



IPM-0428

Corn

Insect, Disease, Nematode, and Weed Control
Recommendations for 2023



INSECT PEST MANAGEMENT

There are more than twenty common insect pests of field corn. The potential for at least one of them to cause problems makes it worthwhile to scout cornfields for insect damage to determine if control tactics are needed.

Scout cornfields weekly from seedling emergence until the corn is knee-high. Thereafter, scout fields periodically until pretasselling, at tasselling, and during ear formation.

How to Scout Corn for Insect Pests

To scout corn, walk across the field in a zigzag or a “U” pattern. Look for any areas where there has been poor emergence, where the seedlings appear to be unhealthy (yellowed, stunted, or deformed plants), where there is evidence of insect chewing, or where plants appear to have been cut off at ground level. Look for patterns in the field. For example, perhaps poor emergence occurs in a regular pattern, such as in low spots where growing conditions are poor, at the end of each row, or in every eighth row. Maybe the damage occurs only on the edges of the field.

Insect damage tends to occur in patches. Use a shovel or trowel to dig in the affected area and at the margins of the patch. Look for the insects themselves or for damaged plants. When the corn is small, insects cause injury by eating seeds, pruning roots, and feeding on the growing point, causing plant death or deformation. As the plants grow, look for insects and insect damage in the leaf whorl, at the base of the leaf sheath, on the tassels, silks, and the developing ear, and in the stalk. “Identifying Caterpillars in Field, Forage, and Horticultural Crops,” ANR-1121, at <http://www.aces.edu/go/525> may be useful in identifying insect pests.

Insects to Look for

Corn insect pests can be divided into five categories related to the corn plant’s growth stage:

- Insects that feed on seedlings, reducing plant stand and health in the first few weeks;
- Insects that feed in the whorl;
- Insects that feed on tassels and silks, interfering with pollination;
- Insects that feed on ears and individual kernels; and
- Insects that tunnel in the stalk, causing lodging and ear loss.

Insects That Feed on Seedlings

Seedlings are the most easily damaged corn plant stage. Protecting them from insect feeding is important because the farmer must achieve an adequate plant population during this stage to realize full yield potential. When damage has been

caused by soil insects such as billbugs, wireworms, sugarcane beetles, or white grubs, there is little that can be done in the current year. For fields with a history of damage by these insects, plant seed treated with higher rates of insecticide seed treatment (Table 2) or apply a broad spectrum at-planting insecticide (Table 3). See *When to Use At-Planting Treatments* further in this discussion.

Billbugs are robust, reddish-brown or black weevils (beetles) with long, curved snouts. They are about 0.5 inch long and often covered with mud. They attack corn at the base of the stalk or just below the soil’s surface. Billbugs feeding on unfurled leaves result in rows of circular to elliptical holes across the leaf when it expands. Billbugs are more numerous in no-till systems. They usually cause economic damage in corn following corn (not rotated), corn in fields adjacent to the past year’s corn, or in fields seriously infested with nutsedges and crabgrass. Rotation is an effective management tool for billbugs because the insect has only one generation per year, moves by crawling, and has a limited host range. Rotation is particularly effective when large blocks are rotated, maximizing isolation. In no-till systems, subsoiling can help enhance the vigor of corn and increase tolerance for billbug infestations. Good fertilization and irrigation can increase the plant’s tolerance to billbugs.

Wireworms are yellow-brown, wire-like beetle larvae. Their bodies are hard and feel slick. Wireworms vary in size from 0.5 to 2 inches long. They live in the larval stage for several years, depending on the species, and grow up to become click beetles. Wireworms prune roots and burrow in the base of seedlings, causing stunting or death of plants. They also will feed on germinating seed. Wireworms are more common in certain conservation tillage situations.

Wireworms are likely to occur where corn has been double cropped after grain, pasture, or clover, or when it has been planted after weedy fallow. Wireworms can inhabit the soil to a depth of up to 5 feet, and they are very difficult to find. They may be even worse in corn planted early in cold soil.

White grubs are occasional pests of corn. Plant damage is caused by the grubs’ feeding on the roots of the plant. White grubs are the immature feeding stage (larva) of May beetles, Japanese beetles, masked chafers, and other scarab beetles. Most white grubs in Alabama complete their development within a year.

Green June beetle grubs may appear in fields where organic fertilizer, such as broiler litter, is used. See ANR-0991, “Biology and Control of Green June Beetle,” <http://www.aces.edu/go/526>. In September, scout fields where broiler litter has been used and control grubworms in the fall to prevent damage to corn seedlings.

Sugarcane beetle adults are black and about 0.5 inch long; they gouge holes in stalks just below the ground's surface. Infestations are worse in reduced tillage systems following grass, fallow, or small grains. ***Corn planted into a field that has been in pasture for several years is at risk regardless of tillage practices.***

Sugarcane beetle adults are active at the time corn is planted. Certain seed treatments and at-planting insecticides may be useful in controlling this beetle. Foliar sprays are unlikely to provide control of the pest because it tends to feed and live just below the soil surface. Do not replant corn into an infested area while adult beetles are still present. In fields prone to sugarcane beetle, an at-planting application of a broad-spectrum insecticide is recommended in addition to the insecticide seed treatment. An in-furrow application is the most effective way to apply the supplemental insecticide.

Cutworms can actually cut small corn plants off at the base. Cutworm damage is largely confined to plants younger than the eight-leaf stage. Damage is most likely to occur when seedlings are growing slowly because of adverse environmental conditions. Cutworms can usually be monitored by the damage they do. "Window-pane" feeding is a sign of young cutworms. Larger worms cut plants off near the soil line. If cut plants are found, check the top 2 inches of soil extending 4 inches from both sides of the row where the plants have been cut. Cutworms normally spend the day just under the soil surface or under debris close to their feeding sites. There are several different kinds of cutworms. The mature larva is a plump, smooth, greasy-looking, dark gray, spotted or striped caterpillar. Consider control measures for cutworms if more than 10 percent of seedlings are cut and the worms are present.

Cutworms tend to be associated with no-till corn and/or with fields where there was a substantial cover of green weeds in the previous year or just prior to planting. Burn down cover crops and/or weeds four weeks before planting to reduce problems with cutworms. Otherwise, apply a broadcast spray at planting of an inexpensive pyrethroid that is labeled for use in corn to control cutworms in these situations.

Chinch bugs overwinter on the edges of fields in wild grasses like big bluestem and broom sedge. Weather conditions in the winter can cause many chinch bugs to die on the overwintering hosts. In spring, they move into transition hosts like wheat. Later, they may invade corn. Invasion can occur at any time, but corn is most susceptible when it is less than a foot tall.

Chinch bugs congregate at the base of plants and thrive in cracks and crevices that develop as the soil dries. Therefore, chinch bug injury is most common in Black Belt soils that are prone to cracking. They suck sap from roots, leaves, and stems of plants, causing stunting, deformation, wilting, and plant death. The plants may be purpled at the base. Chinch bug wounds may be invaded by soft rots, causing further damage. Plants with severely damaged roots may lodge.

The adult chinch bug is black with white wing covers. It is about 0.2 inch long. Immature chinch bugs are reddish brown with a white band running horizontally around their bodies. They can be hard to find because they hide in the leaf sheaths, under residue, or in cracks in the soil.

A plant damaged by chinch bugs is often brittle and will break off if it is moved from side to side. Vigorously growing corn can often outgrow potentially damaging insect situations.

However, stresses such as cold temperatures, too much or too little water, and herbicide injury will cause the corn to grow less vigorously.

Chinch bugs almost always occur in patches, starting near the edges of a field. They usually congregate on isolated plants and then move outward. Chinch bugs tend to be worse in fields with the most surface residue. Therefore, corn in fields with reduced tillage or with grassy weeds is prone to chinch bug damage.

If infestations are detected early enough, a corrective insecticide treatment may be applied. At-planting insecticides or seed treatments can protect young plants from chinch bugs, up to about 25 days after emergence (V1-V3). Otherwise, use a directed spray of a foliar insecticide. Treat for chinch bugs when three to five bugs per plant are found in 20 percent of the corn in a field and when the plants are under water stress or are growing slowly due to herbicide stress or cool temperatures. It is important to aim the insecticide at the base of the plant where the bugs congregate. If the chinch bugs are still migrating into a field, a second application of insecticide may be necessary.

Flea beetles are shiny black bugs that jump instantly when they are disturbed. Look for their characteristic feeding "scratch marks" on the leaves. Flea beetles seldom cause economic damage to cornfields in Alabama. Plants are more susceptible when temperatures are cold, causing seedling growth to slow down. However, the growing point stays below ground level until about the time that the fifth leaf emerges, so plants are usually able to recover from flea beetle injury. Consider treatment only when 75 percent of plants are infested or when more than five beetles per plant are found. Beetles are more numerous during cold springs following mild winters.

Thrips are tiny, fast-crawling, yellow or black insects found in the young plant. They cause "sandblasting" on the leaves. The leaf mottling caused by thrips looks silvery in severely damaged plants. Thrips seldom cause economic damage to corn. Consider treatment only if more than 80 percent of the leaf area is affected or if the plants are severely deformed.

Leafhoppers are small, wedge-shaped, green or brownish bugs that suck sap from buds and leaves of corn. Damage by this insect is seldom great enough to justify control. However, two leafhopper species are responsible for spreading corn stunt virus disease. This disease can cause severe stunting and a subsequent reduction in yield. Try to plant virus-resistant corn to minimize the impact of this virus. If corn that is susceptible to corn stunt virus is to be planted, an at-planting insecticide or seed treatment will help control the leafhopper vectors and, hence, the disease.

Southern corn rootworms make a circular feeding tunnel through the young seedling, causing severe damage if the growing point is eaten. Damage from this pest is most likely when a legume cover crop has been planted. If such a cover crop is planted, be sure to kill it with herbicides four weeks before planting. Southern corn rootworms overwinter as adults. Eggs are laid in the spring and the larvae attack seedling corn.

Stink bugs are major pests of young corn, particularly in South Alabama. At least three species—southern green stink bug, brown stink bug, and green stink bug—occur in Alabama. Brown marmorated stink bug, an invasive species, has recently been found in Alabama. In 2014–15, higher than normal stink bug damage was found on corn kernels from field edges in the Tennessee Valley. If this trend continues, farmers

in north Alabama may also need to consider controlling stink bugs. The brown stink bug is generally hardest to control with insecticides. Stink bugs overwinter as adults under plant residue, tree bark, or culverts in drainage areas. At least two generations occur each year. Parasites and predators, including fire ants, contribute to stink bug control. Certain conditions predispose a cornfield to stink bug problems, including excessive weeds in winter or spring prior to planting, double cropping, and conservation tillage. Corn planted near wheat fields may also be more likely to have problems with stink bugs. Stink bugs have a wide host range, including wheat, corn, cotton, and soybeans. Stink bugs will move from one field to another during the season. Plants on field borders may be more severely affected than those further into the field. Stink bug infestations are very clumped and are hard to scout.

Stink bugs have sucking mouthparts, which they insert into the plant in order to feed. On young corn plants, stink bugs feed at the base of the plant and injure the growing point. Extreme feeding leads to the death of plants.

If the growing point is badly damaged, the plant may develop multiple stems. Moderate feeding results in a buggy whip symptom, where one side of the plant grows faster than the other and the tips of the leaves are entangled in the whorl. If more than 10 percent of plants show a buggy whip symptom, or if there are more than one or two stink bugs per plant, an insecticide treatment may be justified. As the corn gets older, stink bugs can damage the developing ears. See the stink bug section later in this publication for information on control at later corn growth stages..

Insects That Feed in the Whorl

Fall armyworms, corn earworms, European corn borers, southwestern corn borers, cereal leaf beetle adults, and grasshoppers can feed on corn leaves, particularly in the whorl stage. Use Table 1 to determine if the potential amount of damage from these leaf-feeding insects justifies using a corrective treatment.

Fall armyworms, corn earworms, southwestern corn borers, and European corn borers cause damage in more than one category. They are general feeders that feed in the whorl and attack the ear as well. Also, corn borers can cause plant lodging by boring into the cornstalks. Each of these insects has alternate hosts and each one has several generations per year. It may be economically feasible to use an insecticide to control these pests if they are causing excessive damage in the whorl stage. See Bt corn section and Table 3 for a discussion of this method for controlling whorl-feeding caterpillars. See *Insects That Attack the Stalk* for further discussion of corn borers.

Grasshopper outbreaks are likely to occur during a drought and for 1 to 2 years following the drought. There are numerous grasshopper species that attack corn. They overwinter as eggs in the soil. Best control is achieved when grasshoppers are still young. It is very difficult to kill nearly mature grasshoppers of most species and almost impossible to kill lubber grasshoppers (large black grasshoppers with yellow markings). Infestation of grasshoppers is highest in no-tillage situations, along field margins.

Cereal leaf beetles are pests of wheat, oats, and other small grains. Adults emerge as the grain crop is drying in May and migrate to other areas, including cornfields, in search of food. Cereal leaf beetles make long, narrow feeding scars between

Table 1. Yield Loss Potential in Bushels per Acre

Stage of Growth	Percent Leaf Area Destroyed				
	20	40	60	80	100
7 leaf	0	1	4	6	9
9 leaf	0	2	6	9	13
11 leaf	1	5	9	14	22
13 leaf	1	6	13	22	34
15 leaf	2	9	20	34	51
17 leaf	4	12	27	45	69
Tassel	7	21	42	68	100
Silks Brown	6	18	38	60	90
Blister	5	16	30	50	73
Milk	3	12	24	41	59
Soft Dough	2	8	17	29	41
Dent	0	4	10	17	23

Source: John van Duyn, North Carolina State University.

leaf veins. Leaf feeding by these beetles is usually cosmetic. They do not stay very long in cornfields. Therefore, damage is a single, short-term event that rapidly developing corn plants usually outgrow.

Insects That Feed on Tassels and Silks

Japanese beetles, corn earworm larvae, corn rootworm adults, and grasshoppers may all clip corn silks. When these insects feed on the silks and clip them off, the result can be incomplete pollination. Silk clipping has to be severe to affect pollination. Therefore, it is very important to determine when silk clipping is occurring relative to the pollination process. Pollination occurs 3 to 8 days after full tasselling, and it takes 12 to 24 hours for a pollen grain to move down the silk. Poor pollination results in ears that are only partially filled, ears that are smaller than normal, and barren stalks. An insecticide treatment to protect the silks may be justified if (1) less than 75 percent of the ears have silks; AND (2) there are five or more rootworm beetles or two or more Japanese beetles on each ear, or there are corn earworm larvae on each ear; AND (3) silks are being clipped to within 0.5 inch of the ear tip.

Corn leaf aphids are small, blue-green, soft-bodied insects with dark blue “tail pipes.” They usually colonize the upper leaves and tassels of corn plants. Numerous white cast skins are usually seen on the plant and on the ground around the plant. Aphids excrete a sticky substance that may coat nearby plant parts. Microorganisms use this “honeydew” as a food source, resulting in a blackened condition called “sooty mold.” High populations on the tassels and silks can interfere with pollination. Treatment may be justified when there are 50 or more aphids on 50 percent or more of the plants when plants are tasselling.

Insects That Feed on Ears

Stink bugs feed on all plant parts but prefer the high liquid content in developing grain. Ears moderately damaged by stink bugs will typically crook away from the plant stem. Kernels are aborted at and near the feeding site.

Stink bug feeding on young ears, prior to pollination, often results in the destruction of those ears. Best results are obtained if corn is treated while the ear is forming (less than 1 inch long, just before tasseling around the V8-10 growth stage). At that time, two stink bugs per plant can reduce yields by 40 percent.

Therefore, at this stage, treat if 5 percent of plants have stink bugs. At kernel fill, treat if 10 percent of the plants have stink bugs. Continue to protect corn plants from stink bugs through the silking stage. After silking, losses due to stink bugs are usually not as significant. If brown marmorated stink bugs are present, damage will most likely be on the edge of the fields. A perimeter treatment one-boom-width wide may be all that is needed for infestations by this insect.

Corn earworm caterpillars feed on corn ears. Feeding is usually confined to the tip end of the ear. When corn earworms feed on kernels, they open the husks and provide an entry for disease and bird feeding. The female lays her eggs one at a time, usually on the developing silks. Small larvae feed on the silks and then enter the tip of the ear where they will feed on developing kernels. Corn earworm larvae will reach 1.5 inches in length in about 14 to 21 days. Because the larvae are cannibalistic, there will usually be only one earworm larva per ear.

Ear feeding is common in most cornfields, with 60 to 100 percent of the ears having a single caterpillar in years of high populations. Also, secondary ears may be infested. Yield loss in typical field corn, though, is usually not more than 3 percent. Since chemical control requires multiple applications, spraying to reduce ear infestation is seldom economically justified in field corn. Bt corn will reduce ear damage from corn earworms. See Table 3.

Fall armyworm larvae also feed on developing kernels. The caterpillar generally enters the ear from the sides as well as from the tip of the ear. When populations are heavy, it is not unusual to find several worms within a single ear. It is difficult to control the ear-attacking phase of the fall armyworm with insecticides. Certain types of Bt corn (see Table 3) will protect ears from this insect. Early-planted corn is less likely than late-planted corn to be damaged by fall armyworms.

Southwestern and European corn borer larvae (also see below) bore into kernels and cobs. If the corn borer damages the ear shank, the entire ear can fall to the ground. Early-planted, early-maturing corn is recommended in order to escape the heavier pest populations that occur as the weather becomes warmer. Chemical control is effective only when the timing of the application kills the larvae before they enter the ear. See Bt corn section for more information.

Insects That Attack the Stalk

Stalk borers, such as European corn borer and southwestern corn borer, are best managed using Bt corn that is active on stalk borers. They tunnel in the stalks, reducing plant vigor and causing stalks to lodge. Refuge requirements prevent the use of this corn on all the acreage. To control stalk borers in the refuge corn, see the list of insecticides that can control stalk borers before they enter the corn plant (Table 5).

European corn borer is only a problem in the northern tier counties in Alabama. Southwestern corn borer is found in the northern half of Alabama.

Overall losses from serious infestation of southwestern corn borers can be considerable (i.e., 25 to 50 percent) if yield potential of the crop is high. They are difficult to manage in non-Bt corn because there are few cultural control options. It is hard to scout for. Insecticide treatments are effective only against small caterpillars before they bore into the stalk. Bt corn for corn borer is the most effective way to manage this pest. See Table 3. In fields where Bt corn for corn borer is not planted, pheromone traps can be used to help time the

application of long residual foliar insecticides to prevent stalk borers from tunneling in the stalk.

Insects That Attack the Roots

Corn rootworms (several species). Southern corn rootworm is most likely to be a problem in fields that were weedy before spring planting. Adults are attracted to lay eggs in the weedy areas. Southern corn rootworm overwinters as adults, and the larvae attack corn early in the season, causing the young plants to die.

Western corn rootworms are now found in the northern and eastern parts of Alabama. They are pests of second-year or longer continuous corn. Western corn rootworm larvae can destroy most of a plant's root system, causing the plant to fall over. The plant may straighten as it recovers, giving it a goosenecked appearance. Western corn rootworm larvae hatch in May and continue to occur through late June. Injury will not appear until mid to late season, if western corn rootworm is the problem.

In summer western corn rootworms lay their eggs in the soil of cornfields. The eggs overwinter and hatch the following May. Because the eggs overwinter in the soil and the larvae feed on corn but not other major crops, this pest can be controlled by rotation with soybeans or some other crop.

Rootworms can be controlled with insecticides. The insecticides must be applied in or incorporated into the soil at planting or shortly thereafter as a cultivation treatment. High rates of seed treatments may also be effective. See Table 2.

Bt corn is available for control of western corn rootworms but not for southern corn rootworms. Several brands of rootworm active Bt corn are available. See Table 3. This is the preferred method for controlling western corn rootworm in continuous corn.

The adults of both species—southern corn rootworm and western corn rootworm—can feed on the silks and reduce pollination.

Effects of Weather on Corn Pest Incidence

Cool temperatures delay seed germination and early-season growth. This increases the risk of insect damage because the young corn plants are exposed to a longer feeding period by insects. Fall armyworms, chinch bugs, and lesser cornstalk borers are usually more abundant in dry years.

When to Use At-Planting Treatments

The advent of seed treatments containing clothianidin or thiamethoxam (Table 2) has changed the way we manage early-season insects. Most field corn is treated with one of these insecticides as a seed treatment. The higher the rate, the more types of insects are controlled. However, there is still a place for at-planting insecticides in fields that are at high risk from cutworms or soil insects such as sugarcane beetle. Table 4 lists choices for at-planting soil-applied insecticides.

Cutworms are a threat in conservation or no-till systems. A broadcast spray of an inexpensive pyrethroid labeled on corn is recommended to supplement insecticide seed treatment if weeds are not burned down 4 weeks prior to planting.

A field's history should help determine whether to use an at-planting insecticide or a high rate of insecticide seed treatment. Rotated, conventionally tilled corn has the least problems with early-season insects. Cornfields following pasture, non-rotated corn, and conservation tillage or no-till corn are at the greatest risk from early season soil insects.

Bt Corn for Corn Borers and Other Caterpillar Pests

Corn has been genetically engineered to produce Bt toxins that are effective against caterpillar insects such as European corn borer, Southwestern corn borer, and lesser cornstalk borer. Bt corn can also help protect corn against attack by corn earworm and fall armyworm. It is marketed under various names. See Table 3.

Some of the newer types of Bt corn are more effective against other caterpillars, such as fall armyworm and corn earworm. See Table 3 for more information and refuge requirements.

Bt corn cannot be planted on 100 percent of the corn acreage. A certain amount (20 to 50 percent) must be planted in non-Bt corn as a refuge. See Table 3 for more details.

Bt Corn for Rootworms

Corn has been genetically engineered to produce Bt toxins that are effective against the root-feeding larvae of certain beetles called corn rootworms, particularly the western corn rootworm. It is marketed under various trade names. See Table 3.

The genes in this genetically engineered corn are different from those conferring resistance to corn borers and other aboveground caterpillar pests. Sometimes the two types of genes are stacked in a hybrid—like in Herculex Xtra or Genuity VT Triple Pro—in order to give the plant resistance to rootworms and caterpillars such as corn borer.

Western corn rootworm is a pest of continuous corn in the northern half of Alabama. This is where planting a hybrid with a rootworm Bt gene will be most likely to pay off. Bt corn for rootworms is not effective against southern corn rootworm.

