



# Cotton

Insect Control Recommendations for 2026



IPM-0415-A

## INSECT CONTROL

Maximum profits in cotton production depend on an effective and economical insect management program. To plan such a program, you must know what insects are present and the amount of damage they are doing. The “tools of technology” for managing cotton insects include cultural practices, selective insecticide use, insect scouting, transgenic varieties, and beneficial arthropods. The effectiveness of these tools can be maximized when all growers use them over a large area. Insect management does not mean reducing the insect population to zero, but merely to below the level of economic damage.

### Cultural Practices

Certain production practices can have a significant effect on insect management and should therefore be evaluated based on their overall impact. For example, cotton grown under various conservation tillage methods may increase the likelihood of cutworm problems but may reduce thrips infestations. Any practice that delays fruiting or extends the fruiting period increases the potential for damage from a variety of insects. High plant populations, excessive nitrogen rates, late planting, and excessive or careless herbicide use can all delay or extend the fruiting period. Generally, cultural practices that promote the health, vigor, and normal maturation of the cotton crop will benefit insect management.

### Beneficial Arthropods

Parasites and predators are the first line of defense against bollworms, beet armyworms, and tobacco budworms. Predators such as ants, nabids, big-eyed bugs, spiders, insidious flower bugs, green lacewings, and lady beetles are important regulators of caterpillars, particularly in early and mid season. Parasitic flies and wasps are less noticeable than the predators, but their importance should not be underestimated. Cotton insecticides vary widely in their toxicity toward beneficial arthropods and these characteristics should always be considered when choosing a product.

### Selective Use of Insecticides

Selection of insecticides should be based on several factors; effectiveness in controlling target insects should not be the only consideration. Insects’ potential to develop resistance, effects on beneficial arthropods and on other nontarget organisms, ease of application, human safety hazards, availability, and economic considerations are also important.

Apply insecticides only when the pest’s economic threshold level is reached. This can be determined only through regular scouting of the fields to obtain population densities of both destructive and beneficial insects. The use of scouting

and thresholds often reduces insecticide and application costs, lowers unnecessary insecticide exposure in the environment, and helps maximize profits.

### Insecticide Application

Proper timing and coverage of insecticide applications are extremely important. Only field scouting will enable you to time applications for the best effectiveness. Good coverage using ground equipment usually involves applying 5 to 8 gallons of water per acre at 60 to 70 pounds per square inch. Keep nozzles clean and functioning correctly. Maintain appropriate boom height.

Fixed-wing aircraft used to apply insecticides should be equipped with standard nozzles or rotary atomizing devices that deliver the majority of the insecticide in droplets within the 100 to 300 micron range. Fly 10 feet above the crop for the most effective insecticide placement and least drift. Mix emulsifiable concentrates with water immediately before application and apply from 1 to 5 gallons of the insecticide-water mixture per acre. For mid- to late-season insect control, particularly “worms,” apply 3 to 5 gallons of total mixture per acre. Fly proper swath widths to obtain complete coverage of the field.

### Insect Pests of Cotton

**Boll Weevils.** The boll weevil has now been eradicated from the state. Therefore, neither economic weevil numbers nor damage should exist in any fields this year. However, reinfestations may occur from noneradicated areas of the country. If weevil infestations are observed, they should be reported immediately to the local Boll Weevil Eradication Program.

**Bollworms.** Both the cotton bollworm and tobacco budworm can be devastating pests of cotton. Widespread problems with insecticide resistance, especially to pyrethroids, have occurred in the state. Planting transgenic cotton or using alternative insecticides will be necessary to control high levels of budworms in most areas. Cotton bollworms can damage both transgenic and conventional cotton varieties. Caterpillars reaching 0.25 inch or longer often survive on transgenic cotton. Escaped bollworms are usually found in the blooming zone of the plant in Bollgard II and TwinLink cotton. Some caterpillars may also be found in the upper part of plants containing Widestrike technology.

During periods of moth activity, monitor fields twice weekly. In previously untreated fields, apply a recommended larvicide when you find ten small larvae per 100 plants. In previously treated fields, apply a recommended larvicide when you find five small larvae per 100 plants.

**Spider Mites.** In some areas of Alabama, spider mites cause severe damage. Usually, they cause more trouble during hot, dry weather. Spider mites feed on plant juices and cause leaves to become discolored. A heavy infestation can cause complete defoliation of cotton.

Planting behind a winter cereal cover crop, as opposed to fallow ground, reduces the risk of early mite infestations. Conservation tillage acreage containing winter weeds should be burned down well in advance of planting.

If damaging populations develop, make foliar applications of a recommended miticide. Two-spotted spider mites are notorious for developing resistance, and lasting control with any product is seldom achieved before mid-July. Excellent coverage is critical to mite control.

**Fall Armyworms.** Fall armyworms may cause economic damage to cotton in Alabama. Fall armyworms feed on and inside squares, blooms, and bolls in a manner similar to bollworms. The eggs are laid in masses of 150 or more on the undersides of leaves that are on the lower parts of the plants. The larvae are light green or cream colored at hatching but turn darker shades of brown, black, or green as they mature. Small larvae may have a characteristic black dot above and behind the third pair of true legs. Fall armyworm larvae usually have a light colored inverted Y-shape on their heads. The fall armyworm that attacks pastures, lawns, etc. is a different strain and does not damage cotton.

