>Identification:</b> VBC are active or wiggly when disturbed; larvae are green or black with seven white longitudinal stripes and four pairs of abdominal prolegs. GCW are green larvae with three pairs of abdominal prolegs. See ANR-752, "Foliage Feeders on Alabama Peanuts," for more information.</i>				
<i><b>Economic threshold:</b> Apply foliar insecticide when caterpillar infestations exceed four or more per row foot.</i>				
<i><b>Monitoring technique:</b> Pheromone traps are not available for moths; larvae are easily collected in sweep nets or beat sheet.</i>				
<i>Bacillus thuringiensis</i> AGREE WG BIOBIT HP DIPEL DF JAVELIN WG XENTARI DF	1.2 lb. 0.5–1 lb. 0.5–1 lb. 0.25–0.5 lb. 0.5–1.5 lb.	— — — — —	4 4 4 4 4	A delay in larval mortality may occur. Use on small to medium-size larvae and low population pressure to avoid worm outbreak. At high population levels, a contact insecticide should be added or used instead.

<sup>1</sup> Days refers to minimum time from last application to harvest; hours refers to minimum time from last application to reentry.<sup>2</sup> See Table 2 for a list of other trade names.

**Table 1. Peanut Insect Control (cont.)**

Insecticide and Formulation	Amount of Formulation per Acre	Minimum Days/Hours <sup>1</sup> from Last Application to:		Comments
		Harvest	Reentry	
<b>VELVETBEAN CATERpillARS (VBC), GREEN CLOVERWORMS (GCW) (cont.)</b>				
bifenthrin BRIGADE 2EC	2.1–6.4 fl.oz.	14	12	Maximum use is 32 fluid ounces per acre per year.
carbaryl SEVIN 4F	1 qt.	14	12	<b>DO NOT</b> apply more than 8 quarts or pounds of carbaryl per acre per season.
beta-cyfluthrin BAYTHROID XL IEC	1–1.8 fl.oz.	14	12	<b>DO NOT</b> make more than three applications of cyfluthrin and/or beta-cyfluthrin per season.
chlorantraniliprole PREVATHON 0.43SC	14–20 oz.	1	4	Make no more than 4 applications per year; do not exceed 60 fl.oz. per acre per year.
cyfluthrin TOMBSTONE BAYTHROID	1–1.8 fl.oz.	14	12	<b>DO NOT</b> make more than three applications of cyfluthrin and/or beta-cyfluthrin per season.
diflubenzuron DIMILIN 2L	2–4 fl.oz.	28	12	<b>DO NOT</b> make more than three applications per season. Do not exceed 24 fluid ounces per acre per season. The minimum application interval is 14 days. Apply when larvae are small. Since Dimilin is an insect growth regulator, larvae must ingest treated peanut foliage. Control of larvae may not be seen for 5 to 7 days after application. Dimilin is slightly slow in VBC control but provides great control of GCW and armyworms.
esfenvalerate ASANA XL	2.9–5.8 oz.	21	12	<b>DO NOT</b> exceed 0.15 pound active ingredient of Asana per season. <b>DO NOT</b> graze livestock in treated areas or use treated vines or hay for animal feed.
gamma-cyhalothrin DECLARE 1.25CS	1–1.5 fl.oz.	14	24	<b>DO NOT</b> apply more than 0.06 pound active ingredient of gamma-cyhalothrin per acre per season.
lambda-cyhalothrin KARATE Z 2.08CS	0.96–1.6 fl.oz.	14	24	<b>DO NOT</b> apply more than 0.12 pound active ingredient of lambda-cyhalothrin per acre per season.
lambda-cyhalothrin + chlorantraniliprole BESIEGE 1.25SC	10 fl.oz.	7	14	Maximum application equals 31 fluid ounces per acre per year.
methomyl LANNATE 2.4LV	1.5 pt.	21	48	<b>DO NOT</b> feed vines treated with methomyl. <b>DO NOT</b> make more than eight applications per crop per season or exceed 12 pints per acre per season. <b>DO NOT</b> apply more than 4 lb. Lannate SP per acre per crop.
LANNATE 90SP	0.5–1 lb.	21	48	
methoxyfenozide INTREPID 2F	6–10 oz.	7	4	<b>DO NOT</b> apply more than 64 fluid ounces per acre per year. <b>DO NOT</b> make more than three applications per acre per year.
novaluron DIAMOND 0.83EC	6–8 fl.oz.	28	12	Diamond is an insect growth regulator and effective on small caterpillars. <b>DO NOT</b> use Diamond in rotation with other GR15 insecticides. <b>DO NOT FEED</b> treated vines or peanut hay to livestock.
spinosad BLACKHAWK 36WDG	1.7–3.3 oz.	3	4	<b>DO NOT</b> feed hay until 14 days after last application. <b>DO NOT</b> make more than three applications per season. <b>DO NOT</b> apply more than a total of 9 fluid ounces per acre per season.

<sup>1</sup> Days refers to minimum time from last application to harvest; hours refers to minimum time from last application to reentry.<sup>2</sup> See Table 2 for a list of other trade names.

<b>Table 1. Peanut Insect Control (cont.)</b>				
Insecticide and Formulation	Amount of Formulation per Acre	Minimum Days/Hours <sup>1</sup> from Last Application to: Harvest Reentry		Comments
<b>VELVETBEAN CATERPILLARS (VBC), GREEN CLOVERWORMS (GCW) (cont.)</b>				
spinetoram RADIANT 1SC	3–8 oz.	3	24	<b>DO NOT</b> exceed 24 fluid ounces of Radiant SC per acre per year. Do not allow grazing of peanut hay.
spinetoram + methoxyfenozide INTREPID EDGE 3F	4–8 oz.	7	4	24 oz. max per year; no more than 3 applications per year, 7 days apart.
zeta-cypermethrin MUSTANG MAX 0.8EC	1.28–4 fl.oz.	7	12	<b>DO NOT</b> apply more than 0.15 pound active ingredient per acre per year. <b>DO NOT</b> graze livestock in treated area. <b>DO NOT</b> use treated vines or hay for animal feed.
<b>WIREWORMS</b>				
<i><b>Identification:</b> Caterpillars resemble southern corn rootworm larvae; they have a long tubular body with three pairs of legs behind the head; head and mouthparts are dark. Lifecycle ranges from 3 months to 2 years.</i>				
<i><b>Economic threshold:</b> Use bait stations or shovel for estimating infestation. More than two wireworms per sampling location indicates threat to the main crop.</i>				
<i><b>Monitoring technique:</b> Pheromone traps are unavailable. Use wheat and corn based bait stations in ground (at several locations within field and weedy borders) up to a depth of 6 inches. Allow 7 days for bait to work and then uncover to count wireworms.</i>				
chlorpyrifos LORSBAN 15G	13.3 lb	21	24	<b>For Suppression Only.</b> Apply as a banded application over the row when scouting reveals greater than 30 percent pod damage.
chlorpyrifos LORSBAN 4E	4 pt.	21	24	<b>Apply as a preplant broadcast spray to soil surface. Incorporate immediately</b> to a depth of 3 to 4 inches. <b>DO NOT</b> make more than one application per season. <b>DO NOT</b> feed treated forage or hay to meat or dairy animals. The total amount of chlorpyrifos applied per season must not exceed 4 pounds active ingredient per acre.
<b>NONINSECT PEST: SNAILS</b>				
<i><b>Identification:</b> Snails have a hard shell on top. Snails cause crop contamination when infestations occur late in the season. Slugs may also occur but lack the hard shell.</i>				
<i><b>Economic threshold:</b> Not known in peanuts.</i>				
<i><b>Monitoring technique:</b> Watch areas with high organic matter and low areas of field with high soil moisture. Wet and cool summers may lead to population buildup.</i>				
<i><b>Chemical control:</b> Few molluscicides are available but there are label restrictions for crops and very expensive. insecticides do not control snails.</i>				
iron phosphate + spinosad (organic) BUG-N-SLUGGO	20 to 44 lb. per acre	14	-	No more than 3 applications per season. Labeled for peanuts.
metaldehyde DEADLINE	-	-	-	Not labeled on peanuts, but has corn and soybean on label.

<sup>1</sup> Days refers to minimum time from last application to harvest; hours refers to minimum time from last application to reentry.

<sup>2</sup> See Table 2 for a list of other trade names.

**Table 2. Peanut Insecticide Common Chemical Names and Classes, Trade Names, and Formulations**

Insecticide Common Name	IRAC Chemical Class *	Trade Name and Formulation
aldicarb	1A	AgLogic 15G
carbaryl	1A	Sevin 4F
methomyl	1A	Lannate 2–4 LV, Lannate 90SP
acephate**	1B	Orthene 75S, Orthene 97SP, Acephate 75S, Acephate 90S
chlorpyrifos	1B	Lorsban 4E, Lorsban 15G
phorate**	1B	Thimet 20G, Phorate 20G
beta-cyfluthrin	3A	Baythroid XL 1EC, Leverage
bifenthrin	3A	Brigade 2EC, Tundra EC
cyfluthrin	3A	Tombstone
esfenvalerate	3A	Asana XL 0-66EC
fenpropathrin	3A	Danitol 2.4EC
gamma-cyhalothrin	3A	Proaxis 0.5LS, Declare 1.25CS
lambda-cyhalothrin	3A	Grizzly Z, Karate Z 2.08ES, Warrior, Silencer, Besiege (Premix)
zeta-cypermethrin	3A	Mustang Max EC
imidacloprid **	4	Sherpa, Velum Total (Premix), Admire Pro, Leverage
spinetoram	5	Radiant 1 SC, Intrepid Edge 3F (Premix)
spinosad	5	Blackhawk 36WDG
<i>Bacillus thuringiensis</i> (Bt, OMRI listed***)	11	Subspecies aizawai: Agree WG (50% Bt), Xentari DF (54%) Subspecies kurstaki: BioBit HP (58% Bt), Dipel DF (54% Bt), Dipel ES (24% Bt), Javelin WG (85% Bt)
diflubenzuron +	15	Dimilin 2L
novaluron +	15	Diamond 0.83EC
methoxyfenozide +	18	Intrepid 2F, Intrepid Edge 3F (Premix)
indoxacarb	22	Steward 1.25 SC
chlorantraniliprole	28	Besiege (Premix), Prevathon 0.43SC
propargite	—	Comite GEC, Omite 30 WS

Many chemical classes have generic products. Check insecticide label that you buy, and always follow the labeled use rates.

\*Recommended by the Insecticide Resistance Action Committee

\*\*Systemic insecticide—read insecticide label carefully before use.

\*\*\*OMRI = Organic Materials Review Institute approved for organic peanut production

+ Insect growth regulators are effective only against larval or immature stages.

Insecticide premixes include Intrepid Edge, Velum Total, Besiege, and Leverage. Use premix insecticides judiciously when needed to avoid insecticide resistance to two chemistries due to overuse.

**Table 3. Common Beneficial Insects Occurring in Peanut Fields**

<b>Predatory Insects</b>	<b>Activity</b>
Flower Bugs	Feed on thrips, spider mites, aphids, small caterpillars
Big-Eyed Bugs	Feed on variety of small insects, including caterpillars
Spined Soldier Bugs	Found on weedy field borders mid-season. Generalist predator of many insects.
Lady Beetles, Lacewings	Actively devour small caterpillars and thrips. Immature forms of lady beetle and lacewing look very different from adult insect.
Predacious Mites	Feed on pest mites.
<b>Parasitic Wasps</b>	<b>Activity</b>
Ichneumonid Wasps	Feed on small caterpillars. Parasitic wasps may be difficult to see in field but can get accidentally captured in sticky traps.
Encyrtid Wasps	Feed on small caterpillars of the cabbage looper
Scelionid Wasps	Destroy egg masses of stink bugs

Insect Control section prepared by Ayanava Majumdar, Extension Entomologist, Alabama Cooperative Extension System, Alabama A&M University and Auburn University.

## DISEASE AND NEMATODE CONTROL

Peanut diseases significantly reduce yield and nut quality. Poor peanut stands are often the result of seed rot or seedling disease. Control of early and late leaf spot requires a program of regular fungicide sprays to avoid defoliation of peanuts before harvest. Several soilborne fungi and nematodes damage stems, crowns, roots, and pods of peanut plants. A combination of chemical and management practices is usually necessary to control diseases and nematodes on peanuts.