When to Plant or Replant Corn

When planting corn, follow the recommended planting dates for your area of the state. Planting date recommendations are available at the Alabama Cooperative Extension System office in your county.

Damage from early-season soil insect pests, cutworms, and armyworms may look drastic. However, if the cutting damage by these insects occurs above the growing point and there is no additional feeding by these insects, the plants should recover.

Recommended plant stands for Alabama are from 26,000 to 28,000 for dryland corn and 32,000 to 36,000 for irrigated corn.

Before replanting corn, consider the time the damage occurs. Oftentimes, insect damage occurs too late to replant. If 50 percent of a stand is lost during the first four weeks after the first recommended planting date in your area, immediate replanting should result in yields of 85 to 90 percent of the original estimates. However, if 50 percent or more of the stand is lost after the fourth week, replanting is not profitable. At this point, more is lost due to the late replanting date than because of the poor stand. However, a 50-percent stand reduction will

usually result in severe yield reduction and is not likely to return production costs. Also, weed problems in the thinned stand will likely be severe.

Considerations for Late-Planted Corn

Certain pest insects and pathogens reach high levels in late July and August and may severely infest late-maturing corn. Late-planted corn is vulnerable to attack by the lesser cornstalk borers, fall armyworms, and southwestern and European corn borers. Also, late-planted corn is attractive to adult rootworm beetles and may have excessive silk clipping.

Organic Insecticides That Can Be Applied to Field Corn

Organic producers may want to consider the following insecticides, most if not all of which are OMRI approved. Be sure to read the insecticide label to make sure it meets your needs. The following products contain azadirachtin: Azera, Azatrol, Neemix 4.5, and Ecozin Plus. The following products contain *Bacillus thuringiensis*: Biobit HP (subsp. *kurstaki* strain ABTS-351), Dipel DF (subsp. *kurstaki* strain ABTS-351), Javelin WG (subsp. *kurstaki* strain SA-11), Agree WG (subsp. *kurstaki* strain GC-91), and Xentari (subsp. *aizawai* strain ABTS-1857). Glacial Spray Fluid, Organic JMS Stylet-Oil, SuffOil-X, and Tritek contain mineral oil. Surround WP contains kaolin. Microthiol Disperss and Yellow Jacket Special Dusting Sulfur contain sulfur. Gemstar LC contains an insecticidal virus. Venerate XC Bioinsecticide contains *Burkholderia* spp. strain A396. Pest Out contains cottonseed, clove, and garlic oils. Ecotec contains rosemary and peppermint oils. Entrust and Entrust SC contain spinosad. Other formulations of spinosad can be found. Biolink Insect and Bird Repellent contain garlic. Mycotrol ES0 and BotaniGard ES contain *Beauveria bassiana* strain GHA. Grandevo contains *Chromobacterium subtsugae* strain PRAA4-1. Be sure to check the labels to see if they meet the requirements for your cropping system. PyGanic Crop Protection EC 1.4_{II} and PyGanic Crop Protection EC 5.0_{II} insecticides are OMRI approved and contain natural pyrethrins. Other insecticides contain pyrethrins, but also contain piperonyl butoxide and are not considered organic. Venerate XC contains *Burkholderia* spp. strain A396. Gemstar LC contains polyhedral inclusion bodies of the nuclear polyhedrosis virus of corn earworm. Other organic insecticides may be available.

Table 2. Corn Seed Treatments and Their Relative Efficacy for Control of Seedling Insect Pests in Field Corn, 2018

Insecticide	Relative Efficacy of the Seed Treatment ¹												
	Rate	Corn Billbug	White Grubs	Wire-worms	Seedcorn Maggot	Cutworm ²	Sugar-cane Beetle	Southern Green Stink bug	Brown Stink bug	Chinch Bug	Southern Corn Rootworm ²	Western Corn Rootworm	Lesser Cornstalk Borer
clothianidin													
PONCHO 250 or ACCELERON ³ or NIPSIT INSIDE	0.25 mg a.i./kernel	P,NL	F	G	G	P-F	F	F	NL	F-G	E	NL	G, NL
PONCHO 500 or ACCELERON with PONCHO VOTIVO 500 ⁴ or NIPSIT INSIDE	0.50 mg a.i./kernel	F	E	G	E	P-F	G	G	NL	G-E	E	P, NL	G, NL
PONCHO 1250 or ACCELERON with PONCHO VOTIVO 1250 or PPST+ PONCHO 1250/VOTIVO or NIPSIT INSIDE	1.25 mg a.i./kernel	G	E	E	E	F-G	G	G	G, NL	E	E	F-G	E, NL
thiamethoxam													
CRUISER MAXX CORN 250 ³	0.25 mg a.i./kernel	P, NL	F	G	G	P	P	P	NL	F	G, NL	NL	G, NL
CRUISER MAXX CORN 500 ³ or AVICTA COMPLETE CORN ⁴	0.5 mg a.i./kernel	NL	G	G	E	P	F	F	NL	F	E	NL	G, NL
CRUISER MAXX CORN 1250 ³ or AVICTA COMPLETE CORN ⁴	1.25 mg a.i./kernel	G	E	E	E	F	F	G	NL	G	E	P	E, NL
thiamethoxam + chlorantraniliprole (Rynaxypyr)													
PPST 250 PLUS LUMIVIA ⁶	0.25 mg a.i.+0.25 mg a.i./kernel	F-G	G	G ⁷	E	E ⁷	P	P	NL	F	G-E, NL	NL	G, NL
imidacloprid													
AXCESS, MACHO 600 ST, NITRO SHIELD, NITRO SHIELD IV, GAUCHO 600, DYNASHIELD	0.60 mg a.i./kernel ⁵	P, NL	F-G	F-G	E	P, NL	P, NL	P, NL	NL	F	G, NL	NL	P, NL
IMIDACLOPRID 5, SENATOR 600FS, SHARDA													
IMIDACLOPRID 5SC													
LATITUDE ⁵	3.5 oz./hundred-weight	NL	F, NL	G	G	NL	NL	NL	NL	F, NL	G, NL	NL	NL
CONCUR ³	1.5 oz./42 lb. seed	NL	F	G	G	NL	NL	NL	NL	F, NL	G, NL	NL	NL

¹E = highly effective, G = effective, F = inconsistent results, P = not effective, based on trials in the Southeastern U.S.; L = insect is not on the label for this product. In this case it is best to assume that the product is ineffective against that particular pest, unless there is specific knowledge to the contrary about product efficacy in the Southeast. ²In the Southeast, several species of cutworms overwinter as medium to large-sized larvae. They may be capable of cutting considerable numbers of seedlings before they eat a lethal dose of the insecticide. Black cutworm, the cutworm that appears on the label of most of these products, has a different life cycle in which eggs are laid in the spring, so that black cutworm larvae will be small if they have hatched out by the time the corn is planted. Southern corn rootworm larvae are a seedling pest, not a mid-season pest, like western corn rootworm larvae. ³Product name as marketed includes fungicides and a nematocide. AVICTA COMPLETE CORN contains abamectin; ACCELERON WITH PONCHO VOTIVO contains *Bacillus firmus* I-1582, PPST+PONCHO 1250/VOTIVO contains *B. firmus* I-1589 and a biological growth promoter, Biostacked. ⁴Other rates for this active ingredient are available. See label. ⁵Product name as marketed includes fungicides and a biological growth promoter, Biostacked. ⁶Efficacy determined by commercial seed company data.

Table 3. Bt Corn Products for the Southeastern U.S., 2018

Product Trade Name (Abbreviation)	Bt protein(s)	Corn Earworm (ear)	Fall Armyworm (whorl)	Corn Borers ² (stalk)	Black Cutworm (seedling)	LCB ³ (seedling)	CRW ⁴ (roots)	Herbicide Tolerance ⁵	Refuge requirement in the South ⁶	Event(s)
-----Aboveground-----										
-----In soil-----										
Agrisure Products										
Agrisure 3000 GT, Agrisure Artesian 3011A	Cry1Ab mCry3A	P	F	E	P	G	F	GT LL	50%	Bt11, MIR604, GA21
Agrisure Viptera 3110	Vip3Aa20 Cry1Ab	E	E	E	G	G	—	GT LL	20%	MIR162, Bt11, GA21
Agrisure Viptera 3111	Vip3Aa20 Cry1Ab mCry3A	E	E	E	G	G	F-G	GT LL	20%	MIR162, Bt11, MIR604, GA21
Agrisure Viptera 3220	Vip3Aa20 Cry1Ab Cry1F	E	E	E	VG	VG	—	GT LL	20%	MIR162, Bt11, TC 1507, GA21
Herculex and Optimum Products										
Herculex I (HXI) or (HR)	Cry1F	P	G	E	G	G	—	LL	50%	TC 1507
Optimum Intrasect (YHR)	Cry1F Cry1Ab	P-F	VG ⁷	E	G	VG	—	LL RR2	20%	TC 1507, MON810
Optimum Leptra (VYHR)	Cry1F Cry1Ab Vip3A.20	E	E	E	VG	VG	—	LL RR2	20%	MIR162, MON810, TC1507
Optimum TRIsect	Cry1Ab Cry1F mCry3A	P	VG	E	VG	E	—	LL RR2	50%	
YieldGard Products										
YieldGard Corn Borer (YGCB)	Cry1Ab	P-F	F-G	E	P	G	—	—	50%	MON810
YieldGard VT Triple (VT3)	Cry1Ab Cry3Bb1	P	F-G	E	P	G	VG	RR2	50%	MON810, MON88017
Genuity/SmartStax /Powercore Products										
Genuity VT Double PRO (GENVT2P), Genuity Drought Gard VT Double PRO (GENDGVT2P)	Cry1A.105 Cry2Ab2	P-F	E	E	P	VG	—	RR2	20%	MON89034, NK603
Genuity VT Triple PRO (GENVT3P)	Cry1A.105 Cry2Ab2 Cry3Bb1	F-G	E	E	P	VG	VG	RR2	20%	MON89034, MON88017
Powercore	Cry1A.105 Cry2Ab2 Cry1F	F-G	E	E	G	VG	—	LL RR2	20%	MON89034, TC 1507, NK603
SmartStax (SSX, Dow) or Genuity SmartStax (GENSS, Monsanto)	Cry1A.105 Cry2Ab2 Cry1F Cry3Bb1 Cry34Ab1/Cry35Ab1	F	E	E	G	VG	E	LL RR2	20%	MON89034, TC 1507, MON88017, DAS-59122-7
Trecepta	Cry2Ab2 Cry1A.105 Vip3A.20	E	E	E	VG	VG	—	RR2	20%	MON89034 MIR162 NK603

¹ E = excellent, VG = very good, G = good, F = fair, P = poor. Excellent usually means better than 95 percent control. Poor means less than about 30% control

² Southwestern corn borer, European corn borer, and sugarcane borer, and others.

³ Lepidopteran Bt traits do not specifically list lesser cornstalk borer (LCB) as a target pest.

⁴ Bt rootworm traits target western corn rootworm larvae (CRW), which occurs in areas such as north Alabama and north Georgia. These traits are not effective against southern corn rootworm.

⁵ GT = Glyphosate tolerant; LL = Liberty Link (glufosinate tolerant); RR2 = Roundup Ready 2 (glyphosate tolerant)

⁶ See product Insect Resistance Management (IRM) documentation from the seed companies for more details.

⁷ Resistance to Cry1F has been reported in some areas of the Southeast.

Adapted from D. Buntin and K. Flanders, 2014, Bt Corn Products for the Southeastern United States. Based on input from entomologists attending the annual Southern Field Crops Management Seminar.

Table 4. Examples of Broad-Spectrum At-Planting Insecticides for Insect Pests of Corn Seeds and Seedlings

Insecticide (Trade Names)	Rates of Formulated Product	Pests Controlled Include
chlorpyrifos (LORSBAN 15G) ^{1,2}	8 oz./1000 row ft.	Seedcorn maggot, Southern corn rootworm, White grubs, Cutworm, Lesser cornstalk borer
terbufos (COUNTER LOCK'N'LOAD 20G) ^{1,2}	4.5–6 oz./1000 row ft.	Seedcorn maggot, Southern corn rootworm, Wireworms, White grubs *Interactions with ALS herbicides may cause severe injury. Check herbicide label for restrictions.
telfluthrin (FORCE 3G)	3-4 oz./1,000 row ft.	Seedcorn maggots, Southern corn rootworm, Wireworms, White grubs, Cutworms
bifenthrin (CAPTURE LFR) ^{1,2,3} (BRIGADE) ¹	0.2–0.78 oz./1000 row ft. 0.15–0.3 fl.oz./1000 row ft.	Seedcorn maggots, Southern corn rootworm, Wireworms, White grubs, Cutworm, Lesser cornstalk borer, Sugarcane beetle (in furrow at planting)
bifenthrin + chlorethoxyfos (SMART CHOICE 5G LOCK'N'LOAD) ^{1,2}	3–3.5 oz./1000 row ft.	Seedcorn maggots, Southern corn rootworm, Wireworms, White grubs, Cutworms
bifenthrin + chlorethoxyfos (SMART CHOICE 5G LOCK'N'LOAD) ^{1,2}	4.5–5.0 oz./1000 row ft.	Corn rootworms (Northern, Southern, Western), cutworms, wireworms, white grubs, seedcorn maggots, grape colaspis, symphylans
bifenthrin + chlorethoxyfos (Smart Choice HC) ²	1.5–1.67 oz./1000 row ft.	Sugarcane beetle, corn rootworms (Northern, Southern, Western), cutworms, wireworms, white grubs, seedcorn maggots, grape colaspis, symphylans
phorate (THIMET 20-G SMARTBOX or LOCKBOX or EZLOAD) ²	4.5–6.0 oz. 1000 row ft.	Corn rootworms, wireworms, white grubs, seedcorn maggots, seedcorn beetles, flea beetles, mites *Interactions with ALS herbicides may cause severe injury. Check herbicide label for restrictions.

This table was adapted from a table prepared by Scott Stewart, University of Tennessee.

See the insecticide label for specific use instructions, including whether product is to be applied in-furrow, as a T-band, or broadcast.

¹ Other trade names available see Table 7.

² Other insecticides are labeled for at-planting control of cutworms or other pests. These include the pyrethroids beta-cyfluthrin (Baythroid XL), bifenthrin + fungicide (Ethos XB, Temitry LFR, Manticor LFR), chlorethoxyfos (Fortress 5G, other trade names), cyfluthrin (Tombstone), esfenvalerate (Asana XL, other trade names), gamma-cyhalothrin (Declare, other trade names), lambda-cyhalothrin (WARRIOR II with Zeon Technology, other trade names), permethrin (Pounce, other trade names), alpha-cypermethrin (Fastac), and zeta-cypermethrin (Mustang Maxx, other trade names). The insecticide mix chlorpyrifos+gamma-cyhalothrin (Cobalt, other trade names) also can be applied at-planting as can the insecticide mix chlorpyrifos + bifenthrin (Tundra Supreme), the insecticide mix chlorpyrifos and zeta-cypermethrin (Stallion Brand), and the insecticide mix zeta-cypermethrin and bifenthrin (Hero, other trade names). Please see their labels for specific use instructions.

Table 5. Suggestions for Postemergence Corn Insect Control¹

Insecticide and Formulation	Acres per Gallon	Amount of Formulation per Acre	Lb. Active Ingredient Per Acre	Minimum Days from Last Application to Harvest or Grazing	Comments
ARMYWORMS, FALL AND TRUE					
alpha-cypermethrin FASTAC EC Other trade names ²	34–40	3.2–3.8 fl.oz.	0.02–0.025	30 (grain, stover) 60 (forage)	Fastac EC is a RESTRICTED USE pesticide.
beta-cyfluthrin BAYTHROID XL	46–80	1.6-2.8 fl.oz.	0.0113–0.022	21 (grain, fodder) 0 (green forage)	Baythroid XL is a RESTRICTED USE pesticide. Use highest rate for fall armyworms.
bifenthrin BRIGADE EC Other trade names ²	20–61	2.1–6.4 fl.oz.	0.03–0.1	30	Brigade is a RESTRICTED USE pesticide. Do not use Brigade on corn in coastal counties.

¹ See Table 6 for approximate relative efficacy of postemergence insecticides for control of corn insects. See Table 7 for a list of insecticides, formulations, restricted entry intervals, and days to grazing or harvest.

² See Table 7 for other trade names.

Table 5. Suggestions for Postemergence Corn Insect Control ¹ (cont.)

Insecticide and Formulation	Acres per Gallon	Amount of Formulation per Acre	Lb. Active Ingredient Per Acre	Minimum Days from Last Application to Harvest or Grazing	Comments
bifenthrin + zeta-cypermethrin HERO Other trade names ²	12–32	4.0–10.3 fl.oz.	0.04–0.1	30 (grain, fodder, grazing) 60 (harvest for forage)	Hero is a RESTRICTED USE pesticide.
ARMYWORMS, FALL AND TRUE (cont.)					
carbaryl SEVIN XLR PLUS Other trade names ²	2–4	1–2 qt.	1–2	14 (silage, green) 48 (fodder, grain)	
chlorantraniliprole PREVATHON Other trade names ²	6–9	14–20 fl.oz.	0.04–0.06	14 (ears) 1 (forage, fodder, silage, stover)	
chlorpyrifos LORSBAN ADVANCED LORSBAN 75WG Other trade names ²	4–8 —	1–2 pt. 0.67–1.33 lb.	0.47–0.93 0.5–1	21 21	Use on true armyworms only. See label for detailed instructions. Lorsban Advanced is a RESTRICTED USE pesticide. Lorsban 75WG is not.
chlorpyrifos + bifenthrin TUNDRA SUPREME	8–23	5.6–16.8 fl.oz.	0.1–0.32 + 0.03–0.1	30	Tundra Supreme is a RESTRICTED USE pesticide. Use of Tundra Supreme is prohibited on corn in coastal counties.
chlorpyrifos + gamma-cyhalothrin COBALT	5–10	13–26 fl.oz.	0.25–0.51 + 0.004–0.009	21 (grain, ears, forage, fodder) 1 (grazing)	Cobalt is a RESTRICTED USE pesticide.
chlorpyrifos + lambda-cyhalothrin COBALT ADVANCED	5–12	11–26 fl.oz.	0.21–0.51 + 0.011–0.026	21 (grain, ears, forage, fodder) 1 (grazing)	Cobalt Advanced is a RESTRICTED USE pesticide.
chlorpyrifos + zeta-cypermethrin STALLION BRAND	11–14	9.25–11.75 fl.oz.	0.2–0.25 + 0.02–0.025	30 (grain, stover) 60 (forage)	Stallion is a RESTRICTED USE pesticide.
cyfluthrin TOMBSTONE Other trade names ²	46–80	1.6–2.8 fl.oz.	0.025–0.044	21 (grain, fodder) 0 (grazing)	Tombstone is a RESTRICTED USE pesticide. Use high rate for fall armyworm.
deltamethrin DELTA GOLD 1.5 EC	67–85	1.5–1.9 fl.oz.	0.018–0.022	21 (harvest, fodder) 12 (grazing)	Delta Gold is a RESTRICTED USE pesticide.
esfenvalerate ASANA XL Other trade names ²	13–22	5.8–9.6 fl.oz.	0.03–0.05	21	Use on true armyworms. Asana is a RESTRICTED USE pesticide.
gamma-cyhalothrin DECLARE Other trade names ²	83–125	1.02–1.54 fl.oz.	0.01–0.015	21 (grain, fodder, silage) 1 (grazing)	Declare is a RESTRICTED USE pesticide.
lambda-cyhalothrin WARRIOR II with Zeon Technology Other trade names ²	67–100	1.28–1.92 fl.oz.	0.02–0.03	21 (grain, fodder, silage) 1 (grazing)	WARRIOR II is a RESTRICTED USE pesticide.
lambda-cyhalothrin + chlorantraniliprole BESIEGE	13–21	6–10 fl.oz.	0.02–0.03 + 0.04–0.06	21 (grain, fodder, silage) 1 (grazing)	Besiege is a RESTRICTED USE pesticide.
methomyl LANNATE LV Other trade names ²	5–11	0.75–1.5 pt.	0.22–0.45	21 (grain, fodder) 3 (grazing, silage)	Lannate is a RESTRICTED USE pesticide.

² See Table 7 for other trade names.

Table 5. Suggestions for Postemergence Corn Insect Control ¹ (cont.)

Insecticide and Formulation	Acres per Gallon	Amount of Formulation per Acre	Lb. Active Ingredient Per Acre	Minimum Days from Last Application to Harvest or Grazing	Comments
methoxyfenozide INTREPID 2F	8–32	4–16 fl.oz.	0.06–0.25	21	
methoxyfenozide + spinetoram INTREPID EDGE	11–32	4–12 fl.oz.	0.09–0.23	28	
ARMYWORMS, FALL AND TRUE (cont.)					
permethrin POUNCE 25 WP Other trade names ²	—	6.4–9.6 fl.oz.	0.1–0.15	30 (grain, fodder) 0 (forage)	Pounce is a RESTRICTED USE pesticide.
spinetoram RADIANT SC	21–43	3–6 fl.oz.	0.023–0.046	28 (grain) 3 (forage, fodder)	Use higher rate for heavier infestations or larger larvae.
spinosad BLACKHAWK Other trade names ²	39–77/lb.	1.67–3.3 fl.oz.	0.037–0.074	28 (grain) 3 (forage, fodder)	Use higher rates for heavier infestations. Time applications to peak egg hatch.
spinosad + gamma-cyhalothrin CONSERO	42–64	1–1.5 fl.oz. of each product	0.03–0.046 + 0.01–0.015	28 (grain, fodder, silage) 1 (grazing)	Consero is a RESTRICTED USE pesticide. It is a co-pack of two insecticides that must be applied together.
zeta-cypermethrin MUSTANG MAXX EC INSECTICIDE ² Other trade names ²	32–40	3.2–4 fl.oz.	0.02–0.025	7	Control may be variable. Mustang Maxx is a RESTRICTED USE pesticide.
BILLBUGS					
<i>General Comments: Billbug damage often shows up after the insects are through feeding. See Table 2 for suggested seed treatments and Table 4 for at-planting insecticides for control of billbugs.</i>					
chlorpyrifos LORSBAN ADVANCED LORSBAN 75 WG Other trade names ²	4 —	2 pt. 1.33 lb.	0.93 1	21 21	See label for detailed instructions. Lorsban Advanced is a RESTRICTED USE pesticide. Lorsban 75WG is not.
chlorpyrifos + bifenthrin TUNDRA SUPREME	8–23	5.6–16.8 fl.oz.	0.1–0.32 + 0.03–0.1	30	Tundra Supreme is a RESTRICTED USE pesticide.
chlorpyrifos + gamma-cyhalothrin COBALT	3	38–42 fl.oz.	0.74–0.82 + 0.013–0.015	21 (grain, ears, forage, fodder) 1 (grazing)	Cobalt is a RESTRICTED USE pesticide.
chlorpyrifos + lambda-cyhalothrin COBALT ADVANCED	3–4	32–42 fl.oz.	0.62–0.82 + 0.032–0.042	21 (grain, ears, forage, fodder) 1 (grazing)	Cobalt Advanced is a RESTRICTED USE pesticide.
terbufos COUNTER LOCKNLOAD 200	4.5	6 oz./1000	1.3 lb. a.i./A maximum	30 (grazing, forage)	Apply in a 7-inch band over the seedling corn plants and lightly incorporate into the soil when billbug
alpha-cypermethrin FASTAC EC Other trade names ²	34–40	3.2–3.8 fl.oz.	0.02–0.025	30 (grain, stover) 60 (forage)	Fastac EC is a RESTRICTED USE pesticide.
beta-cyfluthrin BAYTHROID XL	46–80	1.6–2.8 fl.oz.	0.013–0.022	21 (grain, fodder) 0 (green forage)	Baythroid XL is a RESTRICTED USE pesticide.
bifenthrin BRIGADE 2EC Other trade names ²	20–61	2.1–6.4 fl.oz.	0.03–0.1	30	Brigade is a RESTRICTED USE pesticide. Do not use Brigade on corn in coastal counties.