**Beet Armyworms.** The beet armyworm is a sporadic pest of cotton. The eggs are deposited in a fuzzy mass, usually on the bottom of leaves, and are similar to the egg masses of the fall armyworm. The newly hatched larvae feed en masse, skeletonizing leaves near the old egg mass. As they mature, they disperse, eating the fruit and foliage along the way. The beet armyworm will damage blooms, squares, and small bolls and even bore into the stalk. Beet armyworm infestations often begin along field edges or in skimpy stands.

The larvae vary from pale to dark olive green, have dark stripes down their backs and pale stripes down each side, and reach a maximum length of 1 inch. A characteristic black spot is located above the second pair of thoracic (true) legs. The spot is often obscured by a dark lateral line. Take care not to confuse the beet armyworm with other armyworms that often possess an evident spot on the side of the first abdominal segment.

**Cabbage and Soybean Loopers.** Loopers are small, greenish, looping worms with white stripes down their backs. These worms feed on leaves, causing a ragged appearance. Loopers that occur in late season in high numbers are most likely the soybean looper. Begin control when worms are small if the top bolls expected for harvest are not mature. Late-season looper infestations are seldom widespread but may defoliate all cotton in a community when they occur.

**Cutworms.** Several species of cutworms attack seedling cotton. Use control measures where cotton stands are threatened. Cotton planted into weedy fields, cotton produced under various conservation tillage systems, and cotton produced on cool cotton land soils are more susceptible to cutworm infestation.

**Cotton Aphids.** Aphids may be numerous in cotton fields at any time during the growing season. They are usually found

on the underside of leaves, on stems, and on terminals. Curling and yellowing of leaves indicate infestation. At-planting insecticides may help control aphids early in the season. Apply additional control measures when honeydew production is heavy. Aphid populations normally crash in July due to a naturally occurring fungus.

**Cotton Jassid.** Cotton jassid, also called two-spot cotton leafhopper, is a new, invasive sucking pest of cotton. In 2025, cotton jassid populations built across southeast Alabama in August, with populations peaking in September. By the end of the season, this pest was observed in low levels as far north as Cherokee and Limestone Counties. Currently, little is known about this insect's ability to overwinter in the United States. Cotton jassids are only expected to survive the winter in south Alabama. In its native range, cotton jassid is considered a season-long pest of cotton. It is not currently known populations in Alabama will grow in future years.

Adults and nymphs feed on the undersides of leaves, extracting sap and injecting toxins that disrupt normal plant physiology. Feeding results in a characteristic yellowing of leaf margins, followed by reddening, browning, and leaf cupping, commonly referred to as hopperburn. Large populations of cotton jassid were observed to kill cotton in as little as 2 weeks in 2025. Cotton jassids are green, small, wedge-shaped leafhoppers. Adult cotton jassids can be distinguished from other species of leafhoppers by the presence of two black spots on the bottom of the wings. Cotton jassid nymphs are indistinguishable from other leafhopper species. When disturbed, cotton jassid will "crabwalk" or run sideways quickly. Often, adults do not immediately fly off when disturbed.

*Preliminary Scouting Recommendation:* Look at the underside of a minimum of twenty-five leaves in each field. Scouting should focus on the mainstem leaf four nodes below the terminal. Based on observations in 2025, initial scouting should be focused on field borders, particularly on plants isolated from the rest of the field. These plants can be used as "indicator" plants. Once indicator plants are infested, scouting should be intensified across the field.

*Preliminary Threshold:* Based on experience and limited research in 2025, a preliminary threshold of one cotton jassid per leaf (adult or nymph) is currently recommended. Treatment should only be made if adult cotton jassids are present, as immatures cannot be easily identified.

Do not underestimate this pest. Cotton jassid populations can build fast under the right conditions. This is expected to be an evolving situation in 2026. For the most up-to-date information on thresholds and control recommendations, contact your local Extension agent.

**Grasshoppers.** Grasshoppers have emerged as a pest of seedling cotton in recent years, primarily in conservation tillage systems. They chew the main stem of young plants, causing a reduction in stands. Cotton is most susceptible to grasshopper injury from the time it begins to emerge in the "crook stage" until the plants have about six true leaves. Both the immature and the adult stages may cause injury. Controls are warranted when stands are threatened.

**Thrips.** Thrips feed on the young leaves and buds and stunt the growth of seedling cotton. A common sign of a heavy

thrips infestation is distorted leaves that have turned brownish around the edges and cup upward. Early control of thrips increases yields and generally results in earlier maturity.

**Plant Bugs and Fleahoppers.** Plant bugs and fleahoppers migrate to cotton from weeds and various legumes. In prebloom cotton, both adults and nymphs feed on tiny squares, causing them to turn black. These insects are usually found in terminals and move quickly about the plant or fly when disturbed. Prior to bloom, make an application when sweep net samples detect eight bugs per 100 sweeps. During the third week of squaring through bloom, treat when drop cloth samples collect three bugs per 5 row feet or sweep net samples detect eight bugs per 100 sweeps. Do not allow square retention to drop below 80 percent due to plant bug feeding. Check plants by shaking terminals over a sweep net or drop cloth before first bloom. Sampling techniques are not adequate when the majority of the plant bug population is in the adult stage.

Plant bugs can also be a problem in blooming cotton (July–August). At this point of the season, a large portion of the plant bug population is nymphs, and large squares and young bolls are damaged in addition to the small squares. Plant bug damage to young bolls results in “hard-locking” of one or more locks per boll. Damage to large squares is revealed as “dirty blooms,” which show necrotic flower parts and warty petals caused when the bugs feed on large squares.

Controlling plant bugs in blooming cotton generally is warranted when 15 to 20 percent of bolls the diameter of a quarter reveal internal plant bug damage.