### Management Practices for Disease Control

Management practices are an important part of a peanut disease control program. Such practices alone cannot prevent outbreaks of disease or nematodes on peanuts. However, they are a good method of reducing losses and, thus, reducing the need for expensive chemical treatments.

**Rotating peanuts** with pasture grasses, cotton, grain sorghum, and corn for two to three growing seasons can reduce the incidence of leaf spot diseases and white mold as well as root-knot nematodes. Avoid peanut-soybean rotations because both crops are susceptible to white mold and peanut root-knot.

See Extension publications ANR-0368, "Soilborne Diseases of Peanuts" and ANR-0856, "Nematode Suppressive Crops," for more information on using crop rotation to control diseases and nematode pests on peanuts.

**Deep plowing** of the previous season's peanut crop residue can be an effective method of reducing leaf spot and white mold pressure. Turning crop residues 6 inches below the soil surface should slow the movement of pathogenic fungi onto young peanut plants. Planting into corn or cotton crop debris using reduced tillage practices will not increase the risk of leaf spot diseases, white mold, or *Cylindrocladium* black root rot (CBR).

**Using recommended herbicides** minimizes the need for cultivation which can encourage disease. Mechanical cultivation between rows for weed control may move soil over the runners or main stem, making the plants more susceptible to white mold. If cultivation is needed, use flat sweeps or other equipment designed to minimize soil movement.

**Table 4. Peanut Disease Control**

Fungicide and Formulation	Amount of Formulation Per 100 lb. Seed	Comments
<b>SEED ROT AND SEEDLING DISEASES</b>		
azoxystrobin + fludioxonil + mefenoxam DYNASTY PD	3–4 oz.	Combining products is <b>NOT RECOMMENDED</b> . Follow manufacturer's directions for treating seed. <b>DO NOT</b> use treated seed for food, feed, or oil. Dynasty PD is active against fungi such as <i>Rhizoctonia solani</i> and <i>Cylindrocladium</i> and will suppress seed rot and seedling disease caused by <i>Aspergillus niger</i> .
ipconazole + carboxin + metalaxyl RANCONA V PD	4 oz.	
<i>Bacillus subtilis</i> KODIAK HB	2–4 oz.	<b>Hopper Box Treatment:</b> Use is recommended for peanuts planted before April 25 to suppress seed rot and seedling disease caused by <i>Rhizoctonia</i> , <i>Fusarium</i> , and <i>Aspergillus</i> , and to improve <i>Rhizobium</i> nodulation.
<b>ASPERGILLUS AND PYTHIUM SEED ROT, DAMPING-OFF, AND EARLY WHITE MOLD SUPPRESSION</b>		
fluoaxastrobin EVITO 480SC	0.16–0.24 fl.oz./1000 row ft.	Apply in furrow or early post for the control of seedling or early season soilborne diseases, respectively.
	Amount of Formulation per Acre	
<b>ASPERGILLUS AND PYTHIUM SEED ROT, DAMPING-OFF, AND EARLY WHITE MOLD SUPPRESSION</b>		
azoxystrobin ABOUND 2SC AZAKA AZOXY 2SC	0.4–0.8 fl.oz./1000 row ft.	<b>In-Furrow Spray:</b> Mount the nozzle so that the spray mixture is applied into the open seed furrow just in front of the press wheel. May also be applied on a 4- to 6-inch band in 20 gallons per acre per treated acre at 100 percent emergence. Use higher rate when weather is cool and wet. Use for the control of <i>Aspergillus</i> -, <i>Pythium</i> -, and <i>Rhizoctonia</i> -incited seed rots and seedling damping-off, as well as suppression of white mold and <i>Cylindrocladium</i> black rot (CBR). See label for additional information.
<b>AFLATOXIN AND A. FLAVUS</b>		
AFLA-GUARD GR	20 lb.	Apply on a band over the row middle approximately 60 days after planting (full canopy) when there is enough soil moisture for plant growth.
<b>RHIZOCTONIA SEED ROT AND DAMPING-OFF</b>		
flutolanil CONVOY	1.68 fl.oz./1000 row ft. (25 fl.oz./A)	<b>In-Furrow Spray:</b> Apply as a directed spray on a 4- to 8-inch band into the seed furrow over the seed and then cover. Apply in a minimum of 3 gallons of spray volume per acre. Application rate will vary by row spacing. See label for additional application information.
<b>EARLY AND LATE LEAF SPOT, WEB BLOTCH</b>		
<b>Leaf Spot Advisory:</b> <i>Absolute</i> , <i>Bravo Weather Stik</i> , <i>Bravo Ultrex</i> , <i>Orius</i> , <i>Propimax</i> , <i>Provost</i> , and <i>Tilt</i> may be applied according to the rules of a leaf spot forecasting advisory such as <i>AU-Pnut*</i> and <i>Peanut Risk Index</i> . Refer to the product label for specific guidelines concerning the use of any of the above fungicides in a disease forecasting or advisory program. <b>If white mold and limb rot control is desired, do not use a leaf spot advisory to schedule tebuconazole applications.</b>		

**Table 4. Peanut Disease Control (cont.)**

Fungicide and Formulation	Amount of Formulation Per 100 lb. Seed	Comments
dodine ELAST 400 FLOWABLE	0.9–1.5 pt.	Begin sprays 35 to 40 days after planting and repeat at 10- to 14-day intervals. Under heavy pressure of early leaf spot, use higher rate. Apply no more than 1.5 pounds per acre per year of T-Methyl 70WSB. Do not make more than three applications of Elast Flowable at the rate of 1.5 pints per acre per year. See Elast 400 Flowable label for additional use guidelines.
chlorothalonil BRAVO WEATHER STIK or ECHO 720 6F	1 pt.  1 pt.	
thiophanate-methyl T-METHYL 70WSB or TOPSIN 4.5FL or T-METHYL 4.5AG or TOPSIN M 70 WDG + chlorothalonil BRAVO WEATHER STIK or ECHO 720 6F or CHLOROTHALONIL 720F	0.5 lb.  10 fl.oz.  10 fl.oz.  0.5 lb.  1 pt.  1 pt.  1 pt.	
<b>EARLY AND LATE LEAF SPOT, WEB BLOTCH, RUST, WHITE MOLD, RHIZOCTONIA LIMB ROT, SUPPRESSION OF CBR</b>		
azoxystrobin + benzovindiflupyr ELATUS	7.3–9.5 fl.oz.	For leaf spot, web blotch and rust control, begin applications 30 to 40 days after planting or at first appearance of disease. Apply 7.3 fl.oz. rate on a 14-day schedule and 9.5 fl.oz./A rate at 21 to 28 day schedule. May be used in conjunction with disease forecasting system. For white mold, make either 3 applications of 7.3 fl.oz. or 2 applications of the 9.5 fl.oz. rates beginning 30 to 45 days or 45 to 60 days after planting, respectively. For resistance management, make no more than 3 applications before alternating to a non-Group 7 fungicide. <b>DO NOT APPLY MORE THAN 21.9 FL.OZ./A PER YEAR.</b> 30-day PHI.
<b>EARLY SEASON SUPPRESSION OF WHITE MOLD, LIMB ROT, AND CBR</b>		
azoxystrobin + benzovindiflupyr ELATUS	0.5–0.65 fl.oz./1000 linear row ft	Apply in 7- to 10-inch band shortly after seeding emergence (approximately 14 to 21 days after planting) in a minimum of 10 gal. spray volume per acre. If twin rows, widen the band width to cover both rows. Rates shown are equivalent to 7.3–9.4 fl.oz./A rates.
<b>EARLY AND LATE LEAF SPOT, RUST, WEB BLOTCH, AND RHIZOCTONIA LIMB ROT</b>		
thiophanate methyl + tetraconazole ACROPOLIS	23 fl.oz.	Apply when conditions favor disease. Repeat applications at 14-day intervals. Tank-mix with recommended rate of Echo or other chlorothalonil fungicide to reduce risk of resistance. <b>DO NOT</b> make more than 4 applications of this product per year.

**Table 4. Peanut Disease Control (cont.)**

Fungicide and Formulation	Amount of Formulation Per 100 lb. Seed	Comments
<b>EARLY AND LATE LEAF SPOT, PEANUT RUST, WEB BLOTCH</b>		
azoxystrobin + tetraconazole BRIXIN	16–21 fl.oz.	<p>For leaf spot control, apply 30 to 40 days after planting and continue applications at 14-day intervals up until 2 weeks prior to crop inversion. Shorten application interval and increase application rate when conditions remain favorable for disease development. <b>DO NOT</b> apply more than 82 fluid ounces of Brixin per acre per year.</p> <p><b>General Leaf Spot Spray Program Guidelines.</b> Begin sprays no later than 40 days after planting or by June 1. Using the AU-Pnut* leaf spot advisory, start sprays after the fifth shower of more than 0.1 inch but no later than 40 days after planting. Start sprays within 30 days of planting on late May- and June-planted peanuts. If needed, chlorothalonil fungicides may be tank mixed with cracking or early postemergence herbicide sprays. Repeat sprays every 10 to 14 days up to 2 weeks before harvest. During periods of frequent rain showers, shorten spray intervals to 7 to 10 days. Adjust spray intervals to account for changes in weather conditions and rotation practices. For peanut rust and web blotch control, apply high rate at 7- to 10-day intervals. Scout fields weekly for both diseases, starting in early August. Rust can cause significant damage in Baldwin, Escambia, and Mobile Counties. The first and possibly the second leaf spot sprays of the year can be banded over the row middle, particularly in a well-rotated field or when May and June weather is relatively dry. Absolute may be used in approved disease forecasting or risk index programs.</p>
chlorothalonil BRAVO ULTREX	0.9–1.36 lb.	
BRAVO WEATHER STIK	1–1.5 pt.	
CHLORONIL 720	1–1.5 pt.	
CHLOROTHALONIL 720	1–1.5 pt.	
ECHO 90DF	1–1.25 lb.	
ECHO 720 6F	1–1.5 pt.	
EQUUS 720 SST	1–1.5 pt.	
EQUUS DF	0.9–1.36 lb.	
chlorothalonil + tetraconazole MAZINGA ADV	2 pt.	
copper hydroxide KOCIDE 3000 +	0.75–1.25 lb.	
chlorothalonil BRAVO ULTREX BRAVO WEATHER STIK	1 lb. 1 pt.	
tebuconazole + trifloxystrobin ABSOLUTE 500SC	3.5 fl.oz.	
flutriafol TOPGUARD	7–14 fl.oz.	Can be integrated into the standard calendar spray schedule with other fungicides such as chlorothalonil with Topguard being applied beginning mid-block (applications 3 to 6) for a total of up to four applications. Apply chlorothalonil before and following the Topguard application block. Use higher rate in fields with a history of disease. May be tank mixed with chlorothalonil for resistance management purposes. Irrigation after Topguard applications will enhance soil activity. May be tank mixed with other fungicides to enhance soil disease control.
<b>EARLY AND LATE LEAF SPOT; PEANUT RUST; WEB BLOTCH; RHIZOCTONIA LIMB, PEG, AND POD ROT; WHITE MOLD; SUPPRESSION OF CBR</b>		
fluxapyroxad + pyraclostrobin PRIAXOR XEMIUM BRAND FUNGICIDE	4–8 fl.oz.	For leaf spot, rust, and web blotch control begin applications prior to disease development and repeat at 14- to 21-day intervals for a total of three Priaxor applications as part of a recommended 14-day calendar leaf spot spray program. For Rhizoctonia diseases and white mold, apply at 8 fl. oz. per acre before disease development and repeat at 14- to 28-day intervals. Apply no more than 24 fluid ounce per acre of Priaxor per year. Use higher rate at shorter interval when disease pressure is high or if field has a history of disease. Do not make more than two consecutive applications of Priaxor before switching to a fungicide with a different mode of action. Maximum number of Priaxor applications per season is three.
<b>EARLY AND LATE LEAF SPOT; PEANUT RUST; WEB BLOTCH; RHIZOCTONIA LIMB, PEG, POD, AND STEM ROT; WHITE MOLD; SUPPRESSION OF CBR</b>		
penthiopyrad FONTELIS	16–24 fl.oz.  16–24 fl.oz.	<p>Integrate into the standard seven-application calendar spray schedule with other fungicides such as chlorothalonil. Begin applications before symptoms appear and repeat applications at 14- to 21-day intervals. Use higher rate at shorter intervals when disease pressure is high and when white mold control is needed. Make no more than three consecutive applications of Fontelis fungicide before switching to another fungicide with a different mode of action. Use the higher rate in fields where the risk of damaging stem rot outbreaks is high.</p> <p>For the control of white mold and suppression of CBR in peanut. Begin applications before symptoms appear and repeat applications at 14- to 21-day intervals. Use higher rate at shorter intervals when disease pressure is high.</p>