² See Table 7 for other trade names.

Table 5. Suggestions for Postemergence Corn Insect Control ¹ (cont.)

Insecticide and Formulation	Acres per Gallon	Amount of Formulation per Acre	Lb. Active Ingredient Per Acre	Minimum Days from Last Application to Harvest or Grazing	Comments
CHINCH BUGS (cont.)					
bifenthrin + zeta-cypermethrin HERO Other trade names ²	12–32	4.0–10.3 fl.oz.	0.04–0.1	30 (grain, fodder, grazing) 60 (harvest for forage)	Hero is a RESTRICTED USE pesticide.
carbaryl SEVIN XLR PLUS Other trade names ²	2–4	1–2 qt.	1–2	14 (silage, green) 48 (grain, fodder)	
chlorpyrifos LORSBAN ADVANCED LORSBAN 75 WG Other trade names ²	4–8 —	1–2 pt. 0.67–1.33 pt.	0.47–0.93 0.5–1	21 21	See label for detailed instructions. Lorsban Advanced is a RESTRICTED USE pesticide. Lorsban 75WG is not.
chlorpyrifos + bifenthrin TUNDRA SUPREME	8–23	5.6–16.8 fl.oz.	0.1–0.32 + 0.03–0.1	30	Tundra Supreme is a RESTRICTED USE pesticide. Use of Tundra Supreme on corn is prohibited in coastal counties.
chlorpyrifos + gamma-cyhalothrin COBALT	3–7	19–38 fl.oz.	0.37–0.74 + 0.007–0.013	21 (grain, ears, forage, fodder) 1 (grazing)	Cobalt is a RESTRICTED USE pesticide.
chlorpyrifos + lambda-cyhalothrin COBALT ADVANCED	3–8	16–38 fl.oz.	0.31–0.74 + 0.016–0.038	21 (grain, ears, forage, fodder) 1 (grazing)	Cobalt Advanced is a RESTRICTED USE pesticide.
chlorpyrifos + zeta-cypermethrin STALLION BRAND	11–14	9.25–11.75 fl.oz.	0.2–0.25 + 0.02–0.025	30 (grain, stover) 60 (forage)	Stallion is a RESTRICTED USE pesticide
cyfluthrin TOMBSTONE Other trade names ²	46–80	1.6–2.8 fl.oz.	0.025–0.044	21 (grain, fodder) 0 (grazing)	Tombstone is a RESTRICTED USE pesticide.
deltamethrin DELTA GOLD 1.5 EC	67–85	1.5–1.9 fl.oz.	0.018–0.022	21 (grain, fodder) 12 (green)	Delta Gold is a RESTRICTED USE pesticide.
esfenvalerate ASANA XL Other trade names ²	13–22	5.8–9.6 fl.oz.	0.03–0.05	21 (harvest) —	Asana is a RESTRICTED USE pesticide.
gamma-cyhalothrin DECLARE Other trade names ²	83	1.54 fl.oz.	0.015	21 (grain, fodder, silage) 1 (grazing)	Declare is a RESTRICTED USE pesticide.
lambda-cyhalothrin WARRIOR II with Zeon Technology Other trade names ²	67	1.92 fl.oz.	0.03	21 (grain, fodder, silage) 1 (grazing)	WARRIOR II is a RESTRICTED USE pesticide.
lambda-cyhalothrin + chlorantraniliprole BESIEGE	13	10 fl.oz.	0.03 + 0.06	21 (grain, fodder, silage) 1 (grazing)	Besiege is a RESTRICTED USE pesticide.
spinosad + gamma-cyhalothrin CONSERO	42	1.5 fl.oz. of each product	0.046 + 0.015	28 (grain, fodder, silage) 1 (grazing)	Consero is a RESTRICTED USE pesticide. It is a co-pack of two insecticides that must be applied together.

² See Table 7 for other trade names.

Table 5. Suggestions for Postemergence Corn Insect Control ¹ (cont.)

Insecticide and Formulation	Acres per Gallon	Amount of Formulation per Acre	Lb. Active Ingredient Per Acre	Minimum Days from Last Application to Harvest or Grazing	Comments
CHINCH BUGS (cont.)					
zeta-cypermethrin MUSTANG MAXX EC INSECTICIDE ² Other trade names ²	32–40	3.2–4 fl.oz.	0.02–0.025	7	Mustang Maxx is a RESTRICTED USE pesticide.
CORN EARWORMS					
<i>General Comments: Using postemergent insecticides to prevent this insect from attacking ears is usually not practical. Insecticides listed here are for control of corn earworm in whorl-stage corn. Early planting may reduce damage from this pest. Corn earworm is also known as the bollworm. See Table 3 for suggested Bt corn for corn earworm control.</i>					
alpha-cypermethrin FASTAC EC Other trade names ²	34–71	1.8–3.8 fl.oz.	0.011–0.025	30 (grain, stover) 60 (forage)	Fastac EC is a RESTRICTED USE pesticide.
beta-cyfluthrin BAYTHROID XL	46–80	1.6–2.8 fl.oz.	0.013–0.022	21 (grain, fodder) 0 (green forage)	Baythroid XL is a RESTRICTED USE pesticide.
bifenthrin BRIGADE 2EC Other trade names ²	20–61	2.1–6.4 fl.oz.	0.03–0.1	30	Brigade is a RESTRICTED USE pesticide. Do not use Brigade in coastal counties.
bifenthrin + zeta-cypermethrin HERO Other trade names ²	12–32	4.0–10.3 fl.oz.	0.04–0.1	30 (grain, fodder, grazing) 60 (harvest for forage)	Hero is a RESTRICTED USE pesticide.
carbaryl SEVIN XLR PLUS Other trade names ²	2–4	1–2 qt.	1–2	14 (silage, green) 48 (grain, fodder)	Make applications directly onto the plant so that the spray will run onto the whorls.
chlorantraniliprole PREVATHON Other trade names ²	6–9	14–20 fl.oz.	0.047–0.067	14 (ears) 1 (forage, fodder, silage, stover)	
chlorpyrifos LORSBAN ADVANCED LORSBAN 75 WG Other trade names ²	4–5 —	1.5–2 pt. 1–1.33 pt.	0.7–0.93 0.75–1	21 21	See label for detailed instructions. Lorsban Advanced is a RESTRICTED USE pesticide. Lorsban 75WG is not.
chlorpyrifos + bifenthrin TUNDRA SUPREME	8–23	5.6–16.8 fl.oz.	0.1–0.32 + 0.03–0.1	30	Tundra Supreme is a RESTRICTED USE pesticide. Use of Tundra Supreme on corn is prohibited in coastal counties.
chlorpyrifos + gamma-cyhalothrin COBALT	3–7	19–38 fl.oz.	0.37–0.74 + 0.007–0.013	21 (grain, ears, forage, fodder) 1 (grazing)	Cobalt is a RESTRICTED USE pesticide.
chlorpyrifos + lambda-cyhalothrin COBALT ADVANCED	3–8	16–38 fl.oz.	0.31–0.74 + 0.016–0.038	21 (grain, forage, fodder) 1 (grazing)	Cobalt Advanced is a RESTRICTED USE pesticide.
chlorpyrifos + zeta-cypermethrin STALLION BRAND	11–14	9.25–11.75 fl.oz.	0.2–0.25 +0.02–0.025	30 (grain, stover) 60 (forage)	Stallion is a RESTRICTED USE pesticide.
cyfluthrin TOMBSTONE Other trade names ²	46–80	1.6–2.8 fl.oz.	0.025–0.044	21 (grain, fodder) 0 (grazing)	Tombstone is a RESTRICTED USE pesticide.
deltamethrin DELTA GOLD 1.5 EC	67–85	1.5–1.9 fl.oz.	0.018–0.022	21 (harvest, fodder) 12 (green)	Delta Gold is a RESTRICTED USE pesticide.

² See Table 7 for other trade names.

Table 5. Suggestions for Postemergence Corn Insect Control ¹ (cont.)

Insecticide and Formulation	Acres per Gallon	Amount of Formulation per Acre	Lb. Active Ingredient Per Acre	Minimum Days from Last Application to Harvest or Grazing	Comments
CORN EARWORMS (cont.)					
esfenvalerate ASANA XL Other trade names ²	13–22	5.8–9.6 fl.oz.	0.03–0.05	21 (harvest)	Use if excessively high numbers occur at silking. First application should be at or before silking. Subsequent applications should be made at 3- to 5-day intervals until silking is complete. Asana is a RESTRICTED USE pesticide.
gamma-cyhalothrin DECLARE Other trade names ²	100–250	0.77–1.28 fl.oz.	0.0075–0.0125	21 (grain, fodder, silage) 1 (grazing)	Declare is a RESTRICTED USE pesticide.
lambda-cyhalothrin WARRIOR II with Zeon Technology Other trade names ²	80–133	0.96–1.6 fl.oz.	0.015–0.025	21 (grain, fodder, silage) 1 (grazing)	For control of corn earworm before it has entered the ear. WARRIOR II is a RESTRICTED USE pesticide.
lambda-cyhalothrin + chlorantraniliprole BESIEGE	13–26	5–10 fl.oz.	0.016–0.03 + 0.03–0.06	21 (grain, fodder, silage) 1 (grazing)	Besiege is a RESTRICTED USE pesticide.
methomyl LANNATE LV Other trade names ²	5–11	0.75–1.5 pt.	0.22–0.45	21 (grain, fodder) 3 (grazing, silage)	Apply a minimum of 20 gallons water per acre for best results. Lannate is a RESTRICTED USE pesticide.
methoxyfenozide + spinetoram INTREPID EDGE	11–16	8–12 fl.oz.	0.18–0.23	28	
permethrin POUNCE 25 WP Other trade names ²	—	6.4–9.6 oz.	0.1–0.15	30 (grain, fodder) 0 (forage)	Pounce is a RESTRICTED USE pesticide.
spinetoram RADIANT SC	21–43	3–6 fl.oz.	0.023–0.046	28 (grain) 3 (forage, fodder)	Use higher rate for heavier infestations or larger larvae.
spinosad BLACKHAWK Other trade names ²	39–58	2.2–3.3 oz.	0.049–0.074	28 (grain) 3 (forage, fodder)	Use higher rates for heavier infestations. Time applications to peak egg hatch.
spinosad + gamma-cyhalothrin CONSERO	42–64	1–1.5 fl.oz. of each product	0.03–0.046 + 0.01–0.015	28 (grain, fodder, silage) 1 (grazing)	Consero is a RESTRICTED USE pesticide. It is a co-pack of two insecticides that must be applied together.
zeta-cypermethrin MUSTANG MAXX EC INSECTICIDE ² Other trade names ²	32–72	1.76–4 fl.oz.	0.011–0.025	7	Mustang Maxx is a RESTRICTED USE pesticide.
CUTWORMS					
<i>See Tables 2 and 4 for suggested seed treatments and broad-spectrum preplant and at-planting insecticides for control of cutworms; see Table 3 for transgenic corn that can control cutworms.</i>					
alpha-cypermethrin FASTAC EC Other trade names ²	46–98	1.3–2.8 fl.oz.	0.008–0.018	30 (grain, stover) 60 (forage)	Fastac EC is a RESTRICTED USE pesticide.
beta-cyfluthrin BAYTHROID XL	80–160	0.8–1.6 fl.oz.	0.007–0.013	21 (grain, fodder) 0 (green forage)	Baythroid XL is a RESTRICTED USE pesticide.
bifenthrin BRIGADE 2EC Other trade names ²	20–61	2.1–6.4 fl.oz.	0.033–0.10	30 (grain, stover, grazing) 60 (forage)	Brigade is a RESTRICTED USE pesticide. Do not use Brigade on corn in coastal counties.

² See Table 7 for other trade names.

Table 5. Suggestions for Postemergence Corn Insect Control ¹ (cont.)

Insecticide and Formulation	Acres per Gallon	Amount of Formulation per Acre	Lb. Active Ingredient Per Acre	Minimum Days from Last Application to Harvest or Grazing	Comments
CUTWORMS (cont.)					
bifenthrin + zeta-cypermethrin HERO Other trade names ²	21–49	2.6–6.1 fl. oz.	0.025–0.06 + 4.0–10.3 fl.oz.	30 (grain, stover, grazing) 60 (forage)	Hero is a RESTRICTED USE pesticide.
carbaryl SEVIN XLR PLUS Other trade names ²	2	2 qt.	2	48 (grain, fodder) 14 (green)	Most effective when applied in a 12-inch band over the row.
chlorpyrifos LORSBAN ADVANCED LORSBAN 75 WG Other trade names ²	4–8 —	1–2 pt. 0.67–1.33 lb.	0.47–0.93 0.5–1	21 21	See label for detailed instructions. Can be applied preplant, at plant, or preemergence. Lorsban Advanced is a RESTRICTED USE pesticide. Lorsban 75WG is not.
chlorpyrifos + bifenthrin TUNDRA SUPREME	8–23	5.6–16.8 fl.oz.	0.1–0.32 + 0.03–0.1	30	Tundra Supreme is a RESTRICTED USE pesticide. Use of Tundra Supreme is prohibited in coastal counties.
chlorpyrifos + gamma- cyhalothrin COBALT	5–10	13–26 fl.oz.	0.25–0.51 + 0.004–0.009	21 (grain, ears, forage, fodder) 1 (grazing)	Cobalt is a RESTRICTED USE pesticide. Can be applied preplant, at plant, or preemergence.
chlorpyrifos + lambda- cyhalothrin COBALT ADVANCED	5–12	11–26 fl.oz.	0.21–0.51 + 0.011–0.026	21 (grain, ears, forage, fodder) 1 (grazing)	Cobalt Advanced is a RESTRICTED USE pesticide.
chlorpyrifos + zeta- cypermethrin STALLION BRAND	11–34	3.75–11.75 fl.oz.	0.08–0.25 + 0.008–0.025	30 (grain, stover) 60 (forage)	Stallion is a RESTRICTED USE pesticide.
cyfluthrin TOMBSTONE Other trade names ²	80–160	0.8–1.6 fl.oz.	0.013–0.025	21 (grain, fodder) 0 (grazing)	Tombstone is a RESTRICTED USE pesticide.
deltamethrin DELTA GOLD 1.5 EC	85–128	1–1.5	0.012–0.018	21 (grain, fodder) 12 (green)	Delta Gold is a RESTRICTED USE pesticide. Can be applied pre- or postemergence.
esfenvalerate ASANA XL Other trade names ²	13–22	5.8–9.6 fl.oz.	0.03–0.05	21	Asana is a RESTRICTED USE pesticide. Can be applied at planting.
gamma-cyhalothrin DECLARE Other trade names ²	166–250	0.51–0.77 fl.oz.	0.005–0.0075	21 (grain, fodder, silage) 1 (grazing)	Declare is a RESTRICTED USE pesticide. Can be applied at planting.
lambda-cyhalothrin WARRIOR II with Zeon Technology Other trade names ²	80–133	0.96–1.6 fl.oz.	0.015–0.025	21 (grain, fodder, silage) 1 (grazing)	WARRIOR II is a RESTRICTED USE pesticide. Can be applied at planting.
lambda-cyhalothrin + chlorantraniliprole BESIEGE	13–26	5–10 fl.oz.	0.016–0.03 + 0.03–0.06	21 (grain, fodder, silage) 1 (grazing)	Besiege is a RESTRICTED USE pesticide.
methomyl LANNATE LV Other trade names ²	5	1.5 pt.	0.45	21 (grain, fodder) 3 (green)	Apply for variegated cutworms. Lannate is a RESTRICTED USE pesticide.

² See Table 7 for other trade names.

Table 5. Suggestions for Postemergence Corn Insect Control ¹ (cont.)

Insecticide and Formulation	Acres per Gallon	Amount of Formulation per Acre	Lb. Active Ingredient Per Acre	Minimum Days from Last Application to Harvest or Grazing	Comments
CUTWORMS (cont.)					
permethrin POUNCE 25 WP Other trade names ²	—	6.4–9.6 oz.	0.1–0.15	30 (grain, fodder) 0 (forage)	Pounce is a RESTRICTED USE pesticide. Can be applied at planting.
spinosad + gamma-cyhalothrin CONSERO	42–64	1–1.5 fl.oz. of each product	0.03–0.046 + 0.01–0.015	28 (grain, fodder, silage) 1 (grazing)	Consero is a RESTRICTED USE pesticide. It is a co-pack of two insecticides that must be applied together.
zeta-cypermethrin MUSTANG MAXX EC INSECTICIDE ² Other trade names ²	46–100	1.28–2.8 fl.oz.	0.008–0.0175	7	Mustang Maxx is a RESTRICTED USE pesticide. Can be applied at planting or prior to planting.
EUROPEAN CORN BORERS, SOUTHWESTERN CORN BORERS					
<i>See text at beginning for discussion of corn borers. See Table 3 for transgenic corn that can control corn borers. Insecticide applications must be made before the larvae bore into the plant.</i>					
alpha-cypermethrin FASTAC EC Other trade names ²	34–47	2.7–3.8 fl.oz.	0.017–0.025	30 (grain, stover) 60 (forage)	Fastac EC is a RESTRICTED USE pesticide.
beta-cyfluthrin BAYTHROID XL	46–80	1.6–2.8 fl.oz.	0.013–0.022	21 (grain, fodder) 0 (green forage)	Baythroid XL is a RESTRICTED USE pesticide.
bifenthrin BRIGADE 2EC Other trade names ²	20–61	2.1–6.4 fl.oz.	0.03–0.1	30	Brigade is a RESTRICTED USE pesticide. Do not use Brigade on corn in coastal counties.
bifenthrin + zeta-cypermethrin HERO Other trade names ²	12–32	4.0–10.3 fl.oz.	0.04–0.1	30 (grain, fodder, grazing) 60 (harvest for forage)	Hero is a RESTRICTED USE pesticide.
carbaryl SEVIN XLR PLUS Other trade names ²	2–3	1.5–2 qt.	1.5–2	14 (silage, green) 48 (grain, fodder)	Apply in the whorls in 20 gallons of water per acre for best control.
chlorantraniliprole PREVATHON Other trade names ²	6–9	14–20 fl.oz.	0.047–0.067	14 (grain, ears, forage, fodder) 1 (grazing)	
chlorpyrifos LORSBAN 75 WG	—	1–1.33 lb.	0.75–1	21	See label for detailed instructions.
LORSBAN 15G	—	5–6.5 lb.	—	21	See label for detailed instructions.
LORSBAN ADVANCED Other trade names ²	4–5	1.5–2 pt.	0.71–0.93	21	See label for detailed instructions. Lorsban Advanced is a RESTRICTED USE pesticide.
chlorpyrifos + bifenthrin TUNDRA SUPREME	8–23	5.6–16.8 fl.oz.	0.1–0.32 + 0.03–0.1	30	Tundra Supreme is a RESTRICTED USE pesticide. Use of Tundra Supreme on corn is prohibited in coastal counties.
chlorpyrifos + gamma-cyhalothrin COBALT	3–7	19–38 fl.oz.	0.37–0.74 + 0.007–0.013	21 (grain, ears, forage, fodder) 1 (grazing)	Cobalt is a RESTRICTED USE pesticide.

² See Table 7 for other trade names.

Table 5. Suggestions for Postemergence Corn Insect Control ¹ (cont.)