**Whiteflies.** Whiteflies damage cotton by sucking sap from plants and by secreting honeydew on which sooty mold grows and stains the lint. Heavy whitefly feeding reduces plant vigor, causes premature defoliation, and reduces yield. All whitefly stages are found on the undersurface of cotton leaves. The tiny, white, gnat-like adults lay small eggs that hatch into immature whiteflies, which soon resemble scale insects.

Historically, the banded-wing whitefly is the species that has been present in Alabama. A new species, the silverleaf whitefly, has now been identified in many of the southern counties. It is much more difficult to control with insecticides. The adult banded-winged whitefly has faint but visible grayish zigzag bands on the wings; the silverleaf whitefly is solid white.

**Stink Bugs** (Various species). Three main species occur on cotton—the green stink bug, the southern green stink bug, and the brown stink bug. A new invasive species, the brown marmorated stink bug, has been found in most Alabama counties and the population is slowly increasing. Stink bugs are shield-shaped, about one-half inch long, and have sucking mouthparts.

The southern green stink bug adults are green, and the nymphal stage has white spots on the back or abdomen. The green stink bug is also green, but the nymphal stage has a striped abdomen. The brown stink bug closely resembles a predaceous stink bug, the spined soldier bug, but can be

distinguished from it by the very sharply pointed “shoulders” on the spined soldier bug. Markings unique to the brown marmorated stink bug include light bands on the antennae and alternating dark bands on the thin outer edge of the abdomen. Stink bug eggs are barrel-shaped and metallic-colored and are deposited in a regular cluster on foliage. The leaf footed bug may be a part of the boll feeding bug complex, especially in the southern part of Alabama.

Stink bugs overwinter as adults in a variety of habitats, such as leaf litter, tree holes, and fields. Their primary host crops in Alabama are corn, wheat, soybeans, and peanuts. Cotton grown near corn or peanuts may be at a greater risk for stink bug infestations and damage. The egg stage lasts about four days, the nymphs develop over 33 days, and the adults live up to 58 days.

Stink bugs damage cotton by feeding on developing seeds within the bolls. Damaged bolls may or may not have a small black spot on the outside. To be certain whether bolls are damaged or not requires an internal examination. Seeds usually turn brown from their feeding and a warty growth is often present where the carpel wall was penetrated.

Stink bug damage is generally warranted when 15 to 20 percent of the quarter-sized bolls reveal damage.

#### **Precautions and General Restrictions.**

Read the label before using any insecticide to prevent misuse. When applying insecticides, change clothes at least once a day. If spray concentrates come in contact with your skin or clothing, remove the clothing immediately and wash your skin with soap and water. For field re-entry intervals, refer to the insecticide label or consult your county agent.

**Restricted Use Pesticides.** Your county Extension office has the necessary forms and information concerning all Restricted Use pesticides. Permits to use Restricted Use insecticides will be issued only by the State Department of Agriculture and Industries, Montgomery, Alabama.

#### **Premixes/Combination Packages**

Multiple insecticide active ingredients are being combined into single products, presumably to increase the number of pest species controlled or to address resistance issues. Premixes may be useful to insect management programs, but also may encourage the unnecessary use of some ingredients or encourage their use at less than optimum rates. Unnecessary applications or applications of reduced rates may lead to the development of insecticide resistance and flare untargeted pest species. Be sure the use of all active ingredients is warranted and that proper rates are being delivered.

#### **Effectiveness of Insecticides and Transgenic Cotton on Target Pests**

The insecticide ratings found in Tables 3 and 4 are based on research across the Cotton Belt and in field experiences by entomologists. Ratings should be considered only general guidelines for comparison purposes. Insecticide ratings assume standard rates, good timing, thorough coverage, no wash off, etc.

<b>Table 1. Cotton Insect Control</b>				
Insecticide and Formulation	Amount of Formulation per Acre	Lb. Active Ingredient per Acre	Minimum Days from Last Application to Harvest	Comments
<b>BEET ARMYWORMS</b>				
chlorantraniliprole VANTACOR	1.2–2.5 oz.	0.073–0.97	21	Best results may be obtained by using rates of .065 lb. ai/ac or higher for the first application.
chlorantraniliprole + bifenthrin ELEVEST 4.8–9.6 oz See label (for ai/A) 21	4.8–9.6 oz.	See label (for ai/A)	21	
indoxacarb STEWARD 1.25EC	9.2–11.3 oz.	0.09–0.11	14	
methoxyfenozide INTREPID 2F	5–10 oz.	0.075–0.16	14	
spinosad BLACKHAWK	2.4–3.2 oz.	0.054–0.072	28	
methoxyfenozide + spinetoram INTREPID EDGE	5–8 oz.	0.113–0.187	28	
<b>BOLLWORMS/TOBACCO BUDWORMS</b>				
<b>Seed</b>				
Bt transgenic cotton BOLLGARD II BOLLGARD III TWINLINK TWINLINK PLUS WIDESTRIKE WIDESTRIKE 3				See Table 4 for activity against all caterpillar pests.