**Table 4. Peanut Disease Control (cont.)**

Fungicide and Formulation	Amount of Formulation Per 100 lb. Seed	Comments	
<b>EARLY AND LATE LEAF SPOT, WEB BLOTCH, AND PEPPER SPOT</b>			
pydiflumetofen MIRAVIS	3.4–4 fl.oz.	Apply prior to disease development. For early and late leaf spot control, apply at 21- to 28-day intervals. Follow resistance management guidelines. Tank-mix with Elatus or other soil fungicide for control of white mold and <i>Rhizoctonia</i> limb rot. <b>DO NOT</b> make more than 3 conservative applications of Miravis or other Group 7 fungicide. See label for additional instructions.	
<b>EARLY AND LATE LEAF SPOT, PEANUT RUST, WHITE MOLD</b>			
metconazole QUASH 50WDG QUASH 50WDG +	2.5–4 oz. 2.5–4 oz.	Make four consecutive sprays (block) at 14-day intervals beginning about 60 days after planting or no earlier than mid-July (applications 3, 4, 5, and 6 in a 7-spray calendar program). Applications should target control of leaf spot with chlorothalonil. As areas where reduced tebuconazole performance are seen, tank mix Quash 50WDG with chlorothalonil. To control white mold, use highest rate of Quash. See comments concerning Triazole Fungicide Resistance Management under tebuconazole.	
chlorothalonil (as needed) BRAVO WEATHER STIK or BRAVO ULTREX or ECHO 720 6F	0.75–1 pt. 0.7–0.9 lb. 0.75–1 pt.		
<b>EARLY AND LATE LEAF SPOT, PEANUT RUST, RHIZOCTONIA LIMB ROT, WHITE MOLD</b>			
fluopyram + prothioconazole PROPULSE	13.6 fl.oz.		Make two applications between 45 and 90 days of planting with at least 14 days between applications. Do not make more than two sequential applications of Propulse or any other Group 7 or Group 3 containing fungicide before rotating to a fungicide in a different group. Effective when applied through-the-line against soil diseases and nematodes. May also be applied in-furrow for early season soil disease control. Do not apply more than 34.2 fl.oz. of Propulse/A/yr.
fluoxastrobin EVITO 480 SC	3–5.7 fl.oz.	Make no more than two consecutive applications of Evito or Evito T at 14-day intervals in a seven-application fungicide treatment program. For season-long leaf spot and rust control, apply the recommended rate of a non-strobilurin fungicide before and after applications of Evito or Evito T for a total of approximately seven fungicide applications a year. Use higher rate of Evito and Evito T to ensure effective control of white mold or <i>Rhizoctonia</i> limb rot. See label for additional information concerning application rates. Make no more than four applications of Evito or Evito T per year. Evito and Evito T are Group 11 (strobilurin) fungicides. See guidelines for Strobilurin Fungicide Resistance Management under azoxystrobin.	
fluoxastrobin + tebuconazole EVITO T	6–11.2 fl.oz.		
<b>EARLY AND LATE LEAF SPOT, PEANUT RUST, RHIZOCTONIA LIMB ROT, WEB BLOTCH, WHITE MOLD</b>			
pyraclostrobin PYRAC 2 EC	6–15 fl.oz.	Make no more than two applications of Pyrac as part of a standard calendar spray program. Applications may be made at 14- to 21-day intervals. Do not make more than two consecutive applications of Pyrac. At application intervals longer than 14 days, apply 9 to 15 fluid ounces per acre. Shorten intervals and increase rates when weather patterns favor rapid disease spread or when heavy leaf shed and spotting have been seen. Also use the 9-to-15-fluid-ounces-per-acre for white mold control. Pyrac may be included in a fungicide program with Bravo Ultrex/ Echo/Equus, and Convoy. To enhance activity against leaf spot diseases at extended treatment intervals, add a low rate of a non-ionic surfactant such as Induce to Pyrac tank mixtures.	
	9–15 fl.oz.	<b>For White Mold and Rhizoctonia Limb Rot Control:</b> See above paragraph for application instructions. Best results against white mold are often seen with night applications programs	
	12–15 fl.oz.	<b>For CBR Suppression:</b> See above paragraph for application direction and intervals.	

**Table 4. Peanut Disease Control (cont.)**

Fungicide and Formulation	Amount of Formulation Per 100 lb. Seed	Comments
<b>EARLY AND LATE LEAF SPOT, PEANUT RUST, RHIZOCTONIA LIMB ROT, SUPPRESSION OF CBR, WHITE MOLD</b>		
tebuconazole MUSCLE 3.6F ORIOUS 3.6F TRISUM 3.6 F TEBUSTAR 3.6 L	7.2 fl.oz. 7.2 fl.oz. 7.2 fl.oz. 7.2 fl.oz.	<p>Make four consecutive sprays (block) at 12- to 14-day intervals, beginning no earlier than 45 days and preferably about 60 days after planting or no later than early July. Apply a recommended rate of a chlorothalonil fungicide before and, if needed, after the block of four tebuconazole sprays. <b>For leaf spot control with tebuconazole</b>, tank mix with a chlorothalonil fungicide, particularly in Covington, Escambia, Geneva, Houston, Baldwin and Mobile Counties. When applied alone, add the lowest recommended rate of a <b>non-ionic surfactant</b> to tebuconazole fungicides. <b>No surfactant</b> is needed when a tebuconazole fungicide is mixed with a chlorothalonil fungicide. During periods of frequent rain showers, tank mixing a tebuconazole fungicide with a chlorothalonil fungicide is <b>STRONGLY RECOMMENDED</b>. Never apply reduced or excessive rates of a triazole fungicide.</p> <p><b>Note:</b> Overuse of stickers and other spray adjuvants may reduce fungicide effectiveness against white mold, particularly on dryland peanuts. In irrigated fields, water peanuts 24 to 48 hours after fungicide application. If rain occurs within 24 hours of an application of a tebuconazole fungicide, apply a chlorothalonil fungicide within 7 days. During drought conditions, try to apply tebuconazole fungicides to dryland peanuts a day or two before rain is forecast. See Extension publication ANR-0368, "Soilborne Diseases of Peanuts," for additional information on resistance management strategies.</p> <p><b>Triazole Fungicide Resistance Management:</b> Continued use of triazole fungicides (Alto, Muscle, Orius, Quash, Tebustar, Trisum, Tebuzol, and Topguard) in the same field year after year will cause leaf spot control failures due to resistance or increased tolerance to these fungicides in target fungi. <b>If four or more</b> applications of one or more triazole fungicides are planned, tank mix Bravo, Echo, Chloronil 720, Chlorothalonil 720, or Equus at specified rates with <b>all</b> triazole fungicide sprays applied in the field in the current year.</p> <p><b>Note:</b> Under drought conditions, tank mixing chlorothalonil with tebuconazole may decrease this fungicide's effectiveness against white mold and limb rot on dryland peanuts but not on irrigated peanuts. If tebuconazole has been applied to peanuts in the same field for 3 consecutive years, consider applying Abound 2SC, Convoy + Bravo, Pyrac, or Elatus instead of tebuconazole for control of soilborne and foliar diseases of peanuts.</p> <p><b>Comments:</b> Tebustar, Trisum, Tebuzol, Orius, and Topguard have both protective and curative activity against leaf spot fungi while chlorothalonil fungicides are only protective. If sprays are delayed by rain, use Tebustar, Trisum, Tebuzole, or Orius to knock out new leaf spot infections. When using ground equipment, apply in 10 to 20 gallons of spray mixture per acre at 60 to 80 psi and a minimum of 5 gallons of spray mixture per acre by air. Replace worn nozzles and recalibrate spray equipment. <b>DO NOT</b> feed peanut hay treated with any of the above fungicides to livestock.</p>
tebuconazole ORIOUS 3.6F +	7.2 fl.oz.	
chlorothalonil BRAVO WEATHER STIK or BRAVO ULTRESX or ECHO 6F	0.75–1 pt. 0.7–0.9 lb. 0.75–1 pt.	
tebuconazole + chlorothalonil MUSCLE ADV	2 pt.	
<b>EARLY AND LATE LEAF SPOT, PEANUT RUST, WEB BLOTCH, WHITE MOLD, CBR, RHIZOCTONIA LIMB ROT</b>		
prothioconazole + tebuconazole PROVOST Opti	7–8 fl.oz.  10.7 fl.oz.	<p><b>For control of leaf spot diseases, rust, web blotch, white mold, Rhizoctonia limb rot:</b> Make four consecutive sprays (block) beginning about 60 days after planting or starting no later than mid-July and repeat at approximately 14-day intervals. Apply a recommended rate of a chlorothalonil fungicide before and as needed after the four-spray Provost block. Prothioconazole and tebuconazole are both triazole (sterol) fungicides. See comments under Triazole Fungicide Resistance Management. May be used in approved disease forecasting or risk index programs. See label for additional instructions concerning advisory spray programs. Avoid use of silicon-based surfactants and multiple tank-mix partners with Provost.</p> <p><b>For CBR Suppression:</b> See above application guidelines for CBR suppression.</p> <p><b>Resistance Management:</b> Make no more than four applications of a triazole fungicide(s) per season. Apply fungicides with a different mode of action before and after applications of Provost to discourage the development of resistant strains.</p>