Insecticide and Formulation	Acres per Gallon	Amount of Formulation per Acre	Lb. Active Ingredient Per Acre	Minimum Days from Last Application to Harvest or Grazing	Comments
EUROPEAN CORN BORERS, SOUTHWESTERN CORN BORERS (cont.)					
chlorpyrifos + lambda-cyhalothrin COBALT ADVANCED	3–8	16–38 fl.oz.	0.31–0.74 + 0.016–0.038	21 (grain, ears, forage, fodder) 1 (grazing)	Cobalt Advanced is a RESTRICTED USE pesticide.
chlorpyrifos + zeta-cypermethrin STALLION BRAND	11–14	9.25–11.75 fl.oz.	0.2–0.25 + 0.02–0.025	30 (grain, stover) 60 (forage)	Stallion is a RESTRICTED USE pesticide.
cyfluthrin TOMBSTONE Other trade names ²	46–80	1.6–2.8 fl.oz.	0.025–0.044	21 (grain, fodder) 0 (grazing)	Tombstone is a RESTRICTED USE pesticide.
deltamethrin DELTA GOLD 1.5 EC	67–85	1.5–1.9 fl.oz.	0.018–0.022	21 (grain, fodder) 12 (green)	Delta Gold is a RESTRICTED USE pesticide.
esfenvalerate ASANA XL Other trade names ²	13–16	7.8–9.6 fl.oz.	0.04–0.05	21 (harvest)	Apply just before egg hatch (blackhead stage) or before larvae enter the whorls. Asana is a RESTRICTED USE pesticide.
gamma-cyhalothrin DECLARE Other trade names ²	100–250	0.77–1.28 fl.oz.	0.0075–0.0125	21 (grain, fodder, silage) 1 (grazing)	Declare is a RESTRICTED USE pesticide.
lambda-cyhalothrin WARRIOR II with Zeon Technology Other trade names ²	67–100	1.28–1.92 fl.oz.	0.02–0.03	21 (grain, fodder, silage) 1 (grazing)	Apply in whorl before borers have entered stalk or ear. WARRIOR II is a RESTRICTED USE pesticide.
lambda-cyhalothrin + chlorantraniliprole BESIEGE	13–21	6–10 fl.oz.	0.02–0.03 + 0.04–0.06	21 (grain, fodder, silage) 1 (grazing)	Besiege is a RESTRICTED USE pesticide.
methomyl LANNATE LV Other trade names ²	5–11	0.75–1.5 pt.	0.22–0.45	21 (grain, stover) 3 (grazing, silage)	Lannate LV is a RESTRICTED USE pesticide.
methoxyfenozide INTREPID 2F	8–32	4–16 fl.oz.	0.06–0.25	21	Apply at first sign of egg hatch or when infestation reaches threshold level.
methoxyfenozide + spinetoram INTREPID EDGE	11–32	4–12 fl.oz.	0.09–0.23	28	
permethrin POUNCE 25 WP Other trade names ²	—	6.4–9.6 oz.	0.1–0.15	30 (grain, fodder) 0 (forage)	Pounce is a RESTRICTED USE pesticide.
spinetoram RADIANT SC	21–43	3–6 fl.oz.	0.023–0.046	28 (grain) 3 (forage, fodder)	Use higher rate for heavier infestations or larger larvae.
spinosad BLACKHAWK Other trade names ²	39–77	1.67–3.3 fl.oz.	0.037–0.074	28 (harvest) 3 (forage, fodder)	Use higher rates for heavier infestations. Time applications to peak egg hatch. Apply as a broadcast or a directed spray to whorl stage corn; otherwise, apply as a broadcast spray. Use 2.2–3.3 fl.oz. for southwestern corn borer.
spinosad + gamma-cyhalothrin CONSERO	42–64	1–1.5 fl.oz. of each product	0.03–0.046 + 0.01–0.015	28 (grain, fodder, silage) 1 (grazing)	Consero is a RESTRICTED USE pesticide. It is a co-pack of two insecticides that must be applied together.

² See Table 7 for other trade names.

Table 5. Suggestions for Postemergence Corn Insect Control ¹ (cont.)

Insecticide and Formulation	Acres per Gallon	Amount of Formulation per Acre	Lb. Active Ingredient Per Acre	Minimum Days from Last Application to Harvest or Grazing	Comments
EUROPEAN CORN BORERS, SOUTHWESTERN CORN BORERS (cont.)					
zeta-cypermethrin MUSTANG MAXX EC INSECTICIDE ² Other trade names ²	32–47	2.72–4 fl.oz.	0.017–0.025	7	Mustang Maxx is a RESTRICTED USE pesticide.
GRASSHOPPERS					
alpha-cypermethrin FASTAC EC Other trade names ²	34–47	2.7–3.8 fl.oz.	0.017–0.025	30 (grain, stover) 60 (forage)	Fastac EC is a RESTRICTED USE pesticide.
beta-cyfluthrin BAYTHROID XL	46–61	2.1–2.8 fl.oz.	0.017–0.022	21 (grain, fodder) 0 (green forage)	Baythroid XL is a RESTRICTED USE pesticide.
bifenthrin BRIGADE 2EC Other trade names ²	20–61	2.1–6.4 fl.oz.	0.033–0.10	30	Brigade is a RESTRICTED USE pesticide. Do not use Brigade on corn in coastal counties.
bifenthrin + zeta-cypermethrin HERO Other trade names ²	21–49	2.6–6.1 fl.oz.	0.025–0.06	30 (grain, fodder, grazing) 60 (harvest for forage)	Hero is a RESTRICTED USE pesticide.
carbaryl SEVIN XLR PLUS Other trade names ²	3–8	0.5–1.5 qt.	0.5–1.5	14 (silage, green) 48 (grain, fodder)	Use lower rate of Sevin for young grasshoppers or sparse vegetation; use higher rate for larger grasshoppers or thicker vegetation.
chlorantraniliprole DUPONT PREVATHON	6–16	8–20 fl.oz.	0.027–0.067	14 (ears) 1 (forage, fodder, silage, stover)	
chlorpyrifos LORSBAN ADVANCED LORSBAN 75 WG Other trade names ²	8–16 —	0.5–1 pt. 0.33–0.67 lb.	0.23–0.47 0.25–0.5	21 21	See label for detailed instructions. Lorsban Advanced is a RESTRICTED USE pesticide. Lorsban 75WG is not.
chlorpyrifos + bifenthrin TUNDRA SUPREME	8–23	5.6–16.8 fl.oz.	0.1–0.32 + 0.03–0.1	30	Tundra Supreme is a RESTRICTED USE pesticide. Use of Tundra Supreme on corn is prohibited in coastal counties.
chlorpyrifos + gamma-cyhalothrin COBALT	10–18	7–13 fl.oz.	0.14–0.25 + 0.002–0.004	21 (grain, ears, forage, fodder) 1 (grazing)	Cobalt is a RESTRICTED USE pesticide.
chlorpyrifos + zeta-cypermethrin STALLION BRAND	11–14	9.25–11.75 fl.oz.	0.2–0.25 +0.02–0.025	30 (grain, stover) 60 (forage)	Stallion is a RESTRICTED USE pesticide.
chlorpyrifos + lambda-cyhalothrin COBALT ADVANCED	10–21	6–13 fl.oz.	0.12–0.25 + 0.006–0.013	21 (grain, ears, forage, fodder) 1 (grazing)	Cobalt Advanced is a RESTRICTED USE pesticide.
cyfluthrin TOMBSTONE Other trade names ²	46–61	2.1–2.8 fl.oz.	0.033–0.044	21 (grain, fodder) 0 (grazing)	Tombstone is a RESTRICTED USE pesticide.
deltamethrin DELTA GOLD 1.5 EC Other trade names ²	85–128	1.0–1.5 fl.oz.	0.012–0.018	21 (grain, fodder) 12 (green)	Delta Gold is a RESTRICTED USE pesticide.
dimethoate DIMETHOATE 4E Other trade names ²	8	16 fl. oz.	0.5 lb.	28 (grain) 14 (forage)	

² See Table 7 for other trade names.

Table 5. Suggestions for Postemergence Corn Insect Control ¹ (cont.)

Insecticide and Formulation	Acres per Gallon	Amount of Formulation per Acre	Lb. Active Ingredient Per Acre	Minimum Days from Last Application to Harvest or Grazing	Comments
GRASSHOPPERS (cont.)					
esfenvalerate ASANA XL Other trade names ²	13–22	5.8–9.6 fl.oz.	0.03–0.05	21	Asana is a RESTRICTED USE pesticide.
gamma-cyhalothrin DECLARE Other trade names ²	83–125	1.02–1.54 fl.oz.	0.01–0.015	21 (grain, fodder, silage) 1 (grazing)	Declare is a RESTRICTED USE pesticide.
lambda-cyhalothrin WARRIOR II with Zeon Technology Other trade names ²	67–100	1.28–1.92 fl.oz.	0.02–0.03	21 (grain, fodder, silage) 1 (grazing)	WARRIOR II is a RESTRICTED USE pesticide.
lambda-cyhalothrin + chlorantraniliprole BESIEGE	13–21	6–10 fl.oz.	0.02–0.03 + 0.04–0.06	21 (grain, fodder, silage) 1 (grazing)	Besiege is a RESTRICTED USE pesticide.
malathion CHEMINOVA MALATHION 57% Other trade names ²	8	1 pt.	0.62 lb.	7	
spinosad + gamma-cyhalothrin CONSERO	42	1.5 fl.oz. of each product	0.046 + 0.015	28 (grain, fodder, silage) 1 (grazing)	Consero is a RESTRICTED USE pesticide. It is a co-pack of two insecticides that must be applied together.
zeta-cypermethrin MUSTANG MAXX EC INSECTICIDE ² Other trade names ²	32–47	2.72–4 fl.oz.	0.017–0.025	7	Mustang Maxx is a RESTRICTED USE pesticide.
GREEN JUNE BEETLE GRUBS (IN FIELDS WHERE BROILER LITTER HAS BEEN USED)					
carbaryl SEVIN XLR PLUS Other trade names ²	—	1–1.5 qt.	1–1.5	14 (silage, green) 48 (grain, fodder)	Treat on the surface of the soil when there is more than one grub per square foot in the fall prior to planting. Spring treatment when soil temperature is cold is not as effective as an application made in the fall.
JAPANESE BEETLE ADULTS, CORN ROOTWORM ADULTS, OTHER SILK FEEDERS, AND FLEA BEETLES					
alpha-cypermethrin FASTAC EC Other trade names ²	34–47	2.7–3.8 fl.oz.	0.017–0.025	30 (grain, stover) 60 (forage)	Fastac EC is a RESTRICTED USE pesticide.
beta-cyfluthrin BAYTHROID XL	46–80	1.6–2.8 fl.oz.	0.013–0.022	21 (grain, fodder) 0 (green forage)	Baythroid XL is a RESTRICTED USE pesticide.
bifenthrin BRIGADE 2EC Other trade names ²	20–61	2.1–6.4 fl.oz.	0.03–0.1	30	Brigade is a RESTRICTED USE pesticide. Do not use Brigade in coastal counties.
bifenthrin + zeta-cypermethrin HERO Other trade names ²	12–32	4.0–10.3 fl.oz.	0.04–0.1	30 (grain, fodder, grazing) 60 (harvest for forage)	Hero is a RESTRICTED USE pesticide.
carbaryl SEVIN XLR PLUS Other trade names ²	2–4	1–2 qt.	1–2	14 (silage, green) 48 (grain, fodder)	Apply when silks first appear and continue until silks dry.

² See Table 7 for other trade names.

Table 5. Suggestions for Postemergence Corn Insect Control ¹ (cont.)

Insecticide and Formulation	Acres per Gallon	Amount of Formulation per Acre	Lb. Active Ingredient Per Acre	Minimum Days from Last Application to Harvest or Grazing	Comments
JAPANESE BEETLE ADULTS, CORN ROOTWORM ADULTS, OTHER SILK FEEDERS, AND FLEA BEETLES (cont.)					
chlorpyrifos LORSBAN ADVANCED LORSBAN 75 WG Other trade names ²	4–8 —	1–2 pt. 0.67–1.33 lb.	0.47–0.93 0.5–1	21 21	See label for detailed instructions. Lorsban Advanced is a RESTRICTED USE pesticide. Lorsban 75WG is not.
chlorpyrifos + bifenthrin TUNDRA SUPREME	8–23	5.6–16.8 fl.oz.	0.1–0.32 + 0.03–0.1	30	Tundra Supreme is a RESTRICTED USE pesticide. Use of Tundra Supreme is prohibited in coastal counties.
chlorpyrifos + gamma-cyhalothrin COBALT	3–10	13–42 fl.oz.	0.25–0.82 + 0.004–0.015	21 (grain, ears, forage, fodder) 1 (grazing)	Cobalt is a RESTRICTED USE pesticide. Use higher rate for Japanese beetle adults.
chlorpyrifos + lambda-cyhalothrin COBALT ADVANCED	3–12	11–42 fl.oz.	0.21–0.82 + 0.011–0.042	21 (grain, ears, forage, fodder) 1 (grazing)	Cobalt Advanced is a RESTRICTED USE pesticide. See label for specific insect to determine the correct rate.
chlorpyrifos + zeta-cypermethrin STALLION BRAND	11–14	9.25–11.75 fl.oz.	0.2–0.25 + 0.02–0.025	30 (grain, stover) 60 (forage)	Stallion is a RESTRICTED USE pesticide.
cyfluthrin TOMBSTONE Other trade names ²	46–80	1.6–2.8 fl.oz.	0.025–0.044	21 (grain, fodder) 0 (grazing)	Tombstone is a RESTRICTED USE pesticide.
deltamethrin DELTA GOLD 1.5 EC	67–85	1.5–1.9 fl.oz.	0.018–0.022	21 (grain, fodder) 12 (green)	Delta Gold is a RESTRICTED USE pesticide.
esfenvalerate ASANA XL Other trade names ²	13–22	5.8–9.6 fl.oz.	0.03–0.05	21	Asana is a RESTRICTED USE pesticide.
gamma-cyhalothrin DECLARE Other trade names ²	83–125	1.02–1.54 fl.oz.	0.01–0.015	21 (grain, fodder, silage) 1 (grazing)	Declare is a RESTRICTED USE pesticide.
lambda-cyhalothrin WARRIOR II with Zeon Technology Other trade names ²	67–100	1.28–1.92 fl.oz.	0.02–0.03	21 (grain, fodder, silage) 1 (grazing)	WARRIOR II is a RESTRICTED USE pesticide.
lambda-cyhalothrin + chlorantraniliprole BESIEGE	13–21	6–10 fl.oz.	0.02–0.03 + 0.04–0.06	21 (grain, fodder, silage) 1 (grazing)	Besiege is a RESTRICTED USE pesticide.
methomyl LANNATE LV Other trade names ²	5–11	0.75–1.5 pt.	0.22–0.45	21 (grain, fodder) 3 (green)	Lannate is a RESTRICTED USE pesticide.
permethrin POUNCE 25 WP Other trade names ²	—	6.4–9.6 oz.	0.1–0.15	30 (grain, fodder) 0 (forage)	Pounce is a RESTRICTED USE pesticide. Not labeled for Japanese beetles.
spinosad + gamma-cyhalothrin CONSERO	42	1.5 fl.oz. of each product	0.046 + 0.015	28 (grain, fodder, silage) 1 (grazing)	Consero is a RESTRICTED USE pesticide. It is a co-pack of two insecticides that must be applied together.
zeta-cypermethrin MUSTANG MAXX EC INSECTICIDE Other trade names ²	32–47	2.72–4 fl.oz.	0.017–0.025	7	Mustang Maxx is a RESTRICTED USE pesticide.

² See Table 7 for other trade names.

Table 5. Suggestions for Postemergence Corn Insect Control ¹ (cont.)

Insecticide and Formulation	Acres per Gallon	Amount of Formulation per Acre	Lb. Active Ingredient Per Acre	Minimum Days from Last Application to Harvest or Grazing	Comments
LEAFHOPPERS					
See Comments.					Leafhoppers are vectors of corn stunt and other plant viruses. Plant virus-resistant varieties, if possible. An at-planting soil systemic insecticide may be beneficial if a variety that is susceptible to corn stunt is planted.
LESSER CORNSTALK BORERS					
<i>See Table 3 for transgenic corn that can control lesser cornstalk borers and Table 4 for at-planting insecticides for control of lesser cornstalk borers.</i>					
chlorpyrifos LORSBAN ADVANCED LORSBAN 75WG Other trade names ²	4 —	2 pt. 1.33 lb.	0.93 1	21 21	Apply as a broadcast spray. See label for detailed instructions. Lorsban Advanced is a RESTRICTED USE pesticide. Lorsban 75WG is not.
chlorpyrifos + bifenthrin TUNDRA SUPREME	8–23	5.6–16.8 fl.oz.	0.1–0.32 + 0.03–0.1	30	Tundra Supreme is a RESTRICTED USE pesticide. Use of Tundra Supreme on corn is prohibited in coastal counties.
chlorpyrifos + gamma-cyhalothrin COBALT	3	38–42 fl.oz.	0.74–0.82 + 0.013–0.015	21 (grain, ears, forage, fodder) 1 (grazing)	Cobalt is a RESTRICTED USE pesticide.
chlorpyrifos + lambda-cyhalothrin COBALT ADVANCED	3–4	32–42 fl.oz.	0.62–0.82 + 0.032–0.042	21 (grain, ears, forage, fodder) 1 (grazing)	Cobalt Advanced is a RESTRICTED USE pesticide.
gamma-cyhalothrin DECLARE Other trade names ²	83–125	1.02–1.54 fl.oz.	0.01–0.015	21 (grain, fodder, silage) 1 (grazing)	Declare is a RESTRICTED USE pesticide.
lambda-cyhalothrin WARRIOR II with Zeon Technology Other trade names ²	67–100	1.28–1.92 fl.oz.	0.02–0.03	21 (grain, fodder, silage) 1 (grazing)	DO NOT apply more than 0.12 pound active ingredient per acre per season. Apply as soon as infestation is detected, before borers have entered the stalk. WARRIOR II is a RESTRICTED USE pesticide.
lambda-cyhalothrin + chlorantraniliprole BESIEGE	13–21	6–10 fl.oz.	0.02–0.03 + 0.04–0.06	21 (grain, fodder, silage) 1 (grazing)	Besiege is a RESTRICTED USE pesticide.
spinosad + gamma-cyhalothrin CONSERO	42	1.5 fl.oz. of each product	0.046 + 0.015	28 (grain, fodder, silage) 1 (grazing)	Consero is a RESTRICTED USE pesticide. It is a co-pack of two insecticides that must be applied together.
MITES					
bifenthrin BRIGADE 2EC Other trade names ²	20–25	5.1–6.4 fl.oz.	0.08–0.10	30	Brigade is a RESTRICTED USE INSECTICIDE . Do not use in coastal counties.
bifenthrin + zeta-cypermethrin HERO Other trade names ²	12	10.3 fl.oz.	0.10	30 (grain, fodder, grazing) 60 (harvest for forage)	Hero is a RESTRICTED USE INSECTICIDE .

² See Table 7 for other trade names.

Table 5. Suggestions for Postemergence Corn Insect Control ¹ (cont.)

Insecticide and Formulation	Acres per Gallon	Amount of Formulation per Acre	Lb. Active Ingredient Per Acre	Minimum Days from Last Application to Harvest or Grazing	Comments
MITES (cont.)					
chlorpyrifos + bifenthrin TUNDRA SUPREME	7.6–9.5	13.5–16.8 fl.oz.	0.25–0.32 + 0.08–0.10	30	Tundra Supreme is a RESTRICTED USE pesticide.
dimethoate DIMETHOATE 4E Other trade names ²	8–12	11–16 fl.oz.	0.33–0.5	28 (grain) 14 (forage)	
etoxazole ZEAL WDG	—	1–3 oz.	0.045–0.135	21	
hexythiazox ONAGER	5–13	10–24 fl.oz.	0.08–0.19	30	
propargite COMITE	2.4–3.5	36–54 fl.oz.	1.7–2.5	30	Comite is a RESTRICTED USE pesticide.
spiromesifen OBERON 2SC Other trade names ²	—	5.7–16.0 fl.oz.	0.09–0.25	30 (grain, stover) 5 (forage, silage)	
SOUTHWESTERN CORN BORERS					
<i>See European Corn Borers.</i>					
STINK BUGS					
<i>See discussion of stink bugs in introduction; see Table 2 for suggested seed treatments to control early season stink bugs.</i>					
alpha-cypermethrin FASTAC EC Other trade names ²	34–47	2.7–3.8 fl.oz.	0.017–0.025	30 (grain, stover) 60 (forage)	Fastac EC is a RESTRICTED USE pesticide.
beta-cyfluthrin BAYTHROID XL	46–80	1.6–2.8 fl.oz.	0.013–0.022	21 (grain, fodder) 0 (green forage)	Baythroid XL is a RESTRICTED USE pesticide.
bifenthrin BRIGADE 2EC Other trade names ²	20–25	2.1–6.4 fl.oz.	0.033–0.1	30	Brigade is a RESTRICTED USE pesticide. Do not use Brigade on corn in coastal counties.
bifenthrin + zeta-cypermethrin HERO Other trade names ²	12–32	4.0–10.3 fl.oz.	0.04–0.1	30 (grain, fodder, grazing) 60 (harvest for forage)	Hero is a RESTRICTED USE pesticide.
chlorpyrifos + bifenthrin TUNDRA SUPREME	8–23	5.6–16.8 fl.oz.	0.1–0.32 + 0.03–0.1	30	Tundra Supreme is a RESTRICTED USE pesticide.
chlorpyrifos + gamma-cyhalothrin COBALT	3–7	19–38 fl.oz.	0.37–0.74 + 0.007–0.013	21 (grain, ears, forage, fodder) 1 (grazing)	Cobalt is a RESTRICTED USE pesticide.
chlorpyrifos + lambda-cyhalothrin COBALT ADVANCED	3–8	16–38 fl.oz.	0.31–0.74 + 0.016–0.038	21 (grain, ears, forage, fodder) 1 (grazing)	Cobalt Advanced is a RESTRICTED USE pesticide.
chlorpyrifos + zeta-cypermethrin STALLION BRAND	11–14	9.25–11.75 fl.oz.	0.2–0.25 + 0.02–0.025	30 (grain, stover) 60 (forage)	Stallion is a RESTRICTED USE pesticide.
cyfluthrin TOMBSTONE Other trade names ²	46–80	1.6–2.8 fl.oz.	0.025–0.044	21 (grain, fodder) 1 (grazing)	Tombstone is a RESTRICTED USE pesticide.
deltamethrin ² DELTA GOLD 1.5 EC	67–85	1.5–1.9 fl.oz.	0.018–0.022	21 (grain, fodder) 12 (green)	Delta Gold is a RESTRICTED USE pesticide.

² See Table 7 for other trade names.

Table 5. Suggestions for Postemergence Corn Insect Control ¹ (cont.)