<b>Table 1. Cotton Insect Control (cont.)</b>				
Insecticide and Formulation	Amount of Formulation per Acre	Lb. Active Ingredient per Acre	Minimum Days from Last Application to Harvest	Comments
<b>Bollworms: Larvicides</b>				
alpha-cypermethrin FASTAC 0.83 EC	2.6–3.6 oz.	0.017–0.023	14	<i>In previously untreated fields where beneficials are present</i> , apply when ten small larvae (0.25 inch) per 100 plants are found. <i>In previously treated fields where beneficials are low or absent</i> , apply when five small larvae per 100 plants are found. Isolated problems with pyrethroid resistance have been reported throughout the eastern United States. For best results, apply pyrethroids to first and second instar larvae.
beta-cyfluthrin BAYTHROID XL 1EC Other brand names (See label.)	1.6–2.6 oz.	0.0125–0.0205	0	
bifenthrin BRIGADE 2EC Other brand names (See label.)	4–6.4 oz.	0.06–0.1	14	
chlorantraniliprole VANTACOR	1.2–2.5 oz.	0.73–0.97	21	
chlorantraniliprole+bifenthrin ELEVEST	4.8–9.6 oz.	See label (for ai/A)	21	
chlorantraniliprole + lambda-cyhalothrin BESIEGE	6.5–12.5 oz.	0.063–0.124	14	
cypermethrin AMMO 2.5EC Other brand names (See label.)	2–5 oz.	0.04–0.1	21	
deltamethrin DELTA GOLD 1.5 EC	1.6–2.6 oz.	0.019–0.030	21	
esfenvalerate ASANA XL 0.66EC	5.8–9.6 oz.	0.03–0.05	21	
gamma-cyhalothrin DECLARE 1.25EC Other brand names (See label.)	1.28–2.05 oz.	0.0125–0.02	14	
indoxacarb STEWARD 1.25EC	11.3 oz.	0.11	21	
lambda-cyhalothrin WARRIOR II Z 2.08CS Other brand names (See label.)	1.6–2.56 oz.	0.025–0.04	15	
methomyl LANNATE 2.4 LV	1.5–2 pt.	0.45–0.6	28	
spinosad BLACKHAWK	2.4–3.2 oz.	0.054–0.072	28	
spinetoram RADIANT 1 SC	4.25–8 oz.	0.0332–0.0625	14	
zeta-cypermethrin MUSTANG MAX 0.8EC	2.64–3.6 oz.	0.017–0.022		

<b>Table 1. Cotton Insect Control (cont.)</b>				
Insecticide and Formulation	Amount of Formulation per Acre	Lb. Active Ingredient per Acre	Minimum Days from Last Application to Harvest	Comments
<b>BOLLWORMS/TOBACCO BUDWORMS (cont.)</b>				
<b>Tobacco Budworms: Larvicides</b>				
chlorantraniliprole VANTACOR	1.2–2.5 oz.	0.73–0.97	21	<i>In previously untreated fields where beneficials are present</i> , apply when ten small larvae (0.25 inch) per 100 plants are found. <i>In previously treated fields where beneficials are absent</i> , apply when five small larvae per 100 plants are found. Tobacco budworms have proven to be more difficult to control with most insecticides (see Table 4). Minimum rates of the recommended insecticides may not be effective against larger larvae or under high pressure. Rates should be adjusted according to the size of the larvae and the level of infestation. Methomyl may be used as an ovicide to control the egg stage at rates of 0.125 to 0.25 pound active ingredient per acre.
chlorantraniliprole_bifenthrin ELEVEST	4.8–9.6 oz.	See label (for ai/A)	21	
chlorantraniliprole + lambda-cyhalothrin BESIEGE	6.5–12.5 oz.	0.063-0.124	21	
indoxacarb STEWARD 1.25EC	11.3 oz.	0.11	14	
methomyl LANNATE 2.4 LV	1.5 pt.	0.45	15	
spinosad BLACKHAWK	2.4–3.2 oz.	0.054–0.072	28	
<b>COTTON APHIDS</b>				
acetamiprid INTRUDER 70WP	0.6–1.1 oz.	0.025–0.05	28	Apply when leaves appear sticky. Make one application; repeat when necessary. At-planting treatments may also give effective early-season control (see Seedling Thrips). Aphids are resistant to many insecticides. Control may vary with location and time of season. Additional applications of the same chemicals are usually ineffective.
flonicamid CARBINE 50 WG	1.4–2.8 oz.	0.044–0.088	30	
imidacloprid ADMIRE PRO 4.6	1.3–1.7 oz.	0.047–0.061	14	
thiamethoxam CENTRIC 40WG	2 oz.	0.05	14	
sulfoxaflo TRANSFORM WG 50%	0.75–1 oz.	0.024–0.031	14	
<b>COTTON JASSID</b>				
dicrotophos BIDRIN 8	6–8 oz.	0.375–0.5	30	The use of Bidrin is prohibited between pinhead square and first bloom. Do not apply more than 16 oz of Bidrin 8 (1.0 lb ai/A) during bloom.
flonicamid CARBINE 50 WG	1.7–2.8 oz.	0.053-0.088	30	Do not apply more than 2.8 oz per application. Do not apply more than more than a total of 8.4 oz/A of Carbine per year. Do not apply more than 3 applications/A of Carbine per year.
flupyradifurone SIVANTO PRIME	10.5–14 oz.	0.137-0.183	14	Do not apply more than 28 oz/A of Sivanto Prime (0.365 lb flupyradifurone) per year.
dinotefuran VENOM	1–3 oz.	0.044-0.14	14	Do not apply more than 6 oz/A of Venom (0.263 lb ai) per year.
afidopyroen SEFINA	10–14 oz.	0.033-0.046	7	Do not apply more than 28 oz of Sefina (0.09 lb ai) per acre per year.
thiamethoxam CENTRIC	2.0–2.5 oz.	0.05-0.625	21	Do not exceed 2.5 oz/A per application.
thiamethoxam + lambda-cyhalothrin ENDIGO ZCX	4.0–4.5 oz.	0.072-0.095	21	Do not exceed 4.5 oz/A per application.
isocycloseram Vertento	1.6–2.0 oz	0.0416–0.0520 lb ai	7	Refer to label for restrictions.
**At the time of publication, these materials had an authorized Section 2(ee) use recommendation for managing cotton jassid/two spot cotton leafhopper. For up-to-date recommendations, always consult the label and contact your local Extension agent.				