**Table 4. Peanut Disease Control (cont.)**

Fungicide and Formulation	Amount of Formulation Per 100 lb. Seed	Comments
<b>EARLY AND LATE LEAF SPOT, RUST, RHIZOCTONIA LIMB ROT, SUPPRESSION OF CBR, WHITE MOLD</b>		
azoxystrobin ABOUND 2SC AZAKA EQUATION AZOXY 2 SC	12.0–24.5 fl.oz.	Make broadcast foliar applications approximately 60 and 90 days after planting. Use higher rate in fields where heavy soilborne disease pressure is expected and serious disease-related losses have occurred in past years. Applications may be made earlier if weather conditions favor disease development. For season-long control of early and late leaf spot, apply a recommended fungicide at 10- to 14-day intervals, before and after applying Abound, for a total of approximately seven fungicide applications per year. Abound will give 10 to 14 days of protection from early and late leaf spot. Under heavy disease pressure or fields with a history of peanut production, use at least 18.5 fluid ounces per acre. Rates below 18.5 fluid ounces per acre may be used in nonirrigated fields under dry environmental conditions. Use the 18.5 to 24.5 fluid ounce rate for CBR suppression. <b>DO NOT</b> apply Abound within 14 days of digging and <b>DO NOT</b> make more than two applications per year. Abound may be applied with ground equipment or by air.
azoxystrobin + cyproconazole ABOUND 2SC + ALTO 100SL	12.0–24.5 fl.oz. + 5.5 fl.oz.	
<b>EARLY AND LATE LEAF SPOT, RUST, WEB BLOTCH, WHITE MOLD, RHIZOCTONIA POD ROT</b>		
flutriafol + azoxystrobin Topguard EQ	5 to 7 fl.oz.	For leaf spot, rust, and web blotch control, apply 30 to 40 days after planting and continue applications at 14-day intervals up to 14 days prior to crop inversion. Make no more than four (4) applications of azoxystrobin alone or in combination with another fungicide per year. <b>DO NOT</b> apply more than 32 fl.oz./a product per acre per year
	8 fl.oz.	For white mold and pod rot control, apply at approximately 60 and 90 days after planting or earlier if conditions for disease development occur. Will also control other diseases listed above when used as part of a full-season fungicide program. See above use restrictions.
<b>EARLY AND LATE LEAF SPOT, RUST, RHIZOCTONIA LIMB AND POD ROT, WHITE MOLD</b>		
azoxystrobin + tebuconazole CUSTODIA AZOXY TEB	15.5 fl. oz	For leaf spot control, apply 30 to 40 days after planting and continue at 14-day intervals. For Rhizoctonia limb and pod rot and white mold, apply 60 and 90 days after planting. Apply a chlorothalonil fungicide as needed before and after Custodia applications for a total of 7 fungicide applications. Do not apply more than 61 fl. oz. of Custodia per season (4 applications). For improved soil disease control, add 0.5 to 17 fl.oz./A of Abound. <b>Strobilurin Fungicide Resistance Management:</b> Continued use of strobilurin fungicides in the same field year after year may eventually result in leaf spot control failures due to increasing tolerance. Abound 2SC, Azaka, Evito, and Pyrac are strobilurin fungicides that have a similar mode of action against target fungi. One of the components of Absolute is also a strobilurin fungicide. Avoid applying Abound, Evito, Pyrac, and/or Absolute to the same peanuts in the same growing season. FRAC guidelines specify that no more than two applications of any strobilurin fungicide may be made per year to the same field of peanuts without a broad-spectrum fungicide tank-mix partner. If more than two strobilurin fungicide applications are planned, add a recommended rate of Bravo Ultrex/Echo/Chloronil 720/Equus to all tank-mix strobilurin combinations. See Triazole Fungicide Resistance Management.
azoxystrobin + tebuconazole HELMSTAR PLUS SC	13 fl.oz.  13 fl.oz.	For leaf spot, rust, and web blotch control, apply 30 to 40 days after planting and continue applications at 14-day intervals up to 14 days prior to crop inversion. For resistance management, make no more than four (4) applications of azoxystrobin alone or in combination with another fungicide per year. <b>DO NOT</b> apply more than 32 fl.oz./a product per acre per year. HelmStar Plus SC may also be used with disease forecasting models such as Peanut RX.  For white mold and pod rot control, apply at approximately 60 and 90 days after planting or earlier if conditions for disease development occur. Will also control other diseases listed above when used as part of a full season fungicide program. See above use restrictions.

**Table 4. Peanut Disease Control (cont.)**

Fungicide and Formulation	Amount of Formulation Per 100 lb. Seed	Comments
azoxystrobin + chlorothalonil ARIUS ADV	21–30 fl.oz.  30 fl.oz.	For leaf spot, rust and web blotch control, apply 30 to 40 days after planting and continue applications at 14-day intervals up to 14 days prior to crop inversion. For resistance management, make no more than two consecutive applications of this fungicide before alternating with a fungicide with a difference mode of action.  For white mold and pod rot control, apply at approximately 60 and 90 days after planting or earlier if conditions for disease development occur. Will also control other diseases listed above when used as part of a full-season fungicide program. See above use restrictions.
<b>CBR AND WHITE MOLD SUPPRESSION</b>		
prothioconazole PROLINE 480SC	0.4 fl.oz./1000 row ft. (5.7 fl.oz./A)	<b>In-furrow and Banded Application for CBR and White Mold Suppression:</b> Apply in seed furrow or in a 4- to 6-inch band over the row prior to seedling emergence. May also be applied on a 4- to 6-inch band over the row at 100 percent seedling emergence (true ground cracking) in fields with a history of severe white mold. See label for additional instructions and use restrictions. For best results, use in conjunction with four-block spray program of Provost 433SC. Minimum application volume for in-furrow or banded application is 20 gallons per acre. Also may provide early season leaf spot disease control.
<b>RHIZOCTONIA LIMB ROT</b>		
pyraclostrobin PYRAC 2EC	9–15 fl.oz.	Make two or three applications approximately 60 to 100 days after planting. At treatment intervals longer than 14 days, apply Pyrac at 15 fluid ounces per acre. Where severe yield losses to white mold have previously occurred, Pyrac may be alternated with Convoy + Bravo Ultrex/Echo/Equus. Best results with Headline against white mold have been obtained with night applications. See label for more information on application guidelines.
<b>RHIZOCTONIA POD AND LIMB ROT, WHITE MOLD</b>		
flutolanil CONVOY	20–32 fl.oz.  10–16 fl.oz.	For a two-application program, make the first application 45 to 60 days after planting or at first sign of disease and follow with a second application 21 to 30 days later. Use higher rate in fields with a history of disease. Convoy will not control leaf spot diseases, peanut rust, or web blotch. Apply a recommended leaf spot fungicide for their control. See chlorothalonil for leaf spot control guidelines. May be used with an approved disease risk index program.  For a four-application block treatment program, tank mix Convoy with scheduled leaf spot fungicide beginning 45 to 60 days after planting or at first sign of disease. Repeat applications of Convoy + chlorothalonil tank mixture at 10- to 14-day intervals for a total of four applications. See chlorothalonil for leaf spot control guidelines.
<b>NEMATODES (PEANUT ROOT-KNOT, RING, LESION)</b>		
<i><b>General Comments on Nematode Control:</b> In root-knot infested fields, consider planting an early-maturing runner-peanut cultivar, such as Andru II, on recommended planting dates in combination with a recommended nematicide to reduce the impact of nematodes on peanut yield and grade. To avoid some nematode damage, plant heavily root-knot infested fields in mid to late April. Avoid planting the Southern Runner peanut cultivar in root-knot infested fields. See Extension Circular ANR-393, "Nematode Pests of Peanuts," for more information on nematode control.</i>		
<b>Preplant</b>		
1-3D TELONE II	4.5–6 gal. (row)  6–9 gal. (broadcast)	Apply as a broadcast plow sole treatment in fall or early spring for suppression of light to moderate nematode infestations. Treat 7 to 10 days before planting peanuts or a cover crop. For best results, apply with mold board plow to a depth of 10 inches below final planting surface. Seal furrow or drag immediately after application. Soil should remain undisturbed for at least 1 week prior to planting. Rates up to 9 gallons per acre may be required to control heavy root-knot nematode infestations. Refer to product label for additional application information. Under heavy nematode pressure, a supplemental application of Temik 15G at-plant or early postplant is suggested. Will not provide any thrips control.

**Table 4. Peanut Disease Control**

Fungicide and Formulation	Amount of Formulation Per 100 lb. Seed	Comments
<b>NEMATODES (ROOT-KNOT, RING, LESION, STING) AND THRIPS</b>		
aldicarb AGLOGIC 15G ALDICARB	7 lb. AP + 10 lb. post	Apply granules in a 4- to 6-inch band over the open seed furrow (T-band) and immediately cover with soil. Follow with early post application about 40 days after planting as a side dress treatment that is 8 to 12 inches to both sides of plant row and 1 to 3 inches deep. Immediately cover granules with soil by closing furrow when the canopy foliage is dry. Dislodge granules from foliage. Irrigate in 24 hours unless rainfall is received. <b>See label for additional use restrictions.</b>
oxamyl VYDATE C-LV	17 fl.oz.	Foliar applications are to be used only following preplant fumigant or at-planting contact nematicides. Band or broadcast beginning 14 to 28 days following peanut emergence. Make second application 14 days later. For band applications, use proportionally less material based on row spacing and band width. May make up to four (4) total applications.
VYDATE C-LV	34-68 fl.oz.	Apply at-plant in 7-inch band behind planter in 10 gallons of water per acre. Incorporate at least 2 inches into soil on either side of furrow using mechanical means.
fluopyram + imidacloprid VELUM TOTAL	18 fl.oz.	Apply as an in-furrow spray directed on or below peanut seed in 3 to 5 gallons spray volume/A. Also has early season activity against several insect pests including thrips as well as suppression of early and late leaf spot and white mold. Full season fungicide program needed to control foliar and soil diseases in peanut.
<b>NEMATODES (ROOT-KNOT, RING, LESION, STING), RHIZOCTONIA LIMB ROT, AND WHITE MOLD (STEM ROT)</b>		
fluopyram + prothioconazole PROPULSE	13.6 fl.oz.	Apply by chemigation approximately 45 DAP using overhead irrigation in 0.10 to 0.25 acre-inch of water to ensure distribution of Propulse into soil. Best results obtained with Propulse when applied on peanuts previously treated with one of the above pre- or at-plant nematicides. Will also get activity against soil and to a lesser extent foliar diseases with chemigation application. Do not apply more than 34.2 fl.oz. of Propulse/A/yr. A through-the-line Propulse application made approximately 45 DAP will replace the first scheduled calendar leaf spot fungicide application.

**Table 5. Properties of Fungicides and Nematicides Used on Peanuts That May Affect Water Quality**

Common Name	Trade Name	Surface-Loss Potential <sup>1</sup>	Leaching Potential <sup>2</sup>
Chlorothalonil	Bravo, Echo	Medium	Small
Tebuconazole	Orius	NA	NA

<sup>1</sup> The surface-loss potential indicates the tendency of the pesticide to move with sediment in runoff.

<sup>2</sup> The leaching potential indicates the tendency of the pesticide to move in solution with water and to leach below the root zone.

NA = Information not available.

## SCOUTING TIPS

### Leaf Spot

The effectiveness of your peanut leaf spot spray program should be periodically evaluated. If disease control is not adequate, adjustments can be made to prevent serious yield losses. If leaf spot control is fair to poor, shorten the interval between fungicide applications or increase the application rate to the highest amount on the label. Disease development will continue 14 days or more before any improvement in leaf spot control will be seen following this change in your spray program. See ANR-0598, "Peanut Pest Management

Scout Manual," for a complete description of peanut scouting procedures. Disease management programs are described in detail in ANR-0369, "Foliar Diseases of Peanut."

### White Mold

Unlike scouting for leaf spot and insects, fields should be checked once a year for white mold just before or after digging.

Simply count the number of white mold hits in 100 feet of row. Sample plants at several locations in a field. A hit is considered a dead plant or group of plants no more than 1 row foot in length. As a rule of thumb, an average of three to four hits per 100 row feet indicates that a fungicide treatment would be justified in the following season. If the hit count is extremely high, rotation to a non-host crop is recommended. White mold control procedures are described in detail in ANR-0368, “Soilborne Diseases of Peanut.”

### **Cylindrocladium Black Root Rot (CBR)**

Check peanuts for CBR just before harvest. Symptoms can be confused with those of TSWV (tomato spotted wilt virus), white mold, or peanut root-knot nematode. Typically, the tap root of CBR-damaged peanuts appears shredded. The brick-red fruiting bodies of the causal fungus usually appear on the rotted crown or pegs. Use the same scouting procedures that are described for white mold. See ANR-368, “Soilborne Diseases of Peanut,” for more information on CBR.

### **Tomato Spotted Wilt Virus (TSWV)**

TSWV can have a sizable impact on the yield of susceptible peanut cultivars. Fields should be checked for TSWV levels in August or September when moisture levels are good for plant growth. A rough estimate of the incidence of this disease can be made by counting the number of TSWV hits of diseased plants in 1 foot of row down 100 feet of row. Yield loss to TSWV really becomes noticeable when hit counts over four or five locations in a field exceed 20 percent.

### **Nematodes**

Collection of soil samples for nematode assay is recommended in every field going into peanuts no matter what its previous crop history. Particular attention should be paid to fields in continuous peanuts, summer fallow behind peanuts, soybeans, or soybean-peanut rotations due to the high risk of nematode problems associated with poor rotation practices. See ANR-0393, “Nematode Pests of Peanuts,” for more information on nematode control procedures.

Samples for nematode assay must be collected in late summer through fall when nematode populations in the soil are greatest. Do not sample for nematodes in the spring. Nematode populations are usually so low at this time of the year that it is impossible to make accurate control recommendations. See ANR-0114, “Collecting Soil and Root Samples for Nematode Analysis,” for additional information on collecting and handling soil samples.

## **2017 AU-PNUT RULES FOR PEANUT LEAF SPOT CONTROL**

In order to use this method for controlling leaf spot on peanuts, you need to know the following.