Insecticide and Formulation	Acres per Gallon	Amount of Formulation per Acre	Lb. Active Ingredient Per Acre	Minimum Days from Last Application to Harvest or Grazing	Comments
STINK BUGS (cont.)					
gamma-cyhalothrin DECLARE Other trade names ²	83–125	1.02–1.54 fl.oz.	0.01–0.015	21 (grain, fodder, silage) 1 (grazing)	Declare is a RESTRICTED USE pesticide.
lambda-cyhalothrin WARRIOR II with Zeon Technology Other trade names ²	67–100	1.28–1.92 fl.oz.	0.02–0.03	21 (grain, fodder, silage) 1 (grazing)	WARRIOR II is a RESTRICTED USE pesticide.
lambda-cyhalothrin + chlorantraniliprole BESIEGE	13–21	6–10 fl.oz.	0.02–0.03 + 0.04–0.06	21 (grain, fodder, silage) 1 (grazing)	Besiege is a RESTRICTED USE pesticide.
spinosad + gamma-cyhalothrin CONSERO	42	1.5 fl.oz. of each product	0.046 + 0.015	28 (grain, fodder, silage) 1 (grazing)	Consero is a RESTRICTED USE pesticide. It is a co-pack of two insecticides that must be applied together.
zeta-cypermethrin MUSTANG MAXX EC INSECTICIDE ² Other trade names ²	32–47	2.72–4 fl.oz.	0.017–0.025	7	Mustang Maxx is a RESTRICTED USE pesticide.
SUGARCANE BEETLES					
<i>See discussion of sugarcane beetles in introduction. See Tables 2 and 4 for suggested seed treatments and at-planting insecticides to control sugarcane beetles. No known rescue treatments have been found to be effective.</i>					
WESTERN CORN ROOTWORM LARVAE					
<i>See Tables 2 and 4 for suggested seed treatments or at-planting insecticides to control western corn rootworm larvae; see Table 3 for transgenic corn that can control western corn rootworm larvae.</i>					
chlorpyrifos + gamma-cyhalothrin COBALT	3	38–42 fl.oz.	0.74–0.82 + 0.013–0.015	21 (grain, ears, forage, fodder) 1 (grazing)	Cobalt is a RESTRICTED USE pesticide. Apply as a cultivation treatment by directing spray to base of plant or use chemigation.
chlorpyrifos + lambda-cyhalothrin COBALT ADVANCED	3–4	32–42 fl.oz.	0.62–0.82 + 0.032–0.042	21 (grain, ears, forage, fodder) 1 (grazing)	Cobalt Advanced is a RESTRICTED USE pesticide. Apply as directed spray to base of plant at cultivation or via chemigation.
chlorpyrifos LORSBAN 75 WG	—	1.33 lb.	1	21	Apply granules to base of plants at time of cultivation just ahead of cultivator shovel. Apply 75 WG as a water emulsion to base of plants on both sides of the row just ahead of cultivator shovel. See label for detailed instructions. Lorsban Advanced is a RESTRICTED USE pesticide.
LORSBAN 15G	—	8 oz./1000 row ft.	—	21	
LORSBAN ADVANCED Other trade names ²	4	2 pt./A	0.93	21	
phorate THIMET 20-G SMARTBOX Other trade names ²	—	4.5–6 oz./1000 row ft.	no more than 1.3 lb. a.i./A	30	Apply granules at time of cultivation to base of plants just ahead of cultivator shovels. Phorate is a RESTRICTED USE pesticides.
terbufos COUNTER 20-G LOCK'N'LOAD	—	6 oz./1000 row ft.	1.3 lb. a.i./A maximum	30 (grazing, forage)	Apply to base of plants just ahead of cultivator shovels. Counter is a RESTRICTED USE pesticide.
WHITE GRUBS					
<i>See Tables 2 and 4 for suggested seed treatments or at-planting insecticides for control of white grubs.</i>					
WIREWORMS					
<i>See Tables 2 and 4 for suggested seed treatments or at-planting insecticides for control of wireworms.</i>					

² See Table 7 for other trade names.

Table 6. Relative Efficacy Ratings (1 to 5) of Postemergent Insecticides for Control of Aboveground (Seedling, Whorl, Stalk, Ear) Field Corn Insects. See Table 5 for Insecticide Rates

INSECTS								
INSECTICIDES	Fall Armyworm (larvae)	True Armyworm (larvae)	Billbug (adults)	Chinch Bug (adults, nymphs)	Corn Earworm (larvae) ¹	Cutworm (larvae)	European Corn Borer (larvae) ²	Southwestern Corn Borer (larvae) ²
Baythroid XL	3	1–2	NL	3	2–3	1	L	2
Tombstone	3	1–2	NL	2–3	2–3	1	L	2
Brigade	2	1–2	NL	1	2	1	L	2
Delta Gold	2	1–2	NL	L	2	1	L	2
Asana	3, NL	1–2	NL	4	2–3	1	L	2
Declare	2	1–2	NL	2–3	2	1	L	2
Warrior II	2	1–2	NL	3	2–3	1	L	2
Pounce	L	1–2	NL	NL	2–3	L	L	L
Mustang Maxx	2	1–2	NL	2–3	2	1	L	2
Fastac	2	1–2	NL	2–3	2	1	L	2
Hero	2	1–2	NL	L	2	NL	L	2
Sevin	4	1	NL	5	4	3–4	L	L
Lorsban	2	1	L	2	3	2–3	L	L
Lannate	2	1	NL	NL	2	NL	L	L
Intrepid	2, NL	L	NL	NL	3, NL	NL	1–2	1–2
Intrepid Edge	2, NL	L	NL	NL	3	NL	L	L
Blackhawk	2	1	NL	NL	2–3	NL	3	3
Consero	2	1	NL		2	1–2	L	L
Radiant	L	L	NL	NL	L	NL	L	L
Cobalt	2	L	L	2	2	L	L	2
Cobalt Advanced	2	L	L	2	2	L	L	2
Prevathon	1	NL	NL	NL	1	1, NL	1	NL
Besiege	1	L	NL	L	1	1	1	1

(continued)

Ratings range from 1–5: 1 = very effective; 5 = not effective

“L” means that the insect is on the label for this product, but that the relative efficacy in the Southeast is not known.

“NL” means the insect is not on the label for this product. In this case it is best to assume that the product is ineffective against that particular pest, unless there is a specific knowledge to the contrary.

¹ Insecticide must be able to reach the target pests. Ratings related to applications made to the target pest before it enters the stalk or ear.² Targeted for second generation larvae before they bore into the stalk or ear.

Table 6. Relative Efficacy Ratings (1 to 5) of Postemergent Insecticides for Control of Aboveground (Seedling, Whorl, Stalk, Ear) Field Corn Insects. See Table 5 for Insecticide Rates (cont.)

INSECTICIDES	INSECTS					
	Flea Beetle (adults)	Grass-hopper (nymphs)	Japanese Beetle, Rootworm (adults)	Lesser Cornstalk Borer (larvae)	Southern Green or Green Stink bug	Brown Stink bug
Baythroid XL	1–2	1–2	1–2	NL	1–2	3
Tombstone	1–2	1–2	1–2	NL	1–2	3
Brigade	1–2	1–2	1–2	NL	1	2
Delta Gold	1–2	1–2	L	NL	1–2	3
Asana	2	1–2	2	NL	NL	NL
Declare	1–2	1–2	1	NL	1–2	3
Warrior II	1–2	1–2	1–2	4–5	1–2	3
Pounce		NL		NL	NL	NL
Mustang Maxx	1–2	1–2	1	NL	1–2	3
Fastac	1–2	1–2	1	NL	1–2	3
Hero	1–2	L	1	NL	1–2	3
Sevin	1–2	L	1	NL	NL	NL
Lorsban	L	1–2	1–2	NL	4, NL	4, NL
Lannate	L	NL	1–2	NL	4, NL	4, NL
Intrepid	NL	NL	NL	NL	5, NL	5, NL
Blackhawk	NL	NL	NL	NL	NL	NL
Consero	L	1–2	L	L	2	3–4
Radiant	NL	NL	NL	NL	NL	NL
Cobalt	L	L	1–2	4–5	1–2	3
Cobalt Advanced	L	L	1–2	4–5	1–2	3
Prevathon	NL	NL	NL	NL	NL	NL
Besiege	L	L	L	L	1–2	3

Ratings range from 1–5: 1 = very effective; 5 = not effective

“L” means that the insect is on the label for this product, but that the relative efficacy in the Southeast is not known.

“NL” means the insect is not on the label for this product. In this case it is best to assume that the product is ineffective against that particular pest, unless there is a specific knowledge to the contrary.

¹ Insecticide must be able to reach the target pests. Ratings related to applications made to the target pest before it enters the stalk or ear.

² Targeted for second generation larvae before they bore into the stalk or ear.

Table 7. Insecticides Labeled for Use on Field Corn, Including Worker Protection and Harvest or Grazing Intervals

Insecticide and Trade Name	A.I./ Formulated Product	Formulation	Restricted Entry Interval (hr)	Minimum Days from Last Application to Harvest or Grazing	Bee Hazard Restriction
alpha-cypermethrin MoA Group 3A*					
FASTAC CS (RESTRICTED USE)	0.83 lb./gal.	capsule suspension	12	30 (grain, stover) 60 (forage)	yes ¹
FASTAC EC (RESTRICTED USE)	0.83 lb./gal.	emulsifiable concentrate	12	30 (grain, stover) 60 (forage)	yes ¹
beta-cyfluthrin MoA Group 3A					
BAYTHROID XL (RESTRICTED USE)	1 lb./gal.	emulsifiable concentrate	12	21 (grain, fodder) 0 (green forage)	yes ⁵
bifenthrin MoA Group 3A (Most bifenthrin products prohibited in coastal counties) See footnote 2.					
BI-DASH 2E ² (RESTRICTED USE)	2 lb./gal.	emulsifiable concentrate	12	30	yes ¹
BIFENTHRIN 2EC ² (RESTRICTED USE)	2 lb./gal.	emulsifiable concentrate	12	30	yes ¹
BIFEN 2 AG GOLD ² (RESTRICTED USE)	2 lb./gal.	emulsifiable concentrate	12	30	yes ¹
BIFENTURE EC (RESTRICTED USE)	2 lb./gal.	emulsifiable concentrate	12	30	yes ¹
BRIGADE 2EC ² (RESTRICTED USE)	2 lb./gal.	emulsifiable concentrate	12	30	yes ¹
DISCIPLINE 2 EC ² (RESTRICTED USE)	2 lb./gal.	emulsifiable concentrate	12	30	yes ¹
FANFARE 2 EC ² (RESTRICTED USE)	2 lb./gal.	emulsifiable concentrate	12	30	yes ¹
FANFARE ES ² (RESTRICTED USE)	2 lb./gal.	water-based concentrate	12	30	yes ¹
REVEAL ² (RESTRICTED USE)	2 lb./gal.	emulsifiable concentrate	12	30	yes ¹
SNIPER 2 EC (RESTRICTED USE)	2 lb./gal.	emulsifiable concentrate	12	30	yes ¹
TAILGUNNER ² (RESTRICTED USE)	2 lb./gal.	emulsifiable concentrate	12	30	yes ¹
TUNDRA EC (RESTRICTED USE)	2 lb./gal.	emulsifiable concentrate	12	30	yes ¹
BIFENTURE LFC ³	1.5 lb./gal.	emulsifiable concentrate	12	Not specified	yes ¹
CAPTURE LFR ³ (RESTRICTED USE)	1.5 lb./gal.	liquid fertilizer ready	12	Not specified	yes ¹
RUCKUS LFR ³ (RESTRICTED USE)	1.5 lb./gal.	liquid fertilizer ready	12	Not specified	yes ¹
XPEDIENT FC ³ (RESTRICTED USE)	2 lb./gal.	emulsifiable concentrate	12	Not specified	yes ¹
XPEDIENT PLUS ³ (RESTRICTED USE)	2 lb./gal.	emulsifiable concentrate	12	Not specified	yes ¹

¹ This product is highly toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds if bees are visiting the treatment area.

*MoA = Mode of Action classification from the Insecticide Resistance Action Committee (www.irac-online.org). Insecticides with different MoAs should be used for insecticide resistance management.

² Do not use on corn in coastal counties.

³ Pre-plant incorporated at-plant, or pre-emergence applications only.

⁴ In furrow application only

⁵ This product is highly toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds on which bees are actively foraging. Additional information may be obtained by consulting your Cooperative Extension Service.

Table 7. Insecticides Labeled for Use on Field Corn, Including Worker Protection and Harvest or Grazing Intervals (cont.)

Insecticide and Trade Name	A.I./ Formulated Product	Formulation	Restricted Entry Interval (hr)	Minimum Days from Last Application to Harvest or Grazing	Bee Hazard Restriction
bifenthrin + chlorethoxyfos MoA Group 3A + MoA Group 1B					
SMARTCHOICE 5G LOCK'N'LOAD ⁴ (RESTRICTED USE)	0.1 oz. + 0.7 oz./lb.	granular	48	Not specified	no
SMARTCHOICE 5G SMARTBOX ⁴ (RESTRICTED USE)	0.1 oz. + 0.7 oz./lb.	granular	48	Not specified	no
SMARTCHOICE HC ⁴ (RESTRICTED USE)	0.3 oz. + 2 oz./lb.	granule	12	Not specified	no
bifenthrin + indole-3-butyric acid MoA Group 3A					
EMPOWER 2	0.18 oz. + 0.00016 oz./lb.	granular	24 ⁴	30	yes ¹
bifenthrin + <i>Bacillus amyloliquefaciens</i> Strain D747 MoA Group 3A plus a biological fungicide Group 44					
ETHOS XB ³ insecticide/fungicide	1.516/gal.	liquid	12	Not specified	yes ¹
bifenthrin + pyraclostrobin MoA Group 3A plus Fungicide MoA Group 11					
TEMITRY LFR ³	1.33 lb. + 0.67 lb./gal.	liquid fertilizer ready	12	Not specified	yes ¹
MANTICOR LFR ³	1.33 lb. + 0.67 lb. /gal.	liquid fertilizer ready	12	Not specified	yes ¹
bifenthrin + zeta-cypermethrin MoA Group 3A (Prohibited in all coastal counties)					
HERO (RESTRICTED USE)	0.93 lb. + 0.31 lb./gal.	emulsifiable concentrate	12	30 (grain, fodder, grazing) 60 (harvest for forage)	yes ¹
STEED (RESTRICTED USE)	0.8 lb. + 0.7 lb./gal.	emulsifiable concentrate	12	30 (grain, stover, grazing) 60 (harvest for forage)	yes ¹
carbaryl MoA Group 1A					
SEVIN 4F	4 lb./gal.	liquid suspension	12	48 (grain, fodder) 14 (grazing, silage)	yes ⁶
SEVIN XLR PLUS	4 lb./gal.	liquid suspension	12	Same as above	yes ⁶
CARBARYL 4L, others	4 lb./gal.	liquid suspension	12	Same as above	yes ⁶
chlorantraniliprole MoA Group 28					
DUPONT CORAGEN	1.67 lb./gal.	suspension concentrate	4	14	no
DUPONT PREVATHON	0.43 lb./gal.	suspension concentrate	4	14 (grain), 1 (forage, fodder, stover)	no
chlorethoxyfos MoA Group 1B					
FORTRESS 5G SMART BOX (RESTRICTED USE)	0.8 oz./lb.	granular	48	Not specified	no
chlorpyrifos MoA Group 1B					
LORSBAN 4E (RESTRICTED USE)	4 lb./gal.	emulsifiable concentrate	24	21	yes ¹
LORSBAN ADVANCED (RESTRICTED USE)	3.755 lb./gal.	water emulsion	24	21	yes ¹
GOVERN 4E (RESTRICTED USE)	4 lb./gal.	emulsifiable concentrate	24	21	yes ¹
HATCHET (RESTRICTED USE)	4 lb./gal.	emulsifiable concentrate	24	21	yes ¹

¹ This product is highly toxic to bees exposed to direct treatment on residues on blooming crops on weeds. Do not apply this product or allow it to drift to blooming crops or weeds if bees are visiting the treatment area.³ Pre-plant incorporated at-plant, or pre-emergence applications only.⁶ May kill honeybees and other bees in substantial numbers. This product may show residual toxicity to honeybees, especially in humid climates and under slow drying conditions. This product is highly toxic to bees exposed to direct treatment or residues on crops or weeds in bloom. If application cannot be avoided when target crop or weeds are in bloom, limiting applications to times when bees are least active, e.g., within 2 hours of sunrise or sunset, will minimize risk to bees. Notifying beekeepers within 1 mile of treatment area at least 48 hours before product is applied will allow them to take additional steps to protect their bees.

Table 7. Insecticides Labeled for Use on Field Corn, Including Worker Protection and Harvest or Grazing Intervals (cont.)

Insecticide and Trade Name	A.I./ Formulated Product	Formulation	Restricted Entry Interval (hr)	Minimum Days from Last Application to Harvest or Grazing	Bee Hazard Restriction
chlorpyrifos MoA Group 1B (cont.)					
CHLORPYRIFOS 4E AG, others (RESTRICTED USE)	4 lb./gal.	emulsifiable concentrate	24	21 (grain, ears) Not specified for grazing or silage	yes ¹
NUFOS 4E (RESTRICTED USE)	4 lb./gal.	emulsifiable concentrate	24	21 (grain, ears) Not specified for grazing or silage	yes ¹
YUMA 4E (RESTRICTED USE)	4 lb./gal.	emulsifiable concentrate	24	21	yes ¹
WARHAWK (RESTRICTED USE)	4 lb./gal.	emulsifiable concentrate	24	21	yes ¹
WHIRLWIND (RESTRICTED USE)	4 lb./gal.	emulsifiable concentrate	24	21	yes ¹
LORSBAN 75WG	12 oz./lb.	water dispersable granule	24	21	yes ¹
LORSBAN 15G	2.4 oz./lb.	granular	24	21	yes ¹
LORSBAN 15G SMARTBOX	2.4 oz./lb.	granular	24	35	yes ¹
SAURUS 15G	2.4 oz./lb.	granular	24	21 (grain, ears) Not specified for forage or fodder	yes ¹
CHLORPYRIFOS 15G	2.4 oz./lb.	granular	24	21 (grain, ears) Not specified for forage or fodder	yes ¹
CPF 4E (RESTRICTED USE)	4 lb./gal.	emulsifiable concentrate	24	21	yes ¹
ERASER (RESTRICTED USE)	4 lb./gal.	emulsifiable concentrate	24	21	yes ¹
WARHAWK CLEARFORM (RESTRICTED USE)	4 lb./gal.	emulsifiable concentrate	24	21	yes ¹
VULCAN (RESTRICTED USE)	4 lb./gal.	emulsifiable concentrate	24	21	yes ¹
chlorpyrifos + bifenthrin MoA Group 1B + MoA Group 3A (Prohibited in all coastal counties)					
TUNDRA SUPREME ² (RESTRICTED USE)	2.41 + 0.76 lb./gal.	emulsifiable concentrate	24	30 (grain, ears, fodder, silage) 30–35 (grazing)	yes ¹
MATCH-UP ² (RESTRICTED USE)	2.41 + 0.76 lb./ gal.	emulsifiable concentrate	24	30	yes ¹
VOLTAGE ENDURX ² (RESTRICTED USE)	2.41 + 0.76 lb./ gal.	emulsifiable concentrate	24	30 (grain, ears, fodder, silage) 30–35 (grazing)	yes ¹
chlorpyrifos + gamma-cyhalothrin MoA Group 1B + MoA Group 3A					
BOLTON (RESTRICTED USE)	2.5 + 0.083 lb./gal.	emulsifiable concentrate	24	21 (grain or ears) 14 (grazing, silage)	yes ¹
COBALT (RESTRICTED USE)	2.5 + 0.045 lb./gal.	emulsifiable concentrate	24	21 (grain, ears, forage, fodder) 1 (grazing)	yes ¹
chlorpyrifos + lambda-cyhalothrin MoA Group 1B + MoA Group 3A					
COBALT ADVANCED (RESTRICTED USE)	2.5 + 0.13 lb./gal/	emulsifiable concentrate	24	21 (grain, ears, forage, fodder) 1 (grazing)	yes ¹

¹ This product is highly toxic to bees exposed to direct treatment on residues on blooming crops on weeds. Do not apply this product or allow it to drift to blooming crops or weeds if bees are visiting the treatment area.

² Use of this product prohibited in coastal counties.

⁷ This compound is highly toxic to bees exposed directly (contact). Ensure that planting equipment is functioning properly in accordance with manufacturing recommendations to minimize seed coat abrasion during planting to reduce dust, which can drift to blooming crops or weeds.

Table 7. Insecticides Labeled for Use on Field Corn, Including Worker Protection and Harvest or Grazing Intervals (cont.)

Insecticide and Trade Name	A.I./ Formulated Product	Formulation	Restricted Entry Interval (hr)	Minimum Days from Last Application to Harvest or Grazing	Bee Hazard Restriction
chlorpyrifos + zeta-cypermethrin					
STALLION BRAND	2.75 + 0.275 lb./gal.	emulsifiable concentrate	24	30 (grain, stover) 60 (forage)	yes ¹
clothianidin MoA Group 4A					
PONCHO 600 ACCELERON IC-609	5 lb./gal. 5 lb./gal.	seed treatment seed treatment	Not specified Not specified	Not specified Not specified	none, but minimize planter dust
NIPSIT INSIDE	5 lb./gal.	seed treatment	12	Not specified	yes ⁷
clothianidin + Bacillus firmus MoA Group 4A					
PONCHO VOTIVO	4.17 + 0.84 lb./gal.	seed treatment	Not specified	Not specified	none, but minimize planter dust
cyfluthrin MoA Group 3A					
TOMBSTONE (RESTRICTED USE)	2 lb./gal.	emulsifiable concentrate	12	21 (grain, fodder) 0 (grazing)	yes ¹
TOMBSTONE HELIOS (RESTRICTED USE)	2 lb./gal.	emulsifiable concentrate	12	21 (grain, fodder) 0 (grazing)	yes ¹
deltamethrin MoA Group 3A					
DELTA GOLD 1.5 EC (RESTRICTED USE)	1.5 lb./gal.	emulsifiable concentrate	12	21 (grain, fodder) 12 (forage, grazing)	yes ¹
dimethoate MoA Group 1B					
DIMETHOATE 4E	4 lb./gal.	emulsifiable concentrate	48	28 (grain) 14 (forage)	yes ¹
DIMATE 4E	4 lb./gal.	emulsifiable concentrate	48	28 (grain) 14 (forage)	yes ¹
DIMETHOATE 400, others	4 lb./gal.	emulsifiable concentrate	48	28 (grain) 14 (forage)	yes ¹
DIMETHOATE 4EC	4 lb./gal.	emulsifiable concentrate	48	28 (grain) 14 (forage)	yes ¹
DIMETHOATE LV-4	4 lb./gal.	emulsifiable concentrate	12	28 (grain) 14 (forage)	yes ¹
esfenvalerate MoA Group 3A					
ASANA XL (RESTRICTED USE)	0.66 lb./gal.	emulsifiable concentrate	12	21	yes ¹
S-FENVALOSTAR (RESTRICTED USE)	0.66 lb./gal.	emulsifiable concentrate	12	21	yes ¹
ZYRATE (RESTRICTED USE)	0.66 lb./gal.	emulsifiable concentrate	12	21	yes ¹
etoxazole MoA Group 10B					
ZEAL SC MITICIDE	2.88 lb./gal.	soluble concentrate	12	21	no
ZEAL WDG	11.5 oz./lb.	water dispersable granule	12	21	no
ZEAL MITICIDE	11.5 oz./lb.	water soluble packets	12	21	no
flupyradifurone MoA Group 4D					
SIVANTO PRIME	1.67 lb./gal.	soluble liquid	4	7 (forage, hay) 21 (grain, stover, straw)	yes ³

¹ This product is highly toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds if bees are visiting the treatment area.