<b>Table 1. Cotton Insect Control (cont.)</b>					
Insecticide and Formulation	Amount of Formulation per Acre	Lb. Active Ingredient per Acre	Minimum Days from Last Application to Harvest	Comments	
<b>CUTWORMS</b>					
acephate ORTHENE 97	0.75 lb.	0.72	21	Apply when worms appear and stands are threatened; cover plants and surfaces of ground along rows with insecticide. Preplant or at-plant applications have been successful for high-risk fields.	
alpha-cypermethrin FASTAC EC	1.3–1.9 oz.	0.008–0.012	14		
beta-cyfluthrin BAYTHROID XL 1EC Other brand names (See label.)	0.8–1.6 oz.	0.0065–0.125	0		
cypermethrin AMMO 2.5EC Other brand names (See label.)	1.3–5 oz.	0.025–0.1	14		
deltamethrin DELTA GOLD 1.5 EC	1.1–1.6 oz.	0.013–0.019	21		
esfenvalerate ASANA SL 0.66EC	5.8 oz.	0.03	21		
gamma-cyhalothrin DECLARE 1.25EC	0.77–1.02 oz.	0.0075–0.01	21		
lambda cyhalothrin WARRIOR II Z 2.08CS Other brand names (See label.)	0.96–1.28 oz.	0.015–0.02	21		
zeta-cypermethrin MUSTANG MAX 0.8EC	1.3–2 oz.	0.008–0.012	14		
<b>FALL ARMYWORMS</b>					
chlorantraniliprole VANTACOR	1.2–2.5 oz.	0.73–0.97	21		Apply when ten or more larvae per 100 plants are found.
chlorantraniliprole ELEVEST	4.8–9.6 oz.	See label (for ai/A)	21		
chlorantraniliprole + lambda-cyhalothrin BESIEGE	6.5–125 oz.	0.063 –.124	21		
indoxacarb STEWARD 1.25EC	9.2–11.3 oz.	0.09–0.11	14		
novaluron DIAMOND 0.83EC	6–12 oz.	0.039–0.077	30		
spinosad BLACKHAWK	2.4–3.2 oz.	0.054–0.072	28		
<b>GRASSHOPPERS</b>					
dicrotophos BIDRIN 8EC	4–8 oz.	0.25–0.5	30	Lower rates may be used to control immature grasshoppers early in the spring (March, April). However, the highest suggested rates will be needed on the adult stage in May and June. Reinfestations may occur from field borders if the first application is made prior to planting. Under these conditions, a second application may be necessary if cotton is still younger than the sixth true leaf stage. Dimilin is an insect growth regulator and is only effective on nymphs.	
diflubenzuron DIMILIN 2L	2 oz.	0.03	14		
pyrethroids	See label.				

<b>Table 1. Cotton Insect Control (cont.)</b>				
Insecticide and Formulation	Amount of Formulation per Acre	Lb. Active Ingredient per Acre	Minimum Days from Last Application to Harvest	Comments
<b>PLANT BUGS, FLEAHOPPERS (cont.)</b>				
acephate ORTHENE 97 Other brand names (See label.)	0.45–0.75 lb.	0.43–0.73	21	Do not allow pinhead square retention to drop below 80 percent due to plant bug feeding. Prior to bloom, make an application when sweep net sampling detects 8 bugs per 100 sweeps. During the third week of squaring through bloom, treat when drop cloth samples detect 3 bugs per 5 row feet or sweep net samples collect 8 bugs per 100 sweeps. No threshold exists for percent dirty blooms, but if you find 10 to 15 percent dirty blooms, intensify scouting plant for bugs. During peak bloom and beyond, applications should be made when 15 percent of the bolls have damage and plant bugs are present. Diamond is an insect growth regulator and is only active on the immature stage of plant bugs. Use of Bidrin between pinhead square and first bloom is prohibited.
acetamiprid INTRUDER 70WP	1.1 oz.	0.05	28	
clothianidin BELAY	3–6 fl.oz.	0.05–0.1	21	
dicrotophos BIDRIN 8EC	3.2–5.3 oz.	0.2–0.33	30	
flonicamid CARBINE	2.8 oz.	0.088	30	
imidacloprid ADMIRE PRO 4.6 Other brand names (See label.)	1.37–1.7 oz.	0.049–0.061	14	
novaluron DIAMOND 0.83EC	6–9 oz.	0.39–0.58	30	
oxamyl VYDATE C-LV 3.77	11.2–17 oz.	0.33–0.5	14	
pyrethroids sulfoxaflor TRANSFORM WG 50%	See label. (See comments.) 1.5 oz.–2.25 oz.	See Table 3. 0.047–0.071	14	
thiamethoxam CENTRIC 40WG	2 oz.	0.05	21	
isocycloseram Vertento	1.6–2.0 oz.	0.0416–0.0520 lb ai	7	Refer to label for restrictions.
<b>SEEDLING THRIPS</b>				
<b>Foliar Treatment</b>				
acephate ORTHENE 97 Other brand names (See label.)	3 oz.	0.18	21	Make one or more applications to seedling cotton (one- to four-leaf stage) when damage is evident. Foliar applications are most effective when applied to cotton near the first true leaf stage.
dicrotophos BIDRIN 8EC	1.6–3.2 oz.	0.2	30	
dimethoate 4E Other brand names (See label.)	6.4 oz.	0.2	14	
spinetoram RADIANT SC	1.5–3 oz.	0.012–0.023	28	
methoxyfenozide +spinetoram Intrepid Edge	3–6 oz.	0.68–0.135	28	
isocycloseram Vertento	1.1 - 2.0 oz	0.0286–0.0520 lb ai	7	
<b>In-Furrow Treatment</b>				
acephate ORTHENE 97 Other brand names (See label.)	1 lb.	0.97	21	Both Orthene and Admire Pro in-furrow sprays may be applied with a liquid fungicide at planting directed on or below the seed. Admire Pro rate depends on row spacing.
imidacloprid ADMIRE PRO 4.6	7.4–9.2 oz.	0.266–0.33	21	
aldicarb AGLOGIC	3.5–5 lb.	0.33–0.53	90	
				Aldicarb is extremely toxic. Use caution when handling.