1. A “rain event” is any day (a 24-hour period) with more than 0.1 inch of rain and/or irrigation or it is fog that begins before 8:00 p.m.
2. The AU-Pnut Weather Forecast provides you:

- a) the 5-day average forecast for rain;
- b) the rain forecast (percent chance of rain) for each day within that 5-day average.

You will use the 5-day average forecast until you plan to irrigate. Then, you will use the forecast for each day.

3. The day you irrigate, the forecast automatically becomes 100 percent, and it becomes your fifth day. So, to figure your 5-day forecast, substitute 100 percent for the forecast on the planned irrigation day. Then, add the forecasts for each day and divide by five.

### **Timing for the First Spray of The Season**

From true cracking, count the number of rain events.

Spray if:

- You have counted four rain events since cracking and the 5-day forecast calls for a 50-percent or greater chance of rain.
- Or,
- You have counted five rain events since cracking and the 5-day forecast calls for a 40-percent or greater chance of rain.
- Or,
- There have been six rain events; spray immediately.

If leaf spot is seen (two or more spots per plant) in the lower leaves of the plant, spray immediately.

### **Timing for All Other Sprays**

Ten days after your last leaf-spot spray, begin counting rain events and check the 5-day average forecast daily. To accurately determine days since application, count the day you sprayed as Day 0; the day after will be Day 1, and so on. When you reach Day 10, start counting rain events again and checking the 5-day average forecast.

Spray if:

- No rain event has been recorded and the average chance of rain for the next 5 days is 50 percent or greater. Or,
- One rain event has been recorded and the average chance of rain for the next 5 days is 40 percent or greater. Or,
- Two rain events have been recorded and the average chance of rain for the next 5 days is 20 percent or greater. Or,
- There have been three rain events; spray immediately.

If you are within 14 days of harvest, stop fungicide applications.

### **Weather Forecast**

The AU weather forecast for each day is available on the Internet 24 hours a day at the Agricultural Weather Information Service Website: [www.awis.com](http://www.awis.com). To access this information, click on peanut weather, then Alabama, and finally AU-Pnut Leaf Spot. On-line information includes both the precipitation forecasts for each of the next 5 days and also the 5-day average precipitation forecast. Check the forecast each morning as you plan that day’s activities.

### **On-line Registration**

To get the on-line rain events needed to run AU-Pnut in each of your peanut fields, you must register each of them with AWIS, using the on-line registration form found on the

AWIS Peanut Weather Website. To locate your field(s) within the Doppler Radar output grid, the longitude and latitude for each peanut field must be provided to AWIS. A hand-held GPS unit can be used to generate the necessary coordinates. To get the full benefit from AU-Pnut, be sure to register your field(s) with AWIS before true ground cracking occurs. Beginning on that day, start totaling up the number of rain events needed to trigger the first fungicide application.

You may also use the AU-Pnut advisory without the Doppler Radar-generated precipitation data. Place a tapered rain gauge, which should read to 0.10 inch, in the middle or end of a minimum of one field within a continuous 640-acre block of land. Since true ground cracking is used to start the AU-Pnut advisory, you will have to separately monitor rainfall totals where peanuts have been planted on different days within each 640-acre block. This situation is most likely to occur where peanut planting is delayed or separated by four or more days.

If numerous showers occur after true ground cracking, the AU-Pnut advisory may trigger the first fungicide spray earlier than the standard 14-day calendar program. If the peanuts are relatively young, the first and, sometimes, the second fungicide application may be banded directly over the middle of the peanut canopy.

See the website <http://www.aces.edu/anr/ipm/fieldcrops/peanuts.php> for internet access to peanut IPM publications and [www.awis.com](http://www.awis.com) for access to the AU-PNUT Leaf Spot Advisory.

All peanut disease and nematode management circulars are distributed by Alabama Cooperative Extension System. The recommendations in this section are based primarily on the research of Rodrigo Rodriguez-Kabana and Kira Bowen, Professors, Department of Entomology and Plant Pathology, Auburn University.

Disease and Nematode Control section prepared by Austin K. Hagan, Extension Plant Pathologist, Professor, Department of Entomology and Plant Pathology, Auburn University.

## WEED CONTROL

Herbicides used for weed control in peanuts can generally be classified according to method of application.

**Preplant.** Applied and incorporated before planting. These are generally effective on grasses and small-seeded broadleaf weeds.

**Preemergence.** Applied on soil surface either broadcast or banded at or shortly after planting.

**Postemergence.** Applied after peanuts have emerged as an over-the-top application.

In this section, herbicides are grouped under these three headings. Rates are given in the amount per acre of material in the can or bag on a broadcast basis. The second column gives the pounds of active ingredient applied per acre on a broadcast basis.

REI = re-entry interval; PHI = pre-harvest interval

A successful season-long weed control program requires field to be free of weeds at planting. A preemergence herbicide or preemergence herbicide combo is required within 3 days after planting. Heavy rainfall occurring after planting but before crop emergence may worsen preemergence herbicide injury on peanut. Peanut may be stunted due to this type of injury but can usually grow out of it eventually. A timely postemergence treatment is needed around 30 to 40 days after planting based on field scouting and weed size. Postemergence herbicides such as Ultra Blazer, Cadre, or Cobra should be tank-mixed with a residual herbicide such as Warrant, Dual Magnum, Zidua, or Outlook to achieve season-long weed control. This is particularly important in fields where ALS-resistant pigweed and grass weeds present. A mid- to late-season cleanup with Cobra, 2,4-DB, or Aim may be needed to suppress large pigweed, sicklepod, or morningglory. Do not use crop oil with these herbicides due to higher crop injury potential. If weeds become uncontrollable in certain fields late in the season, mowing weeds at peanut canopy height could be an option to facilitate harvest and reduce trash in harvested peanut.

**Table 6. Peanut Weed Control**

Herbicide (trade name)	Herbicide (common name)	REI/PHI (hours or days)	Formulation	Rate/Acre Broadcast		Herbicide Group	Time of Application	Weeds Controlled	Comments
				Use rate: oz./A, pt./A, fl.oz./A etc.	Active ingredient/A				
<b>BURNDOWN (NO-TILL/REDUCED TILL)</b>									
LEADOFF	Rimsulfuron + thifensulfuron	4 hr./NA	16.7% + 16.7%	1.5 oz./A	0.25 + 0.25 oz. a.i./A.	2 + 2	PRE plant only. From fall harvest through early spring 45 days prior to planting.	Annual and perennial broadleaf	<b>DO NOT</b> plant peanuts less than 45 days following an application of leafoff. Do not apply more than 0.5 oz. a.i./acre per year. <b>DO NOT</b> apply to coarse-textured soils (sand, loamy sand, or sandy loam) with less than 1% organic matter. <b>DO NOT</b> apply postemergence. <b>DO NOT</b> graze, feed forage, grain or fodder from treated areas to livestock. PRE plant only. Can be mixed with Roundup, Gramoxone, Liberty, dicamba and 2,4-D.
GRAMOXONE SL/OTHERS	paraquat	24 hr./NA	2 lb a.i./gal. 2 lb. a.i./gal.	Weeds 1–3": 2–2.5 pt./A Weeds 3–6": 2.5–3 pt./A Weeds 6": 3–4 pt./A	0.5–0.625 lbs. a.i./A 0.625–0.75 lbs. a.i./A 0.75–1 lbs. a.i./A	22	Apply before weeds smaller than 6" tall	Annual broadleaf weeds and grasses	Use a nonionic surfactant and apply in 20–30 gallons of spray solution per acre. Use the higher rate for harder-to-kill weeds. Complete coverage is essential for good weed desiccation. See label for specific application instructions and tank-mixing partners. Adding Atrazine and other soil herbicides may provide residual weed control.
TOUCHDOWN/ others*	Glyphosate	4 hr./NA	3 lb. ae/gal.	32–64 fl.oz. (3 lb ae)	0.75–1.5 lb. ae/A	9	Apply before, at planting, or immediately after planting but before crop emerges.	Broadleaf and grass weeds	Adjuvant recommendations vary by glyphosate brand. See label for tank-mixing partners. Tank-mixes must follow the most-restrictive REI/PHIs. Use lower rate on smaller, easy-to-kill weeds; increase rate with larger weeds and perennials.
ROUNDUP/ various*			4.5 lb. ae/gal.	22–43 fl.oz./A (4.5 lb. ae)					<b>DO NOT</b> exceed 1 oz./A per year. Allow at least 30 days between applications (0.5 oz. in fall followed by 0.5 oz. in spring). Add 1% COC or 0.25% NIS along with 4 qt./A ammonium nitrate or 4 lb./A ammonium sulfate with any application. Can be tank-mixed with 2,4-D, Clarity, Roundup, Gramoxone, or Ignite to improve weed control.
FIRSTSHOT SG	Thifensulfuron + Tribenuron	12 hr./NA	25% + 25%	0.5–0.8 oz./A	0.125–0.2 oz. a.i./A	2 + 2	Apply from fall harvest to at least 30 days before peanut planting.	Annual and perennial broadleaf weeds	
<b>PREPLANT AND PREEMERGENCE</b>									
OUTLOOK	dimethanamid	12 hr./80 days	6 lb. ai/gal.	Course soils: 12–18 fl. oz./A Medium-fine soils: 18–21 fl.oz./A	0.56–0.84 lb. a.i./A 0.84–0.98 lb. a.i./A	15	Preplant surface, preplant-incorporated, preemergence or postemergence up to 80 days prior to harvest	Annual grasses, broadleaves and sedges	Provides control of hophornbean copperleaf and eclipta and suppresses Florida beggarweed, yellow nutsedge, and sicklepod. <b>DO NOT</b> apply more than 21 fl.oz. per year. May be tank-mixed with Basagran, blazer, cadre, classic, Dual Magnum, Poast, Poast Plus, Prowl, Pursuit, Storm, 2,4-DB, Trefflan, etc. <b>DO NOT</b> incorporate more than 3 inches deep, uniform incorporation will improve weed control consistency.

Table 6. Peanut Weed Control (cont.)

Herbicide (trade name)	Herbicide (common name)	REI/PHI (hours or days)	Formulation	Rate/Acre Broadcast		Herbicide Group	Time of Application	Weeds Controlled	Comments
				Use rate: oz./A, pt./A, fl.oz./A etc.	Active ingredient/A				
<b>PREPLANT AND PREEMERGENCE</b>									
DUAL II MAGNUM/ CINCH	S-metolachlor	24 hr./ 75 d	7.64 lb. ai/gal.	course soils: 1–1.33 pt./A	0.96– 1.27 lb. a.i./A	15	Apply preplant incorporated or at planting.	Annual grasses, broadleaf weeds, and sedges	Shallowly incorporated into soil (no more than 2 inches) or apply at planting. For better yellow nutsedge control on coarse-textured soils, apply 2 pints per acre and incorporate. Nonuniform incorporation may result in crop injury expressed as reduced crop emergence and stunted growth of emerged plants. Generic formulations are available but may require a higher application rate to give comparable control.
PROWL H2O	pendimethaline	24 hr./ 60 d	3.8 lb. ai/gal.	Normal weed pressure: 2 pt./A High weed pressure: up to 3.2 pt./A	0.95 lb. a.i./A (normal weed pressure) 1.52 lb. a.i./A (high weed pressure).	3	Apply preplant incorporated or preemergence.	Annual grasses and small seed broadleaf weeds	Provides good control of Texas panicum, pigweeds, crabgrass, and Florida pusley. Apply Prowl H2O up to 60 days prior to planting and incorporation. For preemergence, apply at planting or up to 2 days after planting and before crop emergence. Minimum of 0.75 inch of irrigation or rainfall is needed within 48 hrs. of application if applied preemergence. Incorporate into top 2 inches of soil within 7 days after application.
PURSUIT	imazethapyr	4 hr./ 85 days	2.0 lb. ae/gal.	4 fl.oz./A	0.063 lb. ae/A	2	Apply preplant incorporated, preemergence, ground- cracking, and postemergence.	Annual grasses, broadleaf weeds and sedges	<b>DO NOT</b> apply more than 4 fluid ounces total per acre per growing season. When applied as a preplant incorporated treatment, it should be shallowly and uniformly incorporated into soil for no more than 2 inches. <b>DO NOT</b> apply to dry soil, especially if significant rain is expected after planting. It may be tank-mixed with Prowl or Sonalan. May be applied in a sequential application.
SONALAN	ethalfluralin	24 hr./ NA	3 lb. ai/gal.	Coarse soil: 1.5–2 pt./A Medium soil: 2–2–5 pt./A Fine soil: 2.5–3 pt./A	0.56–0.75 lb. a.i./A 0.75–0.94 lb. a.i./A 0.94–1.12 lb. a.i./A	3	Apply preplant incorporated only.	Annual grasses and small seed broadleaf weeds	Apply before planting and thoroughly incorporate into the top 2 to 3 inches of soil within 2 days of application. May be applied simultaneously with liquid fertilizer. <b>DO</b> <b>NOT</b> graze or forage crop grown in treated soil or cut for hay. Can be tank-mixed with other products, such as Dual, Outlook, or Pursuit, registered for use in peanuts