³ Toxic to adult bees in laboratory studies via oral exposure; however, not toxic to bees through contact exposure. Field studies conducted with this product have shown no effects on honeybee colony development.

⁸ This product is highly toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply this product or allow it to drift if bees visiting the treatment area. Ensure that planting equipment is functioning properly in accordance with manufacturer specifications to minimize seed coat abrasion during planting to reduce dust, which can drift to blooming crops or weeds.

Table 7. Insecticides Labeled for Use on Field Corn, Including Worker Protection and Harvest or Grazing Intervals (cont.)

Insecticide and Trade Name	A.I./ Formulated Product	Formulation	Restricted Entry Interval (hr)	Minimum Days from Last Application to Harvest or Grazing	Bee Hazard Restriction
gamma-cyhalothrin MoA Group 3A					
DECLARE (RESTRICTED USE)	1.25 lb./gal.	microencapsulated suspension	24	21 (grain, fodder, silage) 1 (grazing)	yes ¹
PROAXIS (RESTRICTED USE)	0.5 lb./gal.	microencapsulated suspension	24	21 (grain, fodder, silage) 1 (grazing)	yes ¹
hexythiazox MoA Group 10A					
ONAGER	1 lb./gal.	emulsifiable concentrate	12	30	no
imidacloprid MoA Group 4A					
NITRO SHIELD	5 lb./gal.	liquid used as seed treatment	12	Not specified	yes ⁸
MACHO 600 ST	5 lb./gal.	liquid used as seed treatment	12	Not specified	yes ¹
GAUCHO 600	5 lb./gal.	liquid used as seed treatment	12	Not specified	no
AXCESS	5 lb./gal.	liquid used as seed treatment	12	Not specified	no
NITRO SHIELD IV	4 lb./gal.	liquid used as seed treatment	12	45	yes ⁸
DYNA-SHIELD IMIDACLOPRID 5	5 lb./gal.	liquid used as seed treatment	12	Not specified	yes ⁷
RESONATE 600ST	5 lb./gal.	liquid used as seed treatment	12	45	yes ⁸
SENATOR 600 FS	5 lb./gal.	liquid used as seed treatment	12	Not specified	no
SHARDA IMIDACLOPRID 5SC	5 lb./gal.	liquid used as seed treatment	12	Not specified	yes ⁷
imidacloprid + metalaxyl MoA Group 4A					
CONCUR SEED TREATMENT	4 oz./lb. + 0.16 oz./lb.	dust used as seed treatment	24	Not specified	no
imidacloprid + carboxin and metalaxyl MoA Group 4A					
LATITUDE	4 oz. + 2.2 oz. + 0.16 oz./lb.	dust used as seed treatment	24	45	no
lambda-cyhalothrin MoA Group 3A					
GRIZZLY Z INSECTICIDE (RESTRICTED USE)	1 lb./gal.	capsule suspension	24	21 (grain, fodder, silage) 1 (grazing, forage)	yes ¹
WARRIOR II with ZEON TECHNOLOGY (RESTRICTED USE)	2.08 lb./gal.	capsule suspension	24	Same as above	yes ¹
KENDO (RESTRICTED USE)	1 lb./gal.	emulsifiable concentrate	24	Same as above	yes ¹
LAMCAP	1 lb./gal.	capsule suspension	24	Same as above	yes ¹
LAMBDA-CY 1EC WILLOWOOD (RESTRICTED USE)	1 lb./gal.	emulsifiable concentrate	24	Same as above	yes ¹
LAMBDA CY AG (RESTRICTED USE)	1 lb./gal.	emulsifiable concentrate	24	Same as above	yes ¹

¹ This product is highly toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds while bees are actively visiting the treatment area.

⁷ This compound is highly toxic to bees exposed directly (contact). Ensure that planting equipment is functioning properly in accordance with manufacturing recommendations to minimize seed coat abrasion during planting to reduce dust, which can drift to blooming crops or weeds.

⁸ This product is highly toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply this product or allow it to drift if bees visiting the treatment area. Ensure that planting equipment is functioning properly in accordance with manufacturer specifications to minimize seed coat abrasion during planting to reduce dust, which can drift to blooming crops or weeds.

Table 7. Insecticides Labeled for Use on Field Corn, Including Worker Protection and Harvest or Grazing Intervals (cont.)

Insecticide and Trade Name	A.I./ Formulated Product	Formulation	Restricted Entry Interval (hr)	Minimum Days from Last Application to Harvest or Grazing	Bee Hazard Restriction
lambda-cyhalothrin MoA Group 3A (cont.)					
LAMBDA-CY EC (RESTRICTED USE)	1 lb./gal.	emulsifiable concentrate	24	21 (grain, fodder, silage) 1 (grazing, forage)	yes ¹
LAMBDASTAR (RESTRICTED USE)	1 lb./gal.	emulsifiable concentrate	24	Same as above	yes ¹
LAMBDASTAR ICS (RESTRICTED USE)	1 lb./gal.	capsule suspension	24	Same as above	yes ¹
LAMBDASTAR PLUS (RESTRICTED USE)	2 lb./gal.	aqueous-based formulation	24	Same as above	yes ¹
LAMBDA-T (RESTRICTED USE)	1 lb./gal.	capsule suspension	24	Same as above	yes ¹
L-C INSECTICIDE (RESTRICTED USE)	1 lb./gal.	emulsifiable concentrate	24	Same as above	yes ¹
NUFARM LAMBDA CYHALOTHRIN 1EC (RESTRICTED USE)	1 lb./gal.	emulsifiable concentrate	24	Same as above	yes ¹
PARADIGM (RESTRICTED USE)	1 lb./gal.	capsule suspension	24	Same as above	yes ¹
PROVINCE (RESTRICTED USE)	1 lb./gal.	capsule suspension	24	Same as above	yes ¹
PROVINCE II (RESTRICTED USE)	2.08 lb./gal.	capsule suspension	24	Same as above	yes ¹
RAVAGE (RESTRICTED USE)	1 lb./gal.	emulsifiable concentrate	24	Same as above	yes ¹
SILENCER (RESTRICTED USE)	1 lb./gal.	emulsifiable concentrate	24	Same as above	yes ¹
SILENCER VXN (RESTRICTED USE)	1 lb./gal.	capsule suspension	24	Same as above	yes ¹
PROVINCE II (RESTRICTED USE)	2.08 lb./gal.	capsule suspension	24	Same as above	yes ¹
GRIZZLY TOO (RESTRICTED USE)	2.08 lb./gal.	capsule suspension	24	Same as above	yes ¹
lambda-cyhalothrin + chlorantraniliprole MoA Group 3A + MoA Group 28					
BESIEGE (RESTRICTED USE)	0.417 lb. + 0.835 lb./ gal.	capsule suspension plus soluble concentrate	24	21 (grain, fodder, silage) 1 (grazing, forage)	yes ¹
malathion MoA Group 1B					
MALATHION 5, 5EC, others	5 lb./gal.	emulsifiable concentrate	12	7	yes ¹
GOWAN MALATHION 8, others	8 lb./gal.	emulsifiable concentrate	12	7	yes ¹
CHEMINOVA MALATHION 57%	5 lb./gal.	emulsifiable concentrate	12	7	yes ¹
FYFANON	5 lb./gal.	emulsifiable concentrate	12	7	yes ¹
FYFANON ULV AG	9.9 lb./gal.	emulsifiable concentrate	12	7	yes ¹
FYFANON 8 LB EMULSION	8 lb./gal.	emulsifiable concentrate	12	37	yes ¹
methomyl MoA Group 1A					
DUPONT LANNATE LV (RESTRICTED USE)	2.4 lb./gal.	water soluble liquid	48	21 (grain, fodder) 3 (grazing, forage)	yes ¹
DUPONT LANNATE SP (RESTRICTED USE)	14.4 oz./lb.	water soluble packet	48	Same as above	yes ¹
NUDRIN LV (RESTRICTED USE)	2.4 lb./gal.	water soluble liquid	48	Same as above	yes ¹

¹ This product is highly toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds if bees are visiting the treatment area.

Table 7. Insecticides Labeled for Use on Field Corn, Including Worker Protection and Harvest or Grazing Intervals (cont.)

Insecticide and Trade Name	A.I./ Formulated Product	Formulation	Restricted Entry Interval (hr)	Minimum Days from Last Application to Harvest or Grazing	Bee Hazard Restriction
methomyl MoA Group 1A (cont.)					
NUDRIN SP (RESTRICTED USE)	14.4 oz./lb.	water soluble packet	48	Same as above	yes ¹
ANNIHILATE LV (RESTRICTED USE)	2.4 lb./gal.	water soluble liquid	48	Same as above	yes ¹
ANNIHILATE SP (RESTRICTED USE)	14.4 oz./lb.	water soluble bags	48	Same as above	yes ¹
CORRIDA 29 SL (RESTRICTED USE)	2.4 lb./gal.	water soluble liquid	48	Same as above	yes ¹
CORRIDA 90 WSP (RESTRICTED USE)	14.4 oz./lb.	water soluble bags	48	Same as above	yes ¹
methoxyfenozide MoA Group 18					
INTREPID 2F	2 lb./gal.	flowable liquid	4	21	no
TROUBADOUR 2F	2 lb./gal.	flowable liquid	4	21	no
methoxyfenozide + spinetoram MOA Group 18 + MoA Group 5					
INTREPID EDGE	2.5 lb. + 0.5 lb./ gal.	flowable liquid	4	28	yes ⁹
permethrin MoA Group 3A					
ARCTIC 3.2EC (RESTRICTED USE)	3.2 lb./gal.	emulsifiable concentrate	12	30 (grain, fodder) 0 (forage)	yes ¹
PERMETHRIN (RESTRICTED USE)	3.2 lb./gal.	emulsifiable concentrate	12	Same as above	yes ¹
PERMETHRIN 3.2 EC, others (RESTRICTED USE)	3.2 lb./gal.	emulsifiable concentrate	12	Same as above	yes ¹
PERMETHRIN 3.2 AG (RESTRICTED USE)	3.2 lb./gal.	emulsifiable concentrate	12	Same as above	yes ¹
STILETTO (RESTRICTED USE)	0.08 oz./lb.	pellets	12	Same as above	yes ¹
PERMASTAR AG (RESTRICTED USE)	3.2 lb./gal.	emulsifiable concentrate	12	Same as above	yes ¹
PERM-UP 3.2EC (RESTRICTED USE)	3.2 lb./gal.	emulsifiable concentrate	12	Same as above	yes ¹
POUNCE 25 WP (RESTRICTED USE)	4 oz./lb.	wettable powder	12	Same as above	yes ¹
POUNCE 1.5 G (RESTRICTED USE)	0.24 oz./lb.	granular	12	Same as above	yes ¹
phorate MoA Group 1B					
THIMET 20-G SMARTBOX OR LOCK'N'LOAD OR EZLOAD (RESTRICTED USE)	3.2 oz./lb.	granular	48	30	no
propargite MoA Group 12C					
COMITE II (RESTRICTED USE)	6 lb./gal.	emulsifiable concentrate	13 days	30	no
spinetoram MoA Group 5					
RADIANT SC	1 lb./gal.	suspension concentrate	4	28 (grain) 3 (forage, fodder)	yes ⁹

¹ This product is highly toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds if bees are visiting the treatment area.

⁹ This product is toxic to bees exposed to treatment during the 3 hours following treatment. Do not apply to blooming, pollen-shedding, or nectar-producing parts of plants if bees may forage on the plants during this time period.

Table 7. Insecticides Labeled for Use on Field Corn, Including Worker Protection and Harvest or Grazing Intervals

Insecticide and Trade Name	A.I./ Formulated Product	Formulation	Restricted Entry Interval (hr)	Minimum Days from Last Application to Harvest or Grazing	Bee Hazard Restriction
spinosad MoA Group 5					
BLACKHAWK	5.8 oz./lb.	wettable powder	4	28 (grain, fodder) 7 (forage)	yes ⁹
ENTRUST	12.8 oz./lb.	wettable powder	4	Same as above	yes ⁹
ENTRUST SC	2 lb./gal.	soluble concentrate	4	Same as above	yes ⁹
SPINTOR 2SC	2 lb./gal.	soluble concentrate	4	Same as above	yes ⁹
spinosad + gamma-cyhalothrin MoA Group 5 + MoA Group 3A					
CONSERO (RESTRICTED USE)	4 lb./gal. + 1.25 lb./ gal.	co-pack containing 0.5 gallon of each insecticide	24	28 (grain, fodder, silage) 1 (grazing)	yes ¹
spiromesifen MoA Group 23					
OBERON 2SC	2 lb./gal.	suspension concentrate	12	30 (grain, stover) 5 (forage, silage)	no
OBERON 4SC	4 lb./gal.	suspension concentrate	12	30 (grain, stover) 5 (forage, silage)	no
terbufos MoA Group 1B					
COUNTER 20G LOCK'N'LOAD OR SMARTBOX (RESTRICTED USE)	3.2 oz./lb.	granular	48	30	no
thiamethoxam MoA Group 4A					
CRUISER 5FS	5 lb./gal.	seed treatment	12	Not specified	yes ¹⁰
thiamethoxam + chlorantraniliprole (MoA Group 4A + MoA Group 28) + 4 fungicides					
PPST 250 PLUS LUMIVIA		seed treatment combination	12	Not specified	yes ¹⁰
thiamethoxam (MoA Group 4A) + 4 fungicides					
PPST 250		seed treatment combination	12	Not specified	yes ¹⁰
CRUISER MAXX CORN 250, 500, OR 1250		seed treatment	12	Not specified	yes ¹⁰
zeta-cypermethrin MoA Group 3A					
MUSTANG MAXX EC INSECTICIDE (RESTRICTED USE)	0.8 lb./gal.	emulsifiable concentrate	12	7	yes ¹
RESPECT INSECTICIDE OR RESPECT EC INSECTICIDE (RESTRICTED USE)	0.8 lb./gal.	emulsifiable concentrate	12	30 (grain, stover) 60 (forage)	yes ¹

¹ This product is highly toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds if bees are visiting the treatment area.

⁹ This product is toxic to bees exposed to treatment during the 3 hours following treatment. Do not apply to blooming, pollen-shedding, or nectar-producing parts of plants if bees may forage on the plants during this time period.

¹⁰ Thiamethoxam is highly toxic to bees exposed to direct treatment and effects may be possible as a result of exposure to translocated residues in blooming crops.

Other products may be available. Always read the label to make sure the specific crop is listed and to determine what rate to use.

Insect Pest Management section prepared by **Katelyn Kesheimer**, *Extension Specialist*, Assistant Professor, Entomology and Plant Pathology, Auburn University.

DISEASE AND NEMATODE CONTROL

In general, diseases cause minimal damage to corn most years. Rusts, ear rots, and storage rots are the most widespread and important diseases of corn. Mycotoxin contamination, primarily aflatoxin on rotted grain, is of particular concern to farmers. Stalk rots and viruses may also cause significant losses on limited acreage across the state. Common smut, southern corn leaf blight, and crazy top are reported every year but are of little economic importance. For a more detailed description of corn diseases, see Extension publication ANR-0601, Corn Diseases.

Most corn diseases can be controlled through the use of good management practices.

- Plant recommended varieties with resistance to viruses and diseases common to your region.
- Select high-quality seed treated with a fungicide.
- Plant only on well-drained and well-prepared seedbeds.
- Maintain balanced fertility levels. Nitrogen and potassium imbalances can increase leaf diseases and stalk rot and cause lodging.
- Rotate corn with non-grass crops. Rotating crops will reduce diseases and nematodes that attack corn.
- Plant early to avoid buildup of aphids and other virus-transmitting insects as well as southern rust.
- Maintain plant populations at recommended levels to reduce stalk rots and lodging.

Fungicides (see Table 9) may partially control fungal leaf blights and rust, but in most cases are not economical. Fungicide applications to field corn should only be considered when crop prices are good, yield potential is high (more than 120 bushels per acre), and weather conditions at tasseling favor rapid disease development. The need for protective fungicide treatments can often be avoided by planting disease resistant corn hybrids. Southern rust is the most destructive disease on corn. The later corn is planted, the higher the risk of a destructive rust outbreak.

Several species of plant-parasitic nematodes can reduce corn yields sufficiently to cause economic losses. Sting, stubby root, and lesion nematodes are known to be the most damaging species on corn. Southern or cotton root-knot nematodes also attack, damage, and reproduce on all field corn hybrids. Problems with root-knot nematodes occur where corn is rotated with cotton. Crop rotation with non-host crops will prevent the buildup of nematode populations to damaging levels. Corn is immune to the reniform nematode.

Although nematicides (see Tables 8 and 10) are effective against nematodes that attack corn, they are too expensive to use on field corn in most situations. Consequently, they are not recommended for general use in nematode-infested cornfields. Only in rare cases where soil insects and nematodes are a problem would nematicides/insecticides be cost effective.

Table 8. Properties of Nematicides Used on Corn That May Affect Water Quality

Common Name	Trade Name	Surface-Loss Potential ¹	Leaching Potential ²
Ethoprop	Mocap	Medium	Large
Terbufos	Counter	Medium	Small

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

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

Table 9. Fungicides Labeled for Controlling Helminthosporium Leaf Spots, Gray Leaf Spot, and Rust

Chemical Name	Rate per Acre	Comments
<i>Aspergillus flavus</i> AFLA-GUARD GR	10–20 lb.	Aflatoxin suppression Apply by air or ground between growth stages V10 – V12 and R1 (silking) as an over-the-top broadcast treatment. Use higher rate if aflatoxin contamination has been historically high.
azoxystrobin QUADRI FLOWABLE AZOXY 2SC AZOXY STAR	6.2–15.5 fl.oz. 6–9 fl.oz.	For control of southern rust, northern corn leaf blight, southern corn leaf blight, gray leaf spot, and anthracnose on field corn. Apply when symptoms first appear on lower leaves and repeat after 7- to 14-day intervals. Do not make more than two consecutive applications of Quadris or other Group 11 fungicides. For control of common rust. See above comments for application timing.
azoxystrobin + flutriafol TOPGUARD EQ	5–7 fl.oz.	For control of northern and southern corn leaf blight, rust diseases, gray leaf spot, and eye spot. Make first application as disease first appears and continue as needed at 7- to 10-day interval. Apply no later than dough stage (GS R4). Do not apply more than 14 fl.oz./ac of product per acre per year. Do not use spray adjuvants for sprays made between V8 and VT (tasseling).
azoxystrobin + propiconazole QUILT XCEL AZOXYPROP XTRA AFRAME PLUS	10.5–14 fl.oz. 10.5–14 fl.oz.	For control of northern and southern corn leaf blight. Apply when disease first appears on leaves and make a second application 7 to 14 days later as needed. For control of eyespot, southern and common rust, anthracnose, and gray leaf spot in field corn. Apply when disease appears and repeat 7 to 14 days later if conditions favor disease development. DO NOT make more than two applications per year. DO NOT apply before tasseling or within 30 days of harvest to corn grown for fodder, grain, or stover. Add a crop oil concentrate or other adjuvant to increase the level of disease control. See label for other use restrictions.
azoxystrobin + tetraconazole BRIXEN	13–19 fl.oz.	For control of northern and southern corn leaf blight, rust diseases, gray leaf spot, and eye spot. Apply before disease appears when conditions favor disease development. Apply no more than 19 fl.oz. of Brixen per acre per year.
azoxystrobin + tebuconazole HELMSTAR PLUS SC	7.2–10.8 fl.oz.	For control of northern and southern corn leaf blight, rust diseases, gray leaf spot, and eye spot. Apply before disease appears when conditions favor disease development. Repeat applications at 7- to 14-day intervals. Shorten intervals under heavy disease pressure. Apply no more than 43.2 fl.oz. per acre per year of Helmstar Plus SC.
azoxystrobin + tebuconazole CUSTODIA TEBSTROBIN SC	9–12.9 fl. oz.	For control of northern and southern corn blight, rusts, gray leaf spot, anthracnose, eyespot. Make first application before disease first appears and follow with a second application as needed 7 to 14 days later. Do not apply more than 51.7 fl. oz. /A/ season. Do not use with an adjuvant or crop oil after GSV8 and prior to GSVT (tasseling).
fluoxastrobin EVITO 480SC	2–5.7 fl.oz.	For control of southern and common rust, anthracnose, gray leaf spot, northern and southern corn leaf blight, and eye spot in field, sweet, and seed corn. Apply at silking to milk stage and again 10 to 14 days later when conditions favor disease development. Final application must be no later than the R4 (early soft dough) stage. See label for further use restrictions.
benzovindiflupr + azoxystrobin + propiconazole TRIVAPRO	13.7 fl.oz.	Apply when conditions favor disease development. Make applications no closer than 14 days apart.
fluoxastrobin + flutriafol FORTIX PREEMPTOR SC	4–6 fl.oz.	For control of common and southern rust, anthracnose, gray leaf spot, northern and southern corn leaf blight, and eyespot on field corn. Make first application when disease first appears and follow with a second application no later than growth stage R4 after 7 to 10 days. DO NOT use adjuvant for applications made between growth stage V8 and VT (tasseling). See label for additional instructions and use restrictions.
fluoxastrobin + tebuconazole EVITO T	4–9 fl.oz.	For control of common and southern rust, northern and southern leaf blight, leaf anthracnose, gray leaf spot, eye spot, and northern corn leaf spot on field and seed corn. Apply up to two times preventively no later than growth stage R4 (early dough stage). Minimum retreatment interval is 7 days. See label for additional use guidelines and restrictions.

Table 9. Fungicides Labeled for Controlling Helminthosporium Leaf Spots, Gray Leaf Spot, and Rust (cont.)