<b>Table 1. Cotton Insect Control (cont.)</b>				
Insecticide and Formulation	Amount of Formulation per Acre	Lb. Active Ingredient per Acre	Minimum Days from Last Application to Harvest	Comments
<b>Seed Treatment</b>				
imidacloprid GAUCHO 600 AERIS	See label.			These seed treatments are commercially applied.
<b>SOYBEAN LOOPERS</b>				
chlorantraniliprole VANTACOR	1.2–2.5 oz.	0.73–0.97	21	Treat when four to five loopers per row foot are present and the top bolls expected for harvest are not mature. Populations of soybean loopers are resistant to pyrethroid insecticides.
chlorantraniliprole+bifenthrin ELEVEST	4.8–9.6 oz.	See label (for ai/A)	21	
indoxacarb STEWARD 1.25EC	6.7–9.2 oz.	0.065–0.09	14	
methoxyfenozide INTREPID 2F	5–10 oz.	0.075–0.16	14	
spinosad BLACKHAWK	2.4–3.2 oz.	0.054–0.072	28	
methoxyfenozide + spinetoram INTREPID EDGE	5–8 oz.	0.113–0.187	28	
<b>SPIDER MITES</b>				
abamectin AGRI-MEK 0.15EC Other brand names (See label.)	8–16 oz.	0.009–0.018	20	<b>Foliar Treatment:</b> Control of spider mites on rapidly growing cotton is difficult. Treat fields when mites are widely distributed and mottling of leaves is common. Hot, dry weather favors spider mite population increase.
AGRI-MEK 0.7SC Other brand names (See label.)	1.7–3.5 oz.	0.009–0.018	20	
etoxazole ZEAL 2.88 SC	1.33–2 oz.	0.03–0.45	28	
ZEAL 72 WP	0.66–1 oz.	0.03–0.45	28	
fenpyroximate PORTAL 0.4	12–16 oz. (early season) 24–32 oz. (mid-season)	0.0375–0.05	14	
isocycloseram VERTENTO	1.1 - 2.0 oz	0.0286-0.0520 lb ai	7	
spiromesifen OBERON 2SC	8–16 oz.	0.125–0.25	30	
<b>BROWN STINK BUGS, LEAF FOOTED BUGS</b>				
acephate ORTHENE 97	0.75 lb.	0.72	21	The boll injury threshold should be adjusted up or down based on the number of susceptible bolls present. Use a 10 to 15 percent boll injury threshold during weeks 3 to 5 of bloom (numerous susceptible bolls present), 20 percent injury during weeks 2 and 6, and 30+ percent during weeks 7+ of bloom (fewer susceptible bolls present).
dicrotophos BIDRIN 8EC	6–8 oz.	0.375–0.5	10	
isocycloseram Vertento	1.6 - 2.0 oz	0.0416–0.0520 lb ai	7	

<b>Table 1. Cotton Insect Control</b>				
Insecticide and Formulation	Amount of Formulation per Acre	Lb. Active Ingredient per Acre	Minimum Days from Last Application to Harvest	Comments
<b>BROWN MARMORATED, GREEN AND SOUTHERN GREEN STINK BUGS</b>				
<b>Organophosphates</b>				
acephate ORTHENE 90S ORTHENE 97 dicorotophos BIDRIN 8EC	0.8 lb. 0.75 lb. 4–8 oz.	0.72 0.72 0.25–0.5	21 21 10	Use same thresholds as for brown stink bugs. Brown marmorated stink bugs can damage larger bolls than other stink bugs.
<b>Pyrethroids</b>				
beta-cyfluthrin BAYTHROID XL1 Other brand names (See label.) bifenthrin BRIGADE 2EC Other brand names (See label.) cypermethrin AMMO 2.5EC Other brand names (See label.) deltamethrin DELTA GOLD 1.5 EC esfenvalerate ASANA SL 0.66EC gamma-cyhalothrin DECLARE 1.25EC isocycloseram VERTENTO lambda-cyhalothrin WARRIOR II Z 2.08CS Other brand names (See label.)	2.13–2.6 oz. 4–6.4 oz. 3.1–5 oz. 1.6–2.6 oz. 7.5–9.6 oz. 1.28–2.05 oz. 1.6 - 2.0 oz 1.8–2.56 oz.	0.0166– 0.0205 0.06–0.1 0.06–0.1 0.019–0.030 0.04–0.05 0.0125–0.02 0.0416–0.0520 lb ai	0 14 14 21 21 21 7 14	Refer to label for restrictions.
zeta-cypermethrin MUSTANG MAX 0.8EC	2.6–3.6 oz.	0.0165–0.022	14	
<b>WESTERN FLOWER THRIPS</b>				
acephate ORTHENE 97 Other brand names (See label.) methoxyfenozide +spinetoram INTREPID EDGE spinetoram RADIANT	0.52–0.77 lb. 6 oz. 3 oz.	0.5–0.75 0.135 0.023	21 28 28	Economic thresholds are not well defined. To suppress, make two applications at 5- to 7-day intervals.  Use of an adjuvant with Radiant is recommended.
<b>WHITEFLIES (BANDEDWING)</b>				
acephate ORTHENE 97 Other brand names (See label.) acetamiprid INTRUDER 70WP imidacloprid ADMIRE PRO 4.6 thiamethoxam CENTRIC 40WG	0.52–1 lb. 1.7–2.3 oz. 0.9–1.7 oz. 2 oz.	0.5–1 0.075–0.1 0.032–0.061 0.05	21 28 14 21	For actively growing cotton, apply when 50 percent of plant terminals have adults clustering on them. It may be necessary to apply more than once to control infestation. For mature or stressed cotton or cotton not growing, apply when honeydew or sooty mold appears on leaves, usually in late season. Make two or three applications 5 days apart.