**Table 6. Peanut Weed Control (cont.)**

Herbicide (trade name)	Herbicide (common name)	RE//PHI (hours or days)	Formulation	Rate/Acre Broadcast		Herbicide Group	Time of Application	Weeds Controlled	Comments
				Use rate: oz./A, pt./A, fl.oz./A etc.	Active ingredient/A				
<b>PREPLANT AND PREEMERGENCE (cont.)</b>									
STRONGARM 84 WDG	diclosulam	12hr./NA	84%	0.45 oz./A	0.378 oz. a.i./A	2	Apply preplant incorporated, preplant surface, and preemergence.	Annual broadleaf weeds	Require 0.25–0.5 inch of irrigation or rainfall to activate. If rainfall is not expected in dryland peanut, shallow incorporate to 2 inches deep. Can be tank-mixed with grass herbicide such as Prowl, Sonalan, Dual, or Outlook. Timely application of postemergence herbicides timed 14 to 17 days after peanut emergence can improve overall control, especially on escaped weeds such as sicklepod, Florida beggarweed, and Texas panicum.
VALOR SX 51WDG	flumioxazin	12 hr./NA	51%	3 oz./A	1.5 oz. a.i./A	14	Apply preplant burndown, preplant surface, and preemergence.	Annual broadleaf weeds and grasses	Apply to peanuts planted at least 1.5 inches deep. Application must be made within 2 days after planting and before peanut emergence. Applications made later or when peanuts have begun to crack or are emerged will result in severe crop injury. DO NOT irrigate when peanuts are cracking. May be tank-mixed with Dual or Outlook. Timely application of postemergence herbicides after peanut emergence can improve overall control, especially on escaped weeds such as sicklepod, yellow nutsedge, and cocklebur. DO NOT apply more than 3 ounces of Valor per acre per year. Completely clean spray equipment THE SAME DAY OF USE as directed by herbicide label. To control small weeds, 0.25% NIS or 1% COC or MSO is needed.
WARRANT	acetochlor	12hr./NA	3 lb. ai/gal.	1.25–2 qt.	0.94–1.5 lb. a.i./A	15	Apply preplant and at planting.	Annual broadleaf weeds and grasses	May be tank-mixed with Prowl, Sonalan, Strongarm, Treflan, or Valor to expand weed control spectrum. However, do not soil incorporate application with Prowl, Treflan, Sonalan, and Strongarm due to crop injury and reduced weed control. <b>DO NOT</b> exceed total of 4 qt. per acre per season; <b>DO NOT</b> apply more than 3 applications per season. Allow minimum 90 days between last application and grazing or feeding peanut hay to livestock.

**Table 6. Peanut Weed Control (cont.)**

Herbicide (trade name)	Herbicide (common name)	REI/PHI (hours or days)	Formulation	Rate/Acre Broadcast		Herbicide Group	Time of Application	Weeds Controlled	Comments
				Use rate: oz./A, pt./A, fl.oz./A etc.	Active ingredient/A				
<b>PREPLANT AND PREEMERGENCE (cont.)</b>									
SPARTAN SUPERCHARGE	carfentrazone + sulfentrazone	12hr./NA	0.35 + 3.15 lb. ai/gal.	3–10.2 fl.oz./A (Check label for detail use rate on different soils.)	0.008 + 0.074 lb. a.i./A 0.028 + 0.251 lb. a.i./A	14 + 14	Apply preplant burndown, early preplant, and preemergence.	Annual broadleaf weeds and sedge suppression	<b>DO NOT</b> apply after crop emergence, at cracking or if the seedling is close to soil surface. <b>DO NOT</b> apply more than 7 fl.oz./A per year. <b>DO NOT</b> use on very sandy soil with less than 1% organic matter. <b>DO NOT</b> irrigate when peanut is cracking. <b>DO NOT</b> feed treated peanut foliage or hay to livestock. Use higher rates for soils with pH less than 7, and use lowest rate for pH greater than 7 within the rate range. Can be tank-mixed with Roundup, Liberty, or Gramoxone.
SOLICAM DF	Norflurazone	12 hr./NA	78.6% DF	1.5–1.8 lb./A	1.18–1.41 lb. a.i./A	12	Apply preemergence only.	Annual broadleaf weeds, grasses, and sedges	Apply as a preemergence surface application immediately after planting and before weeds or crop emerge. <b>DO NOT</b> apply in area with poor drainage. Use only on Virginia-type cultivars; do not use on Spanish peanut cultivars. May be tank-mixed with Dual magnum to increase preemergence control but do not apply with Dual magnum on very coarse texture soils due to injury concern. Delay post applications such as Gramoxone if severe crop whitening is observed. Will not control emerged weeds; some peanut injury should be expected in the first several weeks.
<b>POSTEMERGENCE</b>									
WARRANT	acetochlor	12 hr./end of RI growth stage	3 lb. ai/gal.	1.25–2 qt. (Check label for detail use rate on different soils.)	0.94-1.5 lb. a.i./A	15	Apply at crop emergence up to the end of RI growth stage (50% of plants have a visible peg).	Annual broadleaf weeds and grasses	Will not control established weeds; only prevents weed seed germination. Can be tank-mixed with Gramoxone, Firestorm, Cadre, Cobra, Storm, Ultra Blazer, 2,4-DB to expand weed control. <b>DO NOT</b> exceed a total of 4 qt./A per season. Allow a minimum of 90 days between last application and grazing or feeding of peanut hay to livestock.

**Table 6. Peanut Weed Control (cont.)**

Herbicide (trade name)	Herbicide (common name)	REI/PHI (hours or days)	Formulation	Rate/Acre Broadcast		Herbicide Group	Time of Application	Weeds Controlled	Comments
				Use rate: oz./A, pt./A, fl.oz./A etc.	Active ingredient/A				
<b>POSTEMERGENCE</b>									
GRAMOXONE INTEON/ others	paraquat	24 hr./ NA	2 lb. ai/gal.	8–16 fl.oz./A	0.125– 0.25 lb. a.i./A	22	Apply up to 28 days after ground crack.	Annual broadleaf weeds and grasses	Will control or suppress small emerged annual grass and broadleaf weeds. Can be mixed with Pursuit, Basagran, Dual Magnum, or 2,4-DB for broader weed control spectrum and better control efficacy. Make no more than 2 applications per year and maximum rate per acre per year is 16 fl.oz. <b>DO NOT</b> apply by air; crop foliage will be injured with bronzing and crinkling symptoms and will recover and develop normally in most of cases.
BASAGRAN	bentazon	48 hr./ 50 days	4 lb. ai/gal.	1–2 pt./A	0.5–1 lb. a.i./A	6	Apply from peanut cracking through pegging.	Annual broadleaf weeds and yellow nutsedge	Apply over the top of peanuts for control of bristly starbur and common cocklebur. Use 1.5 pints per acre when bristly starbur has up to four leaves and is no taller than 6 inches. Use 2 pints per acre when bristly starbur is no taller than 3 inches and common cocklebur is no taller than 10 inches. Good spray coverage is essential for effective weed control. May be tank-mixed with Ultra blazer, outlook, Poast, 2,4-DB. Will not control Florida beggarweed or sicklepod. Peanuts often exhibit chlorotic mottling after application but recover in 7 to 10 days. The addition of a crop oil concentrate at the rate of 1 quart per acre will improve the control of yellow nutsedge. Early season application of bentazon at high rates following in-furrow application of Di-Syston may infrequently result in SEVERE peanut injury. Rain-free period is 4 hours. <b>DO NOT</b> graze treated peanut fields at least 50 days after last treatment. <b>DO NOT</b> cultivate within 5 days before applying Basagran or 7 days after application. <b>DO NOT</b> apply more than 4 pints/A per year.
BUTYRAC or 2,4-DB	2,4-DB	48 hr./ 30 days	2 lb. ai/gal.	0.8–1 pt./A	0.2–0.25 lb. a.i./A	4	Apply from 2 to 12 weeks after planting.	Annual broadleaf weeds	Apply 2–12 weeks after planting before weeds get over 3 inches tall. A second application may be made 3 weeks after the first, if needed. <b>DO NOT</b> apply later than 100 days after planting. <b>DO NOT</b> apply more than twice per season. Rain-free period is 1 hour. <b>DO NOT</b> tank-mix with postemergence grass herbicides. <b>DO NOT</b> apply if peanuts are under drought stress.

**Table 6. Peanut Weed Control (cont.)**

Herbicide (trade name)	Herbicide (common name)	RE/PHI (hours or days)	Formulation	Rate/Acre Broadcast		Herbicide Group	Time of Application	Weeds Controlled	Comments
				Use rate: oz./A, pt./A, fl.oz./A etc.	Active ingredient/A				
<b>POSTEMERGENCE (cont.)</b>									
COBRA	lactofen	12 hr./45 day	2 lb. ai/gal.	12.5 fl.oz./A	0.195 lb. a.i./A	14	Apply from 6 leaf leaves to 45 days before harvest.	Annual broadleaf weeds	Apply over the top of peanuts when peanuts have at least six true leaves to control small, actively growing weeds. Treated peanuts will exhibit leaf crinkling, brown leaf speckling, and bronzing. Applications made earlier will result in growth suppression, which may be prolonged by poor growing conditions. Add a nonionic surfactant to spray mix when weeds are small and growing. Add a crop oil concentrate to spray mix when weeds approach maximum label size. <b>DO NOT</b> make more than two applications of Cobra per season. A second application must be made at least 14 days after the first application. See label for weed size and appropriate adjuvant use. <b>DO NOT</b> apply more than 25 fl.oz./A per year. Do not allow livestock to graze treated foliage. Can be tank-mixed with 2,4-DB, Classic, Outlook, Basagran, Dual Magnum, Pursuit, Cadre, and Select max.
FUSILADE DX	fluazifop	12 hr./40 day	2 lb. ai/gal.	8-24 fl.oz./A	0.125-0.375 lb. a.i./A	1	At cracking to 40 days before harvest	Annual and perennial grasses	Apply over the top of actively growing peanuts to control annual and perennial grasses. Use rate depends on weed and weed size. See label for specific rate and timing. <b>DO NOT</b> apply more than 24 ounces per acre per application. Do not apply more than 48 ounces per acre per year. Rainfree period is 1 hr. <b>DO NOT</b> feed foliage to livestock or use for feed. Allow a minimum of 14 days between applications.
POAST POAST PLUS	Sethoxydim Sethoxydim	12 hr./40 day	1.5 lb. ai/gal. 1 lb. ai/gal.	1.5 pt./A 2.25 pt./A	0.28 lb. a.i./A 0.28 lb. a.i./A	1	At cracking to 40 days before harvest	Annual and perennial grasses	Maximum rate for Poast is 2.5 pt per acre per year and 3.75 pt. per acre per year for Poast plus. No livestock grazing or feeding restriction. Can be tank-mixed with Basagran, Storm, Blazer, and 2,4-DB. Use COC or MSO with application; addition of UAN and AMS is also recommended for peanut.