Chemical Name	Rate per Acre	Comments
flutriafol TOPGUARD XYWAY 3D XYWAY LFR	7–14 fl.oz. 5.8–11.8 oz. 0.33–0.68 oz/1000 linear ft. (30" row spacing) 7.6–15.2 oz. 0.44–0.87 oz/1000 linear ft. (30" row spacing)	For control of anthracnose, common and southern rust, gray leaf spot, northern and southern corn leaf blight, and eyespot on field corn and popcorn. For optimal disease control, make first application before symptoms appear and repeat after 7 to 14 days. Use higher rate when disease pressure is high and conditions are favorable. DO NOT use a surfactant for applications made between growth stage V8 and VT (tasseling). For use on corn as an at planting application only. XYWAY 3D fungicide applied at planting results in early to mid-season disease management, for season long control, supplemental foliar fungicide applications may be needed. Please refer to row spacing conversion chart in application instructions for application rates on row spacing other than 30 inches. Do not apply more than one application per year. Do not use this product as a foliar application. Do not apply this product by air. See label for additional use guidelines and restrictions. For mixing directly with liquid fertilizer to control listed soil and foliar diseases. XYWAY LFR fungicide may be applied to corn in-furrow at planting or post-emergence directed to the soil at the base of the plant. Soil applications provide foliar disease control/suppression through the growing season. For control of late-season infestations, heavy disease pressure situations, or foliar diseases not listed on label, a supplemental foliar application may be needed. Please refer to row space conversion chart in application instructions for application rates on row spacings other than 30". Do not use this product as a foliar application. Apply at planting or post-emergence directed to the soil, as described in the specific crop use directions. Do not apply this product by air.
Pydiflumetofen + azoxystrobin + propiconazole MIRAVIS NEO	13.7 fl. oz.	For control of anthracnose, brown spot, common rust, eye spot, gray leaf spot, northern and southern corn leaf blight on field and sweet corn. Apply when disease first appears or at V1 or R1 for disease control. Use the higher rate for heavy disease pressure or when conditions for disease development persist. DO NOT use adjuvants or other additives after the V8 growth stage and prior to the VT growth stage. Read label for other restrictions.
fluxapyroxad + pyraclostrobin PRIAXOR	4–8 fl.oz.	For control of anthracnose, common and southern rust, gray leaf spot, northern and southern corn leaf blight, and eyespot on field corn. For optimal disease control, make first application before symptoms appear and repeat after 7 to 14 days. DO NOT use adjuvant or crop oil for applications made between growth stage V8 and VT (tasseling) unless specified on label. See label for additional application and resistance management instructions
mancozeb DITHANE DF DITHANE F-45 DITHANE M-45 MANZATE PRO STICK PENNCOZEB 80W PENNCOZEB 4F	1.2 qt. 1.2 qt. 1.5 lb. 1.5 lb. 1.5 lb. 0.8–1.2 qt.	For control of common rust, gray leaf spot, and leaf blight diseases of corn. Begin applications when disease first appears. Use with a spray adjuvant. DO NOT exceed 12 pounds active ingredient mancozeb or maneb-related product per acre per season.
mefenfluoconazole + pyraclostrobin VELTYMA	7-10 fl. oz.	For control of anthracnose, eyespot, gray leaf spot, northern and southern corn leaf blight, Physoderma brown spot, common and southern rust, tar spot, and yellow leaf blight. When conditions favor disease development or disease pressure is high, use the shorter spray intervals and the higher rate. For field corn, apply at 14-day intervals at a rate of 7-10 fl. oz per acre. DO NOT make more than 2 applications at 10 fl. oz per acre per year. DO NOT apply more than 20 fl. oz. per acre per year. For sweet corn, apply at 7- to 14-day intervals. DO NOT make more than 3 applications at 10 fl. oz. per acre or 4 applications at 7 fl. oz. per acre per year on sweet corn. DO NOT apply more than 30 fl. oz. per acre per year on sweet corn. Adjuvant crop damage can occur when an adjuvant is used after the V8 stage and before the VT stage. Refer to the adjuvant label for specific use directions and restrictions; call the adjuvant distributor, retailer, or manufacturer if an adjuvant is used after the V8 stage or before the VT stage. Always follow the most restrictive label.
picoxystrobin APROACH	3–4 fl.oz. 6–12 fl.oz.	For control of anthracnose, common and southern rust, gray leaf spot, northern and southern corn leaf blight, and eyespot on field corn and popcorn. For early season disease suppression, apply between growth stage V4 and V7. For best results, apply between growth stage VT and R3, and make first application before disease onset. Reapply at 7- to 14-day intervals as needed. Use higher rate at shorter interval when disease pressure is high. DO NOT use an adjuvant or crop oil for applications made between growth stage V8 and VT (tasseling). DO NOT make more than two sequential applications of Aproach before switching to a fungicide with a different mode of action.

*MOA=Mechanism of action. Herbicides with different MOAs should be used in weed resistance management. See Table 13.

Table 9. Fungicides Labeled for Controlling Helminthosporium Leaf Spots, Gray Leaf Spot, and Rust

Chemical Name	Rate per Acre	Comments
azoxystrobin + fluindapyr + flutriafol ADASTRIO	7–9 fl.oz.	For control of gray leaf spot, eye spot, northern and southern corn leaf blight, Physoderma brown spot, southern corn rust, anthracnose leaf blight, and Diplodia ear and stalk rot. DO NOT apply more than 2 applications per year. DO NOT apply more than 18 fl.oz. of product. DO NOT use an adjuvant after the V8 and before the VT stage of corn. See label for additional directions and restrictions.
picoxystrobin + cyproconazole APROACH PRIMA	3.4 fl.oz. 3.4–6.8 fl.oz.	For control of anthracnose, common and southern rust, gray leaf spot, northern and southern corn leaf blight, and eyespot on field corn and popcorn. For early season disease suppression, apply between growth stage V4 and V7. For best results, apply between growth stage VT and R3, and make first application before disease onset. Reapply at 7- to 14-day intervals as needed. Use higher rate at shorter interval when disease pressure is high. DO NOT apply with an adjuvant or crop oil when applying Aproach Prima between growth stage V8 and VT (tasseling). DO NOT make more than two sequential applications before switching to a fungicide with a different mode of action. DO NOT exceed 6.8 fluid ounces per acre per crop.
propiconazole BUMPER 41.8 EC PROPIMAX TILT 3.6E	2–4 fl.oz. 2–4 fl.oz. 2–4 fl.oz. 4 fl.oz.	For control of northern and southern corn leaf blight. Apply when disease first appears and continue at 7- to 14-day intervals as needed to control the disease. Use higher rate when conditions favor disease development. DO NOT apply more than 16 fluid ounces per acre per year of any propiconazole formulation to corn grown for grain or within 30 days of harvest to corn grown for fodder, grain, or stover. See label for other use restrictions. For control of eyespot, southern and common rust, and gray leaf spot. Apply when disease first appears and repeat at 7- to 14-day intervals as needed to control disease. DO NOT apply more than 16 fluid ounces per acre per year of any propiconazole formulation to corn grown for grain or within 30 days of harvest to corn grown for fodder, grain, or stover. See label for other use restrictions.
prothioconazole PROLINE 480SC	5.7 fl.oz. 5.7 fl oz	For control of northern and southern corn leaf blight, rust diseases, gray leaf spot, and eye spot. Apply as a preventive foliar spray when the earliest disease symptoms appear on the leaves or stems. Repeat applications as needed 10 to 14 days after first application when conditions remain favorable for disease development. Do not use spray adjuvants for sprays made between V8 and VT (tasseling). Do not exceed 22.8 fl.oz. Proline per crop. For Fusarium, Gibberella, and Aspergillus ear rots. Apply at silking (Growth Stage R1) to brown silk (GS R2).
prothioconazole + trifloxystrobin STRATEGO YLD DELARO 325 SC	4–5 fl.oz. 8-12 fl.oz.	For control of northern and southern corn leaf blight, eyespot, southern and common rust, and gray leaf spot on field corn. Apply Stratego at silking or milk stage and repeat 7 to 14 days later when conditions favor further disease development. DO NOT apply more than 10 fluid ounces per acre per year. See label for further use restrictions. Apply Delaro when disease first appears. And continue on a 7- to 14-day interval if conditions for disease development persist. Use the higher rate and shorter intervals when disease pressure is severe. The inclusion of an adjuvant for applications made through V8 and after tassel emergence is recommended. See label for other suggestions and restrictions.
pyraclostrobin PYRAC 2EC	6–12 fl.oz.	For control of anthracnose, northern and southern corn leaf blight, yellow leaf spot, southern rust, and gray leaf spot, apply when conditions favor disease and repeat application 7 to 14 days later as needed to control disease. Apply at higher rate and shorter intervals when weather patterns favor disease. Make no more than two consecutive applications of Headline or other Group 4 fungicide. See label for application and resistance management instructions.
pyraclostrobin + metconazole HEADLINE AMP	10–14.4 fl.oz.	For control of anthracnose, northern and southern corn leaf blight, Physoderma brown spot, southern and common rust, and gray leaf spot. Apply prior to disease development and repeat at 7- to 14-day intervals as needed. Use higher rate at shorter interval when conditions favor disease development. DO NOT make more than two consecutive applications of Headline AMP or other Group 4 fungicide. Maximum product per acre per season is 57.6 fluid ounces.
tebuconazole MONSOON ORIOUS 3.6F TEBUZOL 3.6F TEBUSTAR 3.6F	4–6 fl.oz.	For control of rust, southern corn leaf blight, northern corn leaf blight, and gray leafspot. Apply as protective treatment when conditions favor disease or when symptoms first appear. Repeat applications at 7- to 14-day intervals. A maximum of 24 fluid ounces may be applied per year. See label for additional instructions.
tetraconazole DOMARK 230ME	4–6 fl.oz.	For control of common and southern rust, northern and southern corn leaf blight, gray leaf spot, and anthracnose leaf blight. Apply before disease appears but when conditions favor disease development. Do not apply more than 6 fluid ounces per acre or make more than one application per year. Do not apply between growth stage V8 and VT (tasseling) with an adjuvant.

Table 9. Fungicides Labeled for Controlling Helminthosporium Leaf Spots, Gray Leaf Spot, and Rust (cont.)

Chemical Name	Rate per Acre	Comments
tetraconazole + azoxystrobin AFFIANCE	10–17 fl.oz.	For control of gray leaf spot, rust, eye spot, northern and southern corn leaf blight. For early season disease suppression, apply between growth stages V4 and V8. Follow with a second application as needed at growth stage VT–R3. For applications made between growth stages V8 and R3, apply prior to the appearance of symptoms when conditions favor disease development and follow with a second application 7 to 14 days later as needed to a maximum of 17.06 fl.oz./A. Minimum spray volume is 2 gpa for aerial and 10 gpa for ground applications. See label for additional use restrictions.
tetraconazole + fluoxastrobin ZOLERA FX	4.4–6.8 fl.oz.	Make first applications when conditions favor disease. Use higher rate when disease pressure is high. Do not apply more than 6.8 fl.oz. per acre for Zolera FX per application. A maximum of one application of Zolera fungicide may be made per year.

Table 10. Corn Nematode Control

Amount of Formulation			
Nematicide	Per 1000 Ft. Row	Per Acre	Comments
abamectin + thiamethoxam AVICTA DUO CORN	—	See label.	Field, Popcorn, and Sweet Corn: Apply with commercial seed treatment equipment. For early season suppression of nematodes.
clothianidin + <i>Bacillus firmus</i> I-1582 PONCHO/VOTIVO	—	See label.	Field, Popcorn, and Sweet Corn: Apply with commercial seed treatment equipment.
ethoprop MOCAP 15G LOCK'N'LOAD	12–16 oz.	See label.	Field and Sweet Corn: Apply at planting on 6- to 7-inch band <i>over seed furrow</i> and lightly incorporate. Rate depends on row spacing. See label for applicator settings and application instructions.
terbufos COUNTER LOCK'N'LOAD 15G	6–8 oz.	—	Field, Popcorn, and Sweet Corn: Apply on 7-inch band directly behind planter shoe and in front of press wheel. Incorporate with drag chains or tines. See label for other use restrictions Do not exceed 6.5 lb. of Counter per acre.
	6–8 oz.	—	Place in seed furrow behind the planter shoe so granules are covered by soil.

Disease and Nematode Control section prepared by **Austin K. Hagan**, former *Extension Plant Pathologist*, Professor Emeritus, and **Edward Sikora**, *Extension Plant Pathologist*, Professor, both in Entomology and Plant Pathology, Auburn University.

WEED CONTROL

Table 11. Corn Weed Control

Herbicide (trade name)	Herbicide Common name	REI/PHI (Hours or Days)	Rate/Acre Broadcast		Herbicide Group	Time of Application	Weeds Controlled	Comments
			Formulation	Active Ingredient				
BURNDOWN (NO-TILL/REDUCED TILL)								
AIM	carfentrazone-ethyl	12 hr./ 14 Leaf Collars	2 fl.oz.	0.032 lb.	14	Apply as a preplant burndown no later than one day after planting.	Broadleaf weeds up to 4 inches tall	Apply with glyphosate or paraquat to increase weed spectrum. See label for tank-mix partners. Coverage is essential for good control.
ANTHEM ATZ	atrazine + pyroxasulfone + fluthiacet-methyl	12 hr./45 d	2 pt. (coarse) 2.27 pt.– 2.75 pt. (medium) 2.5 pt.– 4 pt. (fine)	1.125 lb. (coarse) 1.267–1.549 lb. (medium) 1.408–2.253 lb. (fine)	5 + 14 + 15	Apply up to 45 days before planting.	Broadleaf weed, annual grasses, suppresses yellow nutsedge.	Moisture is necessary to activate this herbicide. Do not use on muck soils with 10% or > organic matter. See label for soil type restrictions.
CLARITY	dicamba	24 hr./30 d	8–12 fl.oz.	0.25–0.75 lb.	4	Apply before planting.	Annual broadleaf weeds	Use in reduced tillage production systems only. See label for tank-mix partners.
ELEVORE	haluxifen-methyl	12 hr./N/A	1 fl.oz.	0.00445 lb.	4	Apply 14 days before planting.	Annual broadleaf weeds.	Apply with a COC or MSO at 0.5–1.0% V/V.
VARIOUS	glyphosate	4 hr./ 7 d	32–64 fl.oz. (3lb ae) 22–32 fl.oz. (4.5lb ae)	0.75–1.13 lb. ae	9	Apply before planting.	Annual grasses and small-seeded broadleaf weeds.	Adjust rates according to weed species, weed size, and spray volume. See labels for tank- mix partners. Some formulations of generic glyphosate require a nonionic surfactant. Check labels to see if a surfactant is required.
VARIOUS	2, 4-D	48 hr./ 7 d	1.0–2.0 pt. (3.8 lb.) 0.67–1.3 pt. (5.7 lb.)	0.475–0.95 lb.	4	Apply 7-14 days before planting.	Annual broadleaf weeds.	Do not apply more than 2 pints per acre per application. See label for tank-mix partners and spray drift management control.
GRAMOXONE SL	paraquat	24 hr./ 7 d	2.0–4.0 pt.	0.5–0.75 lbs.	22	Apply as preplant burndown or prior to crop emergence	Annual grasses and broadleaf weeds.	Use the 2.0–2.5 pt rate for weeds 1–3 inches; 2.5–3.0 pt rate for weeds 3–6 inches; 3.0–4.0 pt rate for weeds 6 inches tall. See label for tank-mix partners for improved burndown or residual control. Use in a minimum of 10 gallons of spray per acre for ground applications. Add a nonionic surfactant at 0.5% v/v or a crop oil concentrate at 1% v/v.

Table 11. Corn Weed Control (cont.)

Herbicide (trade name)	Herbicide Common name	REI/PHI (Hours or Days)	Rate/Acre Broadcast		Herbicide Group	Time of Application	Weeds Controlled	Comments
			Formulation	Active Ingredient				
BURNDOWN (NO-TILL/REDUCED TILL) (cont.)								
LIBERTY 280	glufosinate-sodium	12 hr./70 d	29–36 fl.oz.	0.53–0.66 lbs.	10	Apply as a preplant burndown.	Annual grasses and broadleaf weeds.	Thorough spray coverage is essential for optimum performance. Use a minimum of 15 gallons of water per acre. Dense weed canopies require 20–40 gallons per acre. See label for tank-mix partners and application information. Wait until 1.5 hours after sunrise to begin spraying and stop at least 1 hour before sunset.
VALOR SX	flumioxazin	12 hr./N/A	2.0–3.0 oz.	1.0–1.5 lb.	14	Apply as a preplant burndown.		Use only on no-till or minimum tillage fields where last year's crop residue has not been incorporated into the soils. Corn must be planted between 14 and 30 days after application unless the application is made as part of a fall burndown program. Add either a crop oil concentrate or methylated seed oil or a nonionic surfactant at 0.25% v/v unless an adjuvant is already in a tank-mix partner. See label for tank-mix partners.
VERDICT	saflufenacil + dimethenamid-P	12 hr./80 d	10–18 fl. oz.	0.435–0.78 lbs.	14 + 15	Apply as a preplant burndown.	Annual grasses and broadleaf weeds and sedges.	For coarse soils, apply 10–12 fl.oz./A; medium soils, apply 13–15 fl.oz./A; fine soils, apply 16–18 fl. oz./A. Do not apply Verdict where an at-planting application of an organophosphate or carbamate insecticide is planned and/or has occurred because severe injury may result. See label for exceptions. Use a methylated seed oil (MSO) 1 gal./100 gals. (1% v/v).
PREEMERGECE FOR NO-TILL OR CONVENTIONAL CORN								
ACURON	S-metolachlor + atrazine + mesotrione + bicyclopyrone	24 hr./45 d (growing) 60 d (forage)	2.5 qt.	2.15 lb.	5 + 15 + 27	Apply to the soil surface up to 28 days before planting.	Grasses, broadleaf weeds, and yellow nutsedge.	This is a Restricted Use pesticide. When tank-mixing with atrazine, do not exceed 2.0 lb. ai per application or 2.5 lb. ai per acre per year. Can be used on sweet corn (PRE) or yellow popcorn (PRE). See label for restrictions.
ANTHEM	pyroxasulfone + fluthiacet-methyl	12 hr./70 d	5.0–8.0 fl.oz.	0.084–0.134 lb.	14 + 15	Apply as a preplant up to 45 days before planting or preemergence.	Annual grasses, broadleaf weeds, and yellow nutsedge.	See label for additional rates with finer textured soils and tank-mix partners. Weed control will be optimized when applications are made to seedbeds free of residue.
ANTHEM ATZ	atrazine + pyroxasulfone + fluthiacet methyl	12 hr./45 d	1.75–2 pts. (coarse) 2–2.5 pts. (medium) 2.25–3 pts. (fine)	0.985–1.126 lb. (coarse) 1.126–1.408 lb. (medium) 1.267–1.689 lb. (fine)	5 + 14 + 15	Apply prior to crop emergence.	Broadleaf weed, annual grasses, suppresses yellow nutsedge.	Moisture is necessary to activate this herbicide. Do not use on muck soils with 10% or > organic matter. See label for soil type restrictions.

Table 11. Corn Weed Control (cont.)

Herbicide (trade name)	Herbicide Common name	REI/PHI (Hours or Days)	Rate/Acre Broadcast		Herbicide Group	Time of Application	Weeds Controlled	Comments
			Formulation	Active Ingredient				
PREEMERGECE FOR NO-TILL OR CONVENTIONAL CORN (cont.)								
ANTHEM FLEX	pyroxasulfone + carfentrazone	12 hr/ 37 d (sweet corn)	3.5–7.28 fl.oz.	0.109 to 0.227 lb.	14 + 15	Preplant up to 45 days before planting, preplant incorporated, or preemergence.	Annual grasses and small-seeded broadleaf weeds.	Use the lower rate on coarse-textured soils. Mix with glyphosate, paraquat, or glufosinate to control emerged vegetation. Sufficient weed control depends on adequate rainfall for incorporation. Weed control is optimized when applications are made to seedbeds free of residue.
ANTHEM MAXX	pyroxasulfone + fluthiacet-methyl	12 hr./70 d	3.0–6.5 fl.oz.	0.101–0.218 lb.	14 + 15	Apply as a preplant up to 45 days before planting or preemergence.	Annual grasses, broadleaf weeds, and yellow nutsedge.	See label for additional rates with finer textured soils and tank-mix partners. Weed control will be optimized when applications are made to seedbeds free of residue.
ATRAZINE	atrazine	12 hr./60 d	32–64 fl.oz.	1–2 lb.	5	At planting or before crop or weed emergence.	Most small- seeded annual weeds and grasses.	See label for tank-mix partners. Atrazine is a Restricted Use pesticide. Do not exceed 2.5 pounds of active ingredient per acre per year.
AXIOM DF	flufenacet + metribuzin	12 hr./120 d	8.0–15 oz.	0.34–0.64 lb.	15 + 5	Apply preplant up to 45 days before planting, preplant incorporated, or preemergence.	Certain annual grasses and broadleaf weeds.	Do not apply Axiom DF on coarse textured soils with less than 1.0% organic matter. See label for tank-mix partners. Excessive rainfall or irrigation after application may reduce weed control.
BALANCE FLEXX	isoxaflutole	12 hr./45 d	3.0–6.0 fl.oz.	0.047–0.094 lb.	27	Apply preplant up to 21 days before planting, preplant incorporated, or preemergence.	Annual grasses and broadleaf weeds.	See label for tank-mix partners. Use lower rates for coarse textured soils (3–4 fl.oz.), medium soils (5–6 fl.oz.), fine soils (5.5–6 fl.oz.).
BICEP II MAGNUM, ETC.	atrazine + S-metolachlor	24 hr./30 d	1.3–2.1 qt.	1.79–2.89 lb.	5 + 15	Apply preplant (surface or incorporated), preemergence, or early postemergence before weeds pass the 2-leaf stage and before corn exceeds 12 inches in height).	Small-seeded broadleaf, annual grasses, and yellow nutsedge	This is a Restricted Use pesticide. See label for tank-mix partners. On highly erodible land with less than 30% plant residue cover prior to crop emergence, do not exceed 1.6 lb ai of atrazine. See label for all Bicep II Magnum rate limitations.

Table 11. Corn Weed Control (cont.)