Table 1. Cotton Insect Control				
Insecticide and Formulation	Amount of Formulation per Acre	Lb. Active Ingredient per Acre	Minimum Days from Last Application to Harvest	Comments
<b>WHITEFLIES (SILVERLEAF)</b>				
acetamiprid INTRUDER 70WP	1.7–2.3 oz.	0.075–0.1	28	The insect growth regulator Knack is the most consistent treatment for management of silverleaf whiteflies. Knack has a long residual (several weeks) and is generally slow acting. When females feed on foliage treated with Knack, eggs will be sterile. Knack will control the immature stage as they pupate into adults; therefore, established nymphs will continue feeding for several days. <b>Threshold:</b> When 50% of sampled leaves (sample 5th expanded leaf below terminal) are infested with multiple immatures.
ASSAIL 30 SG	4.5-3 oz.	0.75-0.1	28	
STRAFER MAX 70 WP	1.7-2.3 oz	0.75-0.1	28	
buprofezin COURIER 40SC	9–12.5 oz.	0.25–0.35	14	
COURIER 3.6 SC	9–12.5 oz.	0.25–0.35	14	
dinotefuran VENOM 70WDG	1–3 oz.	0.045–0.134		
flupyradifurone SIVANTO PRIME 1.67	10.5-14 oz	0.137-0.183	14	
pyriproxfen KNACK 0.86EC	8–10 oz.	0.054–0.067	28	
spiromesifin OBERON 2	8-16 oz.	0.125-0.25	30	

Table 2. Transgenic Technology Ratings\*

TRANSGENIC TECHNOLOGY	INSECTS							
	Beet Armyworm	Cotton Bollworm	Cutworm	European Corn Borer	Fall Armyworm	Loopers	Southern Armyworm	Tobacco Budworm
Bollgard**	3	2	5	1	4	5	5	1
Bollgard II	1	2	3	1	2	1–2	1	1
Bollgard III	1	1	?	1	1	1	1	1
TwinLink	1	2	3	1	1	1	1	1
TwinLink Plus	1	1	?	1	1	1	1	1
WideStrike	1	2	3	1	1–2	1	1	1
WideStrike3	1	1–2	?	1	1	1	1	1

\* Ratings range from 1-5. 1 = Very Effective; 5 = Not Effective.

\*\* Bollgard technology is no longer registered; it is listed as a reference only.

Some variation in the expression of Bt proteins can be caused by environmental conditions, time of season, and cultivar.

**Table 3. Insecticide Effectiveness Ratings\***

INSECTICIDES	INSECTS							
	Aphids	Beet Armyworms	Beneficial Insects**	Honey Bees***	Boll Weevils	Bollworms	Budworms	Fall Armyworms
Admire Pro	1-2	5	3	1	5	5	5	5
Altacor	5	1	4	1	5	1	1	2
Ammo	4	5	1	1	1-2	1	3	3
Asana XL	4	5	1	1	2	1	3	3
Baythroid XL	4	5	1	1	1-2	1	3	3
Belay	—	5	—	1	—	5	5	5
Bidrin	3	5	1	1	3	5	5	5
Blackhawk	5	1	5	2	5	1-2	1	1-2
Brigade	3	5	1	1	1	1	3	2
Carbine	1-2	5	3	3	5	5	5	5
Centric	1-2	5	2	1	5	5	5	5
Declare	4	5	1	1	1-2	1	3	2
Delta Gold	4	5	1	1	2	1	3	2
Diamond	5	2-3	3	3	4	4	4	2
Dimilin	5	3	5	3	4	5	5	3
Intrepid	5	1	5	3	5	3	3	2
Intruder	1	5	3	2	5	5	5	5
Karate	4	5	1	1	1-2	1	3	2
Knack	2	5	3	3	5	5	5	5
Lannate	4	3-4	3	1	5	2	2	2
Lorsban	4	2	2-3	1	3	3	4	2
Malathion	5	5	1	1	1	5	5	5
Mustang Max	4	5	1	1	1-2	1	3	2
Orthene	5	4-5	1	1	5	3	3-4	4
Radiant	5	5	5	2	5	—	—	—
Steward	5	1	4	1	5	2	1	2
Transform	1	5	5	1	5	5	5	5
Vantacor	5	1	5	3	5	1	1	1
Venom	—	5	—	1	5	5	5	5
Vydate	5	5	2	1	3	5	5	5

\*Ratings range from 1 - 5: 1 = Very Effective; 5 = Not Effective.