**Table 6. Peanut Weed Control (cont.)**

Herbicide (trade name)	Herbicide (common name)	RE/PHI (hours or days)	Formulation	Rate/Acre Broadcast		Herbicide Group	Time of Application	Weeds Controlled	Comments
				Use rate: oz./A, pt./A, fl.oz./A etc.	Active ingredient/A				
<b>POSTEMERGENCE (cont.)</b>									
PURSUIT	Imazethapyr	4 hr./85 day	2 lb. ae/gal.	4 fl.oz./A	0.063 lb. a.i./A	2	Preemergence, at cracking to 85 days before harvest	Annual broadleaf, grasses and sedges	Apply over the top of peanuts for control of problem weeds such as nutsedge, morningglory, and wild poinsettia. Application should be made to small, actively growing weeds. This usually corresponds to the time interval from 7 to 14 days after planting (at cracking) until 14 days after crop emergence. Use a nonionic surfactant at the rate of 1 quart per 100 gallons of spray mix. Pursuit can be tank-mixed with Starfire, Basagran, Poast, Whip, Ultra blazer, or 2,4-DB. <b>DO NOT</b> apply more than 4 fluid ounces total per acre per growing season. Ramfree period is 1 hr. <b>DO NOT</b> graze feed-treated foliage to livestock.
SELECT MAX	clethodim	24 hr./40 day	0.97 lb. ai/gal.	9–16 fl.oz./A for annual grasses; 12 to 32 fl.oz. for perennial grasses	0.07–0.121 lb. a.i./A for annual grasses; 0.091–0.242 lb. a.i./A for perennial grasses	1	Postemergence to 40 days before harvest	Annual and perennial grasses	Apply over the top of actively growing peanuts to control small annual grasses. Use low rate on small grasses and high rate on weeds of maximum label size and under conditions of heavy annual grass pressure. Does not control broadleaf weeds or sedges (nutgrass). See label for higher use rates for perennial grass control. Can be tank-mixed with Basagran, Ultra Blazer, and Storm. <b>DO NOT</b> tank mix with chlorothalonil products because reduced grass control will result. Rain-free period is 1 hour. Use 1 qt./A or 1% v/v COC with 1–2 qt./A UAN or 2.5–4 lb./A spray grade AMS is required for postemergence applications. NIS at 1 qt./100 gal. can be used to reduce crop injury. Do not apply more than 32 fl.oz. Select 2 EC or 64 fl.oz. Select Max per acre per year. A 14-day interval between application is required.
SELECT 2EC			2 lb. ai/gal.	6–16 fl.oz./A	0.09–0.24 lb. a.i./A				
STORM	bentazon + acifluofen	48 hr./75 days	2.67 + 1.33 lb. ai/gal.	1–1.5 pt./A	0.33 + 0.17 lb. a.i.– 0.5 + 0.25 lb. a.i./A	6 + 14	From initiation of cracking to 75 days before harvest	Annual broadleaf weeds	Maximum rate is 3 pt. per acre per year. <b>DO NOT</b> feed treated foliage to livestock. Do not apply sequential application of Ultra Blazer or Storm within 15 days after initial application. Can be used with Starfire, 2,4-DB, and Gramoxzone.

Table 6. Peanut Weed Control (cont.)									
Herbicide (trade name)	Herbicide (common name)	REI/PHI (hours or days)	Formulation	Rate/Acre Broadcast		Herbicide Group	Time of Application	Weeds Controlled	Comments
				Use rate: oz./A, pt./A, fl.oz./A etc.	Active ingredient/A				
<b>POSTEMERGENCE (cont.)</b>									
ULTRA BLAZER	acifluorfen	48 hr./ 75 days	2 lb. ai/gal.	1.5 pt./A	0.38 lb. a.i./A	14	From cracking to 75 days before harvesting	Annual broadleaf control	Apply over the top of actively growing peanuts not under stress. For best results, apply when weeds are in the two- to four-leaf stage and actively growing. Controls a number of broadleaf weeds, including morningglory and wild citron. Apply with flat fan nozzles calibrated to deliver at least 20 gallons of spray mix per acre at 40 to 60 psi. Use 80-percent active nonionic surfactant at the rate of 1 pint per 100 gallons of spray mix. Can be tank-mixed with Basagran, Cadre, Dual magnum, Frontier, Poast, and 2,4-DB. Additional surfactant is required for maximum control of certain weeds. Use AMS 2.5 lb./100 gal or UAN 4-8 pt./100 gal. to increase weed control efficacy. Refer to label for specific directions. Peanuts may exhibit leaf burning, crinkling, or bronzing. Under adequate growing conditions, they will outgrow this condition and continue to develop normally. DO NOT apply more than 2 pints Ultra Blazer per acre per growing season. Rain-free period is 4 hours. Do not feed treated foliage to livestock.
ZIDUA	pyroxasulfone	12 hr./ NA	85% WDG	1.5–2.1 oz./A	0.079–0.112 lb. a.i./A	15	Apply from ground cracking to the beginning of pod development stage.	Annual broadleaf weeds and grasses	Apply to young peanut seedlings for residual weed control. Zidua will not control established weeds. Will require 0.5 inch of rain to activate. Can be applied in sequential applications with 14 days interval. Can be tank-mixed with Basagran, Cadre, Poast, Prowl H2O, Gramoxone, Cobra, and Ultra Blazer. Do not apply more than 2.1 oz./A per application and do not use more than 5 oz./A of Zidua per cropping season.

**Table 6. Peanut Weed Control (cont.)**

Herbicide (trade name)	Herbicide (common name)	REI/PHI (hours or days)	Formulation	Rate/Acre Broadcast		Herbicide Group	Time of Application	Weeds Controlled	Comments
				Use rate: oz./A, pt./A, fl.oz./A etc.	Active ingredient/A				
<b>POSTEMERGENCE (cont.)</b>									
CLASSIC	chlormuron	12 hr./45 day	25% DG	0.5 oz./A	0.125 oz. a.i./A	2	From 60 days after peanut cracking to 45 days before harvest	Annual broadleaf weeds	Apply over the top of peanuts from 60 days after crop emergence to 45 days prior to harvest. Application should be made to Florida beggarweeds that are less than 10 inches tall and are actively growing. Make ONLY one application per season. Classic will not effectively control regrowth of Florida beggarweed following a previous application of Cadre. Addition of NIS at 0.125% v/v with ammonium sulfate (at a rate of 2 pounds per acre) or spray grade urea (at a rate of 2 gallons per acre) improves activity on bristly starbur. DO NOT use on sensitive varieties such as Georgia 06G. DO NOT use on Spanish peanuts. DO NOT use on Tifguard later than 80 days after emergence. Prior to use, consider the rotation instruction on the label. Classic may be mixed with Bravo or 2,4-DB. Combinations of Classic plus 2,4-DB result in significantly more foliar crop injury compared to Classic applied alone. Applications of Classic from 60 days after crop emergence to 45 days before harvest on current tomato spotted wilt-tolerant peanut varieties may result in increased tomato spotted wilt symptoms that may impact peanut yield. Rain-free period is 1 hour.
DUAL MAGNUM	S-metolachlor	24 hr./90 day	7.64 lb. ai/gal.	1-1.33 pt./A	0.95-1.27 lb. a.i./A	15	From cracking up to 90 days before harvesting	Annual broadleaf weeds and grasses	Apply to the soil immediately after the last cultivation but not within 90 days of harvest. DO NOT apply more than 2.67 pounds active ingredient of Dual during any one year. Use this treatment when late germinating weeds are expected as a problem. Provides partial preemergence control of Florida beggarweed when activated by rain or irrigation. Can be tank-mixed with Gramoxone, Basagran, Storm, and 2,4-DB. Sufactant will be needed for postemergence control.

**Table 6. Peanut Weed Control (cont.)**

Herbicide (trade name)	Herbicide (common name)	REI/PHI (hours or days)	Formulation	Rate/Acre Broadcast		Herbicide Group	Time of Application	Weeds Controlled	Comments
				Use rate: oz./A, pt./A, fl.oz./A etc.	Active ingredient/A				
<b>POSTEMERGENCE (cont.)</b>									
AIM EC	carfentrazone	12 hr./7 days	2 lb. ai/gal.	0.5–2 fl.oz./A	0.008–0.032 lb. a.i./A	14	From cracking up to 7 days before harvesting	Annual broadleaf weeds	Apply alone or as a tank-mixture with other POST herbicides as a postemergence treatment or hooded/direct spray treatment. <b>DO NOT</b> apply more than 6.1 fl.oz. per acre per year in total. <b>DO NOT</b> feed treated foliage to livestock. Weed control is enhanced with the addition of NIS at 0.25% v/v or COC at 1% v/v surfactant. AMS 2–4 lb. per acre or UAN 2–4% v/v is allowed. Coverage is important to weed control and use minimal of 15 gallon per acre spray volume and fine to medium spray droplets for ground application.
Cadre	Imazapic	12 hr./90 days	2 lb. ai/gal	4 oz./A	0.0625 lb ai./A	2	Early post emergence to 90 days before harvest	Grass, nutsedge, broadleaf weeds	Can be tank-mixed with many commonly use postemergence herbicides such as 2,4-DB, Dual Magnum, Zidua, etc. <b>DO NOT</b> apply more than 4 fl.oz./A per year. Rain free period is 3 hr. Check label for crop rotation restrictions due to long soil residual persistence. Dissipation is slower in heavy soil with more organic matter. Will not control ALS-resistant pigweed. <b>DO NOT</b> feed peanut hay to livestock.
<b>HARVEST AID</b>									
AIM EC	carfentrazone-ethyl	12 hr./7 days	2 lb. ai/gal.	0.5–2 fl.oz./A	0.008–0.032 lb. a.i./A	14	At harvest	Desiccation of broadleaf weeds, such as pig-weeds and morning-glories	Coverage is essential for good control. Use a minimum of 15 gallons of finished spray per acre for ground applications. A NIS, MSO, or COC is required. May be tank-mixed with glyphosate to improve control of grasses and other weeds. Do not apply more than 2 fl.oz. per acre per year as harvest aid treatment. The high rate (2 ounces per acre) may be needed if smallflower morningglory is present. Make only one application per season. <b>DO NOT</b> feed or graze peanut hay treated with Aim. Rain-free period is 6 to 8 hours.

**Table 7. Estimated Effectiveness of Recommended Preplant Incorporated and Preemergence Herbicide Treatments on Important Weeds Infesting Peanuts in Alabama <sup>1</sup>**

WEEDS	HERBICIDES							
	Cinch/ Dual (PPI)	Outlook (PPI)	Prowl (PPI)	Sonalan (PPI)	Strongarm (PPI)	Pursuit (PPI, EPOT)	Cinch/ Dual (PRE)	Valor (PRE)
<b>GRASSES</b>								
Bermudagrass	0	0	4	4	0	0	0	0
Broadleaf signalgrass	7	9	8	9	0	6	7	6
Crabgrass	9	9	9	9	0	6	9	6
Crowfootgrass	9	9	9	9	0	4	9	--
Fall panicum	7	8	8	8	0	6	7	6
Goosegrass	9	9	9	9	0	6	9	6
Texas panicum	5	4	8	8	0	4	5	6
<b>SEDGES</b>								
Purple nutsedge	1	0	0	0	7	8	1	2
Yellow nutsedge	8	8	0	0	7	7	5	2
<b>BROADLEAVES</b>								
Bristly starbur	0	0	0	0	9+	6	3	6
Burgherkin	0	0	0	0	—	8	0	8
Carpetweed	7	8	8	8	8	0	6	0
Citronmelon	0	0	0	0	8	—	0	8
Cocklebur	0	0	0	0	9+	7–8	0	3
Common ragweed	0	7	0	0	8	5	0	7
Cowpea	0	0	0	0	0	0	0	6
Crotalaria	0	0	0	0	—	3	0	8
Eclipta	0	6	0	0	8	0	0	8
Florida beggarweed	6	6	1	1	7–8	3	6	9
Florida pusley	9	8	9	9	8	6	8	9
Groundcherry	8	8	0	0	0	0	7–8	0
Horsenettle	0	0	0	0	—	0	0	0
Hophornbean copperleaf	5	7	0	0	8–9	0	5	8–9
Jimsonweed	0	0	0	0	8	8	0	8
Lambsquarters	6	0	9	9	8	6	6	9
Morningglory	0	0	2	2	8+	7	0	8
Morningglory, smallflower	0	0	2	2	8	9	0	9
Pigweed	9	9	8	8	8	9	9	8–9
Prickly sida	6	7	0	0	8	8	3	8
Purslane	8	8	8–9	8–9	0	0	8	8–9
Redweed	0	0	0	0	—	—	0	8
Sicklepod	4	4	1	1	6	0	6	0
Spurge	6	7	0	0	0	7	4	0
Tropic croton	0	0	0	0	6	0	0	7
Tropical spiderwort	8–9	7	0	0	8	0	8–9	6
Wild poinsettia	0	0	0	0	9	9	0	8
Wild radish	0	0	0	0	9	9	0	7
Woolly croton	0	0	0	0	5	0	0	5

<sup>1</sup> Effectiveness ratings are based on observations of research plots and field use under average weather conditions for several years by weed control workers in Alabama.