\*\*A rating of 1 on beneficial insects means the chemical is very hard on beneficials; a rating of 5 indicates selectivity toward beneficials.

\*\*\***Toxicity Group 1** = Highly toxic to bees. Product contains any active ingredient with an acute LD<sub>50</sub> of 2 micrograms/bee or less.

**Toxicity Group 2** = Toxic to bees. Product contains any active ingredient with an acute LD<sub>50</sub> of greater than 2 micrograms/bee but less than 11 micrograms/bee.

**Toxicity Group 3** = All products not in toxicity groups 1 and 2. (No bee precautionary statement on label.)

Honey bee toxicity ratings adapted from "How to Reduce Bee Poisonings from Pesticides." A Pacific Northwestern Extension Publication, PNW 591. Oregon State University, University of Idaho, and Washington State University.

**Table 3. Insecticide Effectiveness Ratings\* (cont.)**

INSECTICIDES	INSECTS						
	Plant Bugs**	Seedling Thrips	Soybean Loopers	Spider Mites	Stink Bugs (Brown)	Stink Bugs (Green)	Whiteflies
Abamectin	5	5	5	1	5	5	5
Admire Pro	2-3	2	5	5	4	4	2
Ammo	2-5	3	3	5	4	2	4
Asana XL	2-5	3	4	5	4	2	4
Baythroid XL	2-5	3	4	5	4	2	4
Belay	2	—	4	—	3	3	—
Bidrin	1	1	5	4	1	1	4
Blackhawk	5	5	1	5	5	5	5
Brigade	2-5	3	4	3	3	2	4
Carbine	2-3	2-3	5	5	—	—	—
Centric	2	1	5	5	2-3	2-3	2
Courier	5	5	5	5	5	5	1
Declare	2-5	3	3	5	4	2	4
Delta Gold	2-5	3	3	5	4	2	4
Diamond	2	5	2	5	2-3	2-3	5
Dimilin	5	5	4	5	5	5	5
Intrepid	5	5	1	5	5	5	5
Intruder	2-3	1-2	5	—	3	3	1-2
Karate 2.08 Z	2-5	5	4	5	4	2	4
Knack	4	3-4	5	3	4	4	1
Lannate	3	5	3	5	4	4	5
Lorsban	2	2	4	3	3	3	4
Malathion	1	4	5	5	1	1	5
Mustang Max	2-5	3	3	5	4	2	4
Orthene	1	1-2	3	5	2	2	2
Vantacor	5	—	1	—	5	5	—
Venom	—	—	5	—	5	5	1
Vydate	3	3	5	5	2	2-3	4
Warrior II Z	2-5	5	4	5	4	2	4

\*Ratings range from 1-5: 1 = Very Effective; 5 = Not Effective.

\*\*Pyrethroids have not been effective in controlling plant bugs in most of north Alabama.

**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.



## 2026 IPM-0415

Revised by **Scott H. Graham**, *Extension Entomologist*, Assistant Professor, Entomology and Plant Pathology, Auburn University. Originally prepared by **Ronald H. Smith**, Professor Emeritus; **Scott H. Graham**, *Extension Entomologist*, Assistant Professor; and **Alana Jacobson**, Research Entomologist, Associate Professor, all in Entomology and Plant Pathology, Auburn University.

For more information, contact your county Extension office. Visit [www.aces.edu/counties](http://www.aces.edu/counties) or look in your telephone directory under your county's name to find contact information.

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.

---

In accordance with Federal law and U.S. Department of Agriculture (USDA) civil rights regulations and policies, this institution is prohibited from discriminating because of race, color, national origin, sex (including gender identity and sexual orientation), age, disability, and reprisal or retaliation for prior civil rights activity. Program information may be made available in languages other than English. Persons with disabilities who require alternative means of communication for program information (e.g., Braille, large print, audiotape, and American Sign Language) should contact the Alabama Cooperative Extension System Human Resources Department at (334) 844-5531 or the State of Alabama Governor's Office on Disability (GOOD) at (888) 879-3582 or USDA's TARGET Center at (202) 720-2600 (voice and TTY) or contact USDA through the Federal Relay Service at (800) 877-8339. To file a program discrimination complaint, a complainant should complete a Form AD3027, USDA Program Discrimination Complaint Form, which can be obtained online at <https://www.usda.gov/oascr/how-to-file-a-program-discrimination-complaint>, from any USDA office, by calling (866) 632-9992, or by writing a letter addressed to USDA. The letter must contain the complainant's name, address, telephone number, and a written description of the alleged discriminatory action in sufficient detail to inform the Assistant Secretary for Civil Rights (ASCR) about the nature and date of an alleged civil rights violation. The completed AD-3027 form or letter must be submitted to USDA by mail: U.S. Department of Agriculture Office of the Assistant Secretary for Civil Rights, 1400 Independence Avenue, SW, Washington, D.C. 20250-9410; Fax: (833) 256-1665 or (202) 690-7442; or Email: [program.intake@usda.gov](mailto:program.intake@usda.gov).

This institution is an equal opportunity provider.

© 2026 by the Alabama Cooperative Extension System. All rights reserved.

[www.aces.edu](http://www.aces.edu)