KEY TO EFFECTIVENESS RATINGS AND ABBREVIATIONS:

9 = 90% to 100% effective; 0 = Not effective; — = Information not available. PPI = Preplant Incorporated; EPOT = Early Postemergence; PRE = Preemergence; POST = Postemergence.

Table 8. Estimated Effectiveness of Recommended Postemergence Herbicide Treatments on Important Weeds Infesting Peanuts in Alabama <sup>1</sup>

WEEDS	HERBICIDES										
	Basagran (POST)	2,4-DB (POST)	Impose Cadre (POST)	Classic (POST)	Cobra (POST)	Firestorm Gramoxone (POST)	Fusilade (POST)	Poast Plus Select (POST)	Storm (POST)	Ultra Blazer (POST)	Dual Magnum (LAYBY)
<b>GRASSES</b>											
Bermudagrass	0	0	0	0	0	0	8	6-8	0	0	0
Broadleaf signalgrass	0	1	7	0	1	8	8	8	0	1	4
Crabgrass	0	1	8	0	2	4	8	8	0	2	9
Crowfootgrass	0	1	7	0	2	8	7-8	8	0	2	9
Fall panicum	0	1	7	0	1	8	8	8	0	1	3
Goosegrass	0	1	6	0	2	8	8	8	0	2	9
Texas panicum	0	0	7	0	0	8	8	8	0	0	4
<b>SEDGES</b>											
Purple nutsedge	0	0	9	4	0	4	0	0	0	0	0
Yellow nutsedge	7	2	8	5	2	5	0	0	4	2	4
<b>BROADLEAVES</b>											
Bristly starbur	8	6	7	7	8	3	0	0	8	7	0
Burgherkin	6 <sup>2</sup>	6 <sup>2</sup>	8	4	7	5	0	0	6	8	3
Carpetweed	0	0	6	0	8	0	0	0	8	8-9	0
Citronmelon	0	7	8	0	8	6	0	0	8	7	0
Cocklebur	9	8	9+	8	9	4	0	0	9	8	0
Common ragweed	6	7	5	7	9	6	0	0	8	8	0
Cowpea	2	6	6	7	6	7	0	0	7	4	0
Crotolaria	3	6	—	—	9	4	0	0	9	9	0
Eclipta	7	4	—	4	8	4	0	0	8	8	0
Florida beggarweed	0	1	7-8	8	7-8	7-8	0	0	0	1	6
Florida pusley	0	3	3	3	8	5	0	0	9	9	8
Groundcherry	6	0	0	0	8	7	0	0	8	9	0
Horsenettle	0	0	7	0	5	2	0	0	0	0	0
Hophornbean copperleaf	0	0	5	0	8	0	0	0	7	8-9	0
Jimsonweed	9	3	9	—	9	9	0	0	9	9	0
Lambsquarters	6	6	—	4	7	3	0	0	6	6	4
Morningglory	4	8	8	5	8	7	0	0	8	8	0
Morningglory, smallflower	9	7	9	3	8	3	0	0	7	8	0

**Table 8. Estimated Effectiveness of Recommended Postemergence Herbicide Treatments on Important Weeds Infesting Peanuts in Alabama <sup>1</sup> (cont.)**

WEEDS	HERBICIDES											
	Basagran (POST)	Butoxone (POST)	Impose Cadre (POST)	Classic (POST)	Cobra (POST)	Firestorm Gramoxone (POST)	Fusilade (POST)	Poast Plus Select (POST)	Storm (POST)	Ultra Blazer (POST)	Dual Magnum (LAYBY)	
<b>BROADLEAVES (cont.)</b>												
Pigweed	4	5	9	4	9	5	0	0	9	9	9	9
Prickly sida	8	2	7-8	5	8	2	0	0	8	4	0	0
Purslane	7	3	0	5	8	5	0	0	8	9	0	0
Redweed	8	5	8	3	—	7	0	0	7	5	0	0
Sicklepod	0	7	8	7	6	7	0	0	0	3	4	4
Spurge	0	0	0	5	6-7	4	0	0	6	6	0	0
Tropic croton	7	3	0	4	9	4	0	0	8	8	0	0
Tropical spiderwort	8	0	6	0	—	8	0	0	6	3	0	0
Wild poinsettia	0	3	8-9	4	8	8	0	0	7	8-9	0	0
Wild radish	6	0	9	0	7	6	0	0	8	9	0	0
Woolly croton	4	2	0	0	8	0	0	0	6	8	0	0

<sup>1</sup> Effectiveness ratings are based on observations of research plots and field use under average weather conditions for several years by weed control workers in Alabama.

**KEY TO EFFECTIVENESS RATINGS AND ABBREVIATIONS:**

9 = 90% to 100% effective; 0 = Not effective; — = Information not available. PPI = Preplant Incorporated; EPOT = Early Postemergence; PRE = Preemergence; POST = Postemergence.

## PEANUT MANAGEMENT CHECKLIST

Each year, the farmers who get maximum returns from the dollars they invest in peanut production are those who carry out certain key management practices. Use this checklist to check up on your peanut management system. If you can't check off each of these points for your own farm, you may be missing out on maximum returns.

□ **Use a crop rotation system.** For best results, grow a grass crop for at least 2 years before planting peanuts. Rotation helps you cut down on disease and nematode problems and contributes to better weed control. Avoid soybeans in the rotation—both soybeans and peanuts are susceptible to the same major diseases, nematodes, and weeds.

□ **Soil test every year and follow the recommendations.** Test each field in the fall for fertility level and lime needs. Peanuts respond best to residual fertility, so it is better to build up soil fertility as you grow other crops. But, peanuts will respond to direct fertilization when soil fertility levels are low.

□ **Plant between April 28 and May 25.** For optimum yield, plant according to the Tomato Spotted Wilt Index.

□ **Check fields regularly for virus problems.** Send a properly trained person—yourself, a consultant, or a scout—into your fields at least weekly during the growing season. Scouting enables you to identify pest problems and time control measures for best results. It also gives you the records you need for planning peanut production in the same field in future years.

□ **Irrigate if it is economically feasible.** Timely irrigation will increase yield and quality in most years. It also gives you a measure of insurance against loss during dry years. In the future, irrigation may be a major method of applying agricultural chemicals.

□ **Use the hull scrape or the shellout method to time your harvest.** You'll get better yields and higher quality using one of these methods.

□ **Use pesticides only as needed.** Except for leaf spot fungicides, chemicals applied to peanuts automatically or on a fixed schedule are usually a poor investment. For maximum returns, select and apply pesticides based on the specific problem identified in the field.

□ **Maintain records on white mold.** Control white mold only in fields where this disease has caused major problems before. Three to four dead spots in 100 feet of row is justification for treatment. White mold is more likely to cause losses if you don't follow a 3-year rotation or if you include soybeans in your rotation program. The highest white mold loss is usually seen in fields cropped every second year in peanuts. Two or more years of corn, cotton, or a pasture grass will greatly reduce the risk of serious disease loss.

□ **Control leaf spot with a regular spray program.** Begin 30 to 40 days after planting or by June 1. Maintain a 10- to 14-day schedule until July 15 and a 7- to 10-day schedule after July 15 during periods of frequent rain showers. Otherwise,

continue sprays every 10 to 14 days until 2 weeks before harvest. Use recommended rate and an adequate spray volume for good coverage. Don't allow a canopy of broadleaf weeds to develop and interfere with your coverage. Evaluate your control program in each field every few weeks.

□ **Use nematicides only when needed.** Take a soil sample for nematode analysis in August or September from all fields you will plant to peanuts the following year. Treat for nematodes only in those fields where you know a problem exists. Apply a recommended nematicide at planting time in those fields. During your weekly inspections, check plants not growing normally for nematode damage. Nematodes are most destructive in fields in continuous peanut production.

□ **Maintain a field-by-field record or map of weed problems.** Choose the proper herbicides to control the weeds you have. Remember that the first 6 weeks of the growing season is the critical period for weed control. Don't use the "shotgun" approach: using different herbicides at different times without regard to the particular weed problems that are in the field. Most herbicides have some undesirable effects on the peanut plants themselves; the more herbicides you use, the more the peanut plants will be hurt.

□ **Control early-season sucking insects.** Use one of the insecticides recommended for thrips. If acephate or cyhalothrin is used as a foliar spray, make the first application when the second true leaf develops and make another application 5 to 7 days later.

□ **Use foliar insect sprays only when needed, based on your weekly inspection program.** Remember that uncontrolled low levels of damaging foliage-feeding insects early in the season will help to build up a beneficial insect population. Beneficials can help keep large infestations of damaging insects in check later in the season. Foliage-feeding caterpillars are more often a major problem in July and August.

□ **Control important peg- and pod-feeding pests.** The lesser cornstalk borer and southern corn rootworm are primarily peg- and pod-feeding pests. Check carefully for these pests and the feeding damage they cause from the time pegging begins until the crop is mature.

□ **Choose and use insecticides as recommended.** Apply recommended insecticides at correct rates to control the insect pests that have reached or exceeded the "threshold" level. For example, only granular formulations are recommended for lesser cornstalk borer and southern rootworm control because granules will sift through the vines to the soil surface. No single insecticide will control all peanut insects.

For more information and specific recommendations, ask your county Extension agent for detailed information applicable to conditions in your county. You can also get cost and return budgets and up-to-date publications on peanut production.

**Table 9. Herbicide Classified by Mechanism of Action**

Mechanism of Action	Herbicide
Acetolactate Synthase (ALS) inhibitor	Pursuit, Strongarm, Cadre, Classic
Acetyl CoA Carboxylase (ACCase) inhibitor	Fusilade, Poast, Select/Arrow
EPSP inhibitor	Roundup
Mitosis inhibitor	Dual/Cinch, Outlook, Prowl, Sonalan
Photosystem I inhibitor	Gramoxone Inteon/Firestorm
Photosystem II inhibitor	Basagran, Storm
Protoporphyrinogen oxidase (PPO) inhibitor	Valor, Cobra, Storm, Ultra Blazer, Aim
Synthetic auxin	2,4-DB

Weed Control section prepared by Steve Li, Extension Specialist, Assistant Professor, Department of Crop, Soil and Environmental Sciences, Auburn University.

**FOR MORE INFORMATION** on pesticides, pesticide safety, or submitting samples for analysis, see the following publications in the IPM series: IPM 1293, "Safety." Safety contact information; worker protection standards; the safe use, handling, and storage of pesticides  
IPM 1294, "Submitting Samples." Procedures for submitting samples for diagnosis, analysis, and identification  
IPM 1295, "General Pesticide Information." Federal and state restricted use pesticide lists; pesticides and water quality  
IPM 1317, "Appendix." Pesticide guidelines for agronomic crops, including preharvest intervals; rain-free requirements; grazing restrictions; crop rotation guidelines; and the names, classifications, and toxicities of pesticides.



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**For more information**, contact your county Extension office. Visit [www.aces.edu/directory](http://www.aces.edu/directory).

Use pesticides **only** according to the directions on the label. Follow all directions, precautions, and restrictions that are listed. Do not use pesticides on plants that are not listed on the label

The pesticide rates in this publication are recommended **only** if they are registered with the Environmental Protection Agency or the Alabama Department of Agriculture and Industries. If a registration is changed or canceled, the rate listed here is no longer recommended. Before you apply **any** pesticide, check with your county Extension agent for the latest information.

Trade names are used **only** to give specific information. The Alabama Cooperative Extension System does not endorse or guarantee any product and does not recommend one product instead of another that might be similar.

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