Herbicide (trade name)	Herbicide Common name	REI/PHI (Hours or Days)	Rate/Acre Broadcast		Herbicide Group	Time of Application	Weeds Controlled	Comments
			Formulation	Active Ingredient				
PREEMERGECE FOR NO-TILL OR CONVENTIONAL CORN (cont.)								
CORVUS	thiencarbazone methyl + isoxaflutole	12 hr./45 d	3.3 fl.oz. (coarse) 5.6 fl.oz. (medium and fine)	0.068 lb. (coarse) 0.12 lb. (medium and fine)	27 + 2	Apply up to 21 days before planting or prior to corn emergence.	Broadleaf weeds and grasses.	This is a Restricted Use pesticide. Consult label for restrictions and see label for guidelines for tank-mixes.
DUAL II MAGNUM	S-metolachlor	24 hr./30 d	1.0–1.67 pt.	0.96–1.6 lb.	15	Apply preplant, preplant incorporated, or preemergence.	Small-seeded broadleaf weeds, annual grasses, and yellow nutsedge.	See label for tank-mix partners. Use 1.0–1.33 pt./A on coarse soil types.
LEADOFF	rimsulfuron + thifensulfuron- methyl	4 hr./N/A	1.5–2.7 oz.	0.0313–0.0564 lb.	2	Apply preplant or preemergence	Broadleaf weeds and grasses.	Add surfactant when mixing with nonselective products for burndown prior to crop emergence. Some hybrids may be sensitive to rimsulfuron. Consult with your seed supplier prior to application.
LEXAR EZ, LUMAX	S-metolachlor + atrazine + mesotrione	24 hr./60 d	2.5 qt.	2.78–3.24 lb.	15 + 5 + 27	Apply as a preemergence to corn.	Annual grasses and broadleaf weeds.	See label for tank-mix partners. This is a Restricted Use pesticide. Do not apply more than 14 days prior to planting.
OUTLOOK	dimethenamid-P	12 hr./40 d	12.0–18.0 fl.oz.	0.56–0.84 lb.	15	Apply preplant, preplant incorporated, or preemergence.	Annual grasses, broadleaf weeds, and yellow nutsedge.	Do not apply to sandy soils with less than 3% organic matter. See label for tank-mix partners. Tank-mixes with glyphosate or paraquat must be used when weeds are present at the time of application.
PROWL H2O	pendimethalin	24 hr./21 d	2.0–3.0 pt.	0.95–1.43 lb.	3	Apply after planting but before weeds germinate and crop emerges or postemerge until corn reaches 30 inches tall or in the V8 growth stage, whichever is more restrictive.	Small-seeded broadleaf and annual grasses.	Plant corn at least 1.5 inches deep and completely cover with soil. See label for tank-mix partners. Do not apply as a preplant incorporated or serious corn injury can result. Use the lower rates on coarse textured soils.
PYTHON WDG	flumetsulam	12 hr./45 d	0.8–1.0 oz.	0.04–0.05 lb.	2	Apply preplant up to 30 days before planting, preplant incorporated, or preemergence.	Broadleaf weeds.	Due to crop injury, Python cannot be used when Counter or Thimet insecticides are used. All other insecticides should be applied in a T-band or band to avoid potential crop injury. Use on soils with less than 1.5% organic matter may result in crop injury. Do not apply Python WDG to coarse soils more than 14 days before planting. See label for recropping restrictions and tank-mix partners.

Table 11. Corn Weed Control (cont.)

Herbicide (trade name)	Herbicide Common name	RE/PHI (Hours or Days)	Rate/Acre Broadcast		Herbicide Group	Time of Application	Weeds Controlled	Comments
			Formulation	Active Ingredient				
PREEMERGECE FOR NO-TILL OR CONVENTIONAL CORN (cont.)								
SHARPEN	saflufenacil	12 hr./80 d	2.0–3.5 fl.oz.	0.045–0.078 lb.	14	Apply preplant, preplant incorporated, or preemergence.	Broadleaf weeds.	For coarse soils, apply 2.0–2.5 fl.oz.; medium soils, apply 2.5–3 fl.oz.; fine soils, apply 3.0–3.5 fl.oz.; see label for tank-mix partners. Do not apply where at-planting application of an organophosphate or carbamate insecticide is planned. Do not apply after corn emerges or severe crop injury will occur.
VALOR SX	flumioxazin	12 hr./N/A	2.0–3.0 oz.	0.25–0.37 lb.	14	Apply between 14 and 30 days prior to planting.	Broadleaf weeds.	See label for tank-mix partners. Residual weed control will not be provided at rates lower than 2 oz./A. Tank-mixes with flufenacet, metolachlor or S-metolachlor, dimethenamid or dimethenamid-p, alachlor, or acetochlor may result in injury to field corn when application is followed by prolonged periods of cool wet weather and should be used with Valor SX unless supplemental labeling by Valent USA Corp is followed.
VERDICT	saflufenacil + dimethenamid-P	12 hr./ 80 d	10–18 fl.oz.	0.435–0.78 lbs.	14 + 15	Apply preplant, preplant incorporated, or preemergence.	Annual grasses and broadleaf weeds and sedges.	For coarse soils, apply 10–12 fl.oz./A; medium soils, apply 13–15 fl.oz./A; fine soils, apply 16–18 fl. oz./A. Do not apply Verdict where an at-planting application of an organophosphate or carbamate insecticide is planned and/or has occurred because severe injury may result. See label for exceptions. Use a methylated seed oil (MSO) 1 gal/100 gals (1% v/v).
WARRANT	acetochlor	12 hr./N/A	1.5–2.75 qt.	1.10–2.02 lb.	15	Apply preplant, at-planting, or preemergence	Annual grasses and small-seeded broadleaf weeds	Add surfactant when mixing with non-selective products for burndown prior to crop emergence. Adequate rainfall is necessary for soil incorporation and activation.
ZIDUA	pyroxasulfone	12 hr./37 d	1.5–4 fl.oz.	0.11–0.29 lb.	15	Apply preplant, preplant incorporated, or preemergence.	Annual broadleaves, grasses, and yellow nutsedge.	For coarse soils, apply 1.5–2.75 fl.oz.; medium soils, 2–3 fl.oz.; fine soils, 2.5–4 fl.oz.. Do not apply more than 2.75 fl.oz.. of Zidua on coarse soils. See label for tank-mix partners.
POST (OVER THE TOP) FOR CORN								
2, 4-D AMINE	2, 4-D Amine	48 hr./7 d	0.5–1.0 pt.	0.25–0.5 lb.	4	Apply postemergence over-the-top when corn is 4-8 inches tall and when weeds are small. After corn is 8 inches tall, use drop nozzles to direct spray to base of plant.	Annual broadleaf weeds.	Use higher rate when weeds are taller. Corn may be injured when it is silking or tasseling. Delay cultivation at least a week after application or corn stalks may become brittle. PREVENT SPRAY DRIFT by using on days with low wind, using drift-reducing nozzles, and spraying in cooler weather. A nonionic surfactant should be added at 0.25% v/v.

Table 11. Corn Weed Control (cont.)

Herbicide (trade name)	Herbicide Common name	REI/PHI (Hours or Days)	Rate/Acre Broadcast		Herbicide Group	Time of Application	Weeds Controlled	Comments
			Formulation	Active Ingredient				
POST (OVER THE TOP) FOR CORN (cont.)								
ACCENT Q	nicosulfuron	4 hr./30 d	0.9 oz.	0.48 lb.	2	Apply postemergence to corn up to 20 inches tall or that is up to and including 6 leaf collars (V6) whichever is more restrictive; apply with drop nozzles only in corn 20-36 inches tall.	Annual grasses and broadleaf weeds.	Add either a crop oil concentrate at 1% v/v or a nonionic surfactant at 0.25% v/v. See label for tank-mix partners and insecticide interaction information.
ACURON	S-metolachlor + atrazine + mesotrione + bicyclopyrone	24 hr./45 d (growing) 60 d (forage)	2.5 qt.	2.15 lb.	5 + 15 + 27	Apply to small broadleaf weeds (3 in.).	Grasses, broadleaf weeds, and yellow nutsedge.	See label for type of adjuvant needed. Do not apply in liquid fertilizer. May only be applied to field corn POST. Do not apply POST to sweet corn or yellow popcorn.
AIM	carfentrazone-ethyl	12 hr./14 Leaf Collars	0.5 oz.	0.008 lb.	14	Apply postemergence up to 8 leaf collar stage.	Annual broadleaf weeds.	Temporary leaf burn may occur. Always add a nonionic surfactant at 0.25% v/v.
ANTHEM ATZ	atrazine + pyrooxasulfone + fluthiacet methyl	12 hr./45 d	1.5–2 pts. (coarse) 1.15–2.85 pts. (med.) 2–3 pts. (fine)	0.849–1.126 lb. (coarse) 0.985–1.267 lb. (medium) 1.126–1.689 lb. (fine)	5 + 14 + 15	Apply from crop emergence up to V4 stage.	Broadleaf weeds, grasses, and suppresses yellow nutsedge.	Moisture is necessary to activate this herbicide. Do not use on muck soils with 10% or > organic matter. See label for soil type restrictions.
ARMEZON, IMPACT	topramazone	12 hr./45 d	0.5–1.0 fl.oz.	0.011–0.021 lb.	27	Postemergence on all corn types up to the V8 growth stage.	Annual broadleaves and grasses.	Add a methylated seed oil (MSO) at 1 to 1.5% v/v. Use the higher rate in periods of hot, dry weather. See label for tank-mix partners.
ARMEZON PRO	topramazone + dimethenamid	12 hr./45 d	14–16 fl.oz. (coarse) 16–20 fl.oz. (medium and fine)	0.59–0.67 lb. (coarse) 0.67–0.84 lb. (medium and fine)	15 + 27	Apply to weeds 4 inches or less.	Broadleaf weeds and grasses	Use an MSO or a COC at 0.5 to 1.0 gal. per 100 gal. H ₂ O (0.5–1.0 % v/v). See label for tank-mixing partners. Safe for all corn types including field, seed, sweet corn, and popcorn.
ATRAZINE + OIL	atrazine	12 hr./60 d	2 qt.	2 lb. + 1 gal./100 gal.	5	Apply before corn reaches 12 inches tall and before weeds are 1.5 inches tall.	Annual grasses and broadleaf weeds.	Atrazine is a Restricted Use pesticide. Do not exceed 2.5 pounds of total atrazine per calendar year. Always add a crop oil concentrate (COC) at 1 gal. per 100 gal. of spray mix.

Table 11. Corn Weed Control (cont.)

Herbicide (trade name)	Herbicide Common name	REI/PHI (Hours or Days)	Rate/Acre Broadcast		Herbicide Group	Time of Application	Weeds Controlled	Comments
			Formulation	Active Ingredient				
POST (OVER THE TOP) FOR CORN (cont.)								
BASAGRAN	bentazon	48 hr./12 d	1.5–2.0 pt.	0.75–1.0 lb.	6	Apply early postemergence.	Annual broadleaf weeds and suppresses yellow nutsedge.	See label for tank-mix partners. Always add a nonionic surfactant at 0.25% v/v or a crop oil concentrate at 0.5 % v/v. See label for specific rates with weed sizes.
CALLISTO	mesotrione	12 hr./45 d	3 fl.oz.	0.094 lb.	27	Apply postemergence up to 30 inches tall.	Annual broadleaves and grasses.	Always add a crop oil concentrate (COC) at 1% v/v. See label for insecticide precautions with organophosphate and carbamate insecticides. See label for tank-mix partners; take caution with mixing with emulsifiable concentrates (EC). Do not apply to popcorn, sweet corn, or ornamental corn.
CAPRENO	thiencarbazone-methyl + tembotrione	12 hr./45 d	3 fl.oz.	0.013 + 0.0675 lb.	2 + 27	Apply postemergence up to V5 corn. Apply postdirected from V6 to V7 (the first leaf has a rounded tip).	Annual broadleaf weeds and yellow nutsedge.	Always add a crop oil concentrate (COC) at 1% v/v. Do not apply Capreno on coarse-textured soils containing less than 2% organic matter or crop injury may occur. See label for tank-mix partners and for insecticide interaction information.
CLARITY, ETC.	dicamba	24 hr./30 d	0.5–1.0 pt.	0.25–0.5 lb.	4	Apply postemergence until corn is 36 inches tall or until 15 days before tassel emerges.	Annual broadleaf weeds	Use the 0.5 pt. rate up to 36 inches tall; the 1 pt. rate up to 8 inches tall. Do not apply when conditions are favorable for drift to nearby, sensitive crops. Do not apply to sweet corn or popcorn. Do not make more than one application per season.
CORVUS	thiencarbazone methyl + isoxaflutole	12 hr./45 d.	3.3 fl.oz. (coarse) 5.6 fl.oz. (medium and fine)	0.068 lb. (coarse) 0.12 lb. (medium and fine)	27 + 2	Apply from spiking through the 2-collar stage.	Broadleaf and grasses.	This is a Restricted Use pesticide. Consult label for restrictions and see label for guidelines for tank-mixes. Do not use COC or MSO with Corvus applied to emerged field corn.
HALEX GT (ROUNDUP READY VARIETIES ONLY)	S-metolachlor + glyphosate + mesotrione	24 hr./45 d	3.6–4.0 pt.	2.0–2.2 lb.	15 + 9 + 27	Postemergence from corn emergence up to 30 inches tall or 8 leaf stage	Most broadleaf weeds and annual grasses.	Add a nonionic surfactant (NIS) at 1-2 qt./100 gal (0.25-0.5% v/v). See label for tank-mix partners. Yield loss may occur if any foliar organophosphate or carbamate insecticide is applied postemergence with 7 days before or after a Halex GT application or if applied in a tank-mix with Halex GT. (APPLY TO ROUNDUP READY VARIETIES ONLY)

Table 11. Corn Weed Control (cont.)

Herbicide (trade name)	Herbicide Common name	REI/PHI (Hours or Days)	Rate/Acre Broadcast		Herbicide Group	Time of Application	Weeds Controlled	Comments
			Formulation	Active Ingredient				
POST (OVER THE TOP) FOR CORN (cont.)								
LAUDIS	tembotrione	12 hr./45d	3 fl.oz..	0.082 lb	27	Postemergence from emergence up to V8 stage for field corn or popcorn, or from emergence up to V7 stage for sweet corn	Annual broadleaf weeds and grasses.	Use a methylated seed oil (MSO) at 1 gallon per 100 gallons of water (1% v/v). See label for tank-mix partners.
LEXAR EZ, LUMAX	S-metolachlor + atrazine + mesotrione	24 hr./60d	3 qt	2.78 lb	5 + 15 + 27	Apply early postemergence until corn is 12 inches tall	Most broadleaf weeds and annual grasses.	Do not apply postemergence within 7 days of any organophosphate or carbamate insecticide application. See label for tank-mix partners. This is a Restricted Use Pesticide.
LIBERTY 280SL (LIBERTY LINK VARIETIES ONLY)	glufosinate-sodium	12 hr./70d	22 fl.oz..	0.40 lb	10	Apply postemergence until the corn reaches 24 inches in height or V-7 growth stage unless using drop nozzles in which you can go up to 36 inches tall	Most annual grasses and broadleaf weeds.	Must be applied with ammonium sulfate (AMS) at 3 lbs per acre (17 lbs/100 gallons). See label for tank-mix partners. (LIBERTY LINK VARIETIES ONLY)
PERMIT PLUS	halosulfuron-methyl + thifensulfuron-methyl	12 hr./30 d	0.75 oz..	0.031 + 0.0036 lb	2 + 2	Apply over the top or with drop nozzles to 2 to 6 leaf corn.	Annual broadleaf weeds and nutsedges.	See label for tank-mix partners. Add a nonionic surfactant (NIS) at 0.25 to 0.5% v/v.
REALM Q	rimsulfuron + mesotrione	12 hr./70 d	4 oz.	0.097 lb	2 + 27	Apply postemergence up to 20 inches in height or having 7 or more leaf collars, whichever is more restrictive.	Annual grasses and broadleaf weeds.	Include a crop oil concentrate (COC) at 1% v/v. See label for tank-mix partners. Do not apply to field corn grown for seed, to popcorn, or to sweet corn. Do not tank-mix with foliar-applied organophosphate insecticides. See label for additional insecticide restriction information.
RESICORE	acetochlor + mesotrione + clopyralid	2 hr/45 d ears and forage; 60 d stover	2.25 to 2.75 pt.	0.93–1.13 lb.	15 + 27 + 4	Small, actively growing weeds less than 3 inches tall.	Henbit, morningglory, pigweed, and other broadleaf weeds.	Mix with glyphosate or glufosinate (depending on hybrid) and atrazine to improve weed control spectrum. Do not apply carbamate or organophosphate insecticide within 7 days before or 7 days after application. Add a nonionic surfactant at 0.25% v/v or a nonphytotoxic crop oil concentrate at 1% v/v.

Table 11. Corn Weed Control (cont.)

Herbicide (trade name)	Herbicide Common name	REI/PHI (Hours or Days)	Rate/Acre Broadcast		Herbicide Group	Time of Application	Weeds Controlled	Comments
			Formulation	Active Ingredient				
POST (OVER THE TOP) FOR CORN (cont.)								
REVULIN Q	nicosulfuron + mesotrione	12 hr./ 70 d (grain) 45 (storage)	3.4–4 oz.	0.011–0.128 lb.	2 + 27	Apply to corn up to 20 inches tall or V6, whichever is more restrictive.	Certain annual grasses, broadleaf weeds.	See label for restrictions. Do not tank-mix with organophosphates. Do not use liquid nitrogen as the total carrier. See label for adjuvant requirement. May be used in corn for seed, yellow popcorn, and field corn grown for silage or grain. See label for rates and application timings for different types of corn.
ROUND-UP POWERMAX (4.5 ae) Generic glyphosate (3.0 lb. ae) (ROUNDUP READY 2 HYBRIDS ONLY)	glyphosate	4 hr./ 7 d	16–32 fl.oz.. (4.5 ae) 24–32 oz. (3 ae)	0.56–1.125 lb ae	9	Apply from emergence to 30 inches in height or through V8 growth stage on Roundup Ready corn. If drop nozzles are used height restrictions go up to 48" in height	Most annual grasses and broadleaf weeds.	See label for tank-mix partners. The use of a residual herbicide is necessary to obtain optimum control and for resistance weed management. Avoid spraying under conditionals that favor drift. See label for restrictions. (ROUNDUP READY 2 HYBRIDS ONLY)
SOLSTICE	fluthiacet-methyl + mesotrione	12 hr./ 45 (forage) 70 days (fodder)	2.5–3.15 fl.oz.	0.078–0.098 lb.	14 + 27	Apply (POST) up to V8 growth stage (or 30 inches tall).	Annual grasses, broadleaf weeds	See label for restrictions, adjuvant requirements, and rotational restrictions. See rates for specific weeds on label.
STATUS	diflufenzopyr + dicamba	24 hr./ 72 d	5–10 oz.	0.18–0.35 lb.	19 + 4	Apply postemergence from 4 to 36 inches tall or V10 stage, or within 15 days before tassel emergence, whichever comes first.	Annual and perennial broadleaf weeds and grasses.	Use a nonionic surfactant (NIS) at 0.25% v/v plus 1.25% UAN or 5 to 17 pounds of AMS. See label for tank-mix partner, restrictions with emulsifiable concentrates (EC), and foliar insecticide interactions.
STEADFAST Q	nicosulfuron + rimsulfuron	4 hr./30 d	1.5 oz.	0.035 lb.	2	Apply postemergence to corn up to 20 inches tall and with up to 6 leaf collars.	Annual grasses and broadleaf weeds.	Always add a nonionic surfactant at 0.25% v/v or a crop oil concentrate at 1% v/v. In addition, an ammonium nitrate fertilizer must be used unless specifically prohibited by tank-mix labeling partner (28% N at 2 qt./A). See label for tank-mix partners. Do not apply to corn treated with Counter 15G, Counter 20CR, Lorsban, or Thimet. See label for additional soil insecticide interaction information.

Table 11. Corn Weed Control (cont.)

Herbicide (trade name)	Herbicide Common name	REI/PHI (Hours or Days)	Rate/Acre Broadcast		Herbicide Group	Time of Application	Weeds Controlled	Comments
			Formulation	Active Ingredient				
POST DIRECTED FOR CORN								
VARIOUS	linuron	24 hr./ 57d	1.25–1.5 lb. (50 DF) 1.25–1.5 pts. (4L)	0.625–0.75 lb.	7	Apply a single application as a directed spray after corn is at least 15 inches in height.	Most annual broadleaf weeds and grasses.	Do not use on loamy sand or sand. Use the low rate when weeds are less than 2 inches tall. Use the high rates on weeds up to 5 inches. Use a nonionic surfactant (NIS) at 0.5% v/v.
GRAMOXONE SL, ETC.	paraquat	12 hr./7 d	1–2 pt.	0.25–0.5 lb.	22	Apply as a postemergence directed spray after corn is at least 12 inches tall. (Including hooded or shielded sprayers.)	Annual grasses and broadleaf weeds less than 4 inches tall.	Add a nonionic surfactant (NIS) at 0.25% v/v. This is a Restricted Use pesticide. Spray no higher than the lower 3 inches on the corn stalk. See label for tank-mix partners.
HARVEST AIDS FOR CORN								
2, 4-D	2, 4-D	48 hr./7 d	1–2 pt.	0.48–0.96 lb.	4	Apply after corn has reached the hard dough stage or is in dent.	Broadleaf weeds or vines that interfere with harvesting.	Observe drift control precautions noted for postemergence use of 2,4-D. No adjuvant is recommended.
AIM	carfentrazone-ethyl	12 hr./3 d	1.6–1.9 oz.	0.025–0.030 lb.	14	Apply after corn grain is physiologically mature and at least 3 days before grain harvest.	Annual morningglories, pigweeds, and hemp sesbania	Apply in sufficient spray volume to give complete coverage. Use a crop oil concentrate (COC) at 1% v/v or 1 gallon per 100 gallons of spray solution. Do not graze corn stover until 14 days after application.
GRAMOXONE SL (2 lb./gal.) OR FIRESTORM, PARAZONE (3 lb./gal.)	paraquat	12 hr./7 d	1.2–2.0 pt (2 lb./gal.) 0.8–1.3 pts. (3 lb./gal.)	0.3–0.5 lb.	22	Apply after corn is mature after the black layer has formed at the base of the kernels.	Annual morningglories, cocklebur	Add nonionic surfactant containing at least 75% surface active ingredient at 0.25% v/v. Use the higher rate for mature weeds and grasses that are taller than 18 inches.
VARIOUS	glyphosate	4 hr./ 7 d	22–44 oz. (4.5 ae) 32–64 oz. (3 ae)	0.75–1.5 lb. (ae).	9	Apply after grain reaches 35% moisture or less and kernal black layer has formed.	Annual grasses and broadleaf weeds.	Do not use on corn grown for seed if hybrid is not RR Corn 2. Refer to glyphosate label to ensure that glyphosate formulation is labeled for use as a harvest aid. Use a spray volume of 10 to 20 gallons of water per acre for ground applications or 3–10 gallons of water for aerial applications. Avoid spraying during conditions that favor drift.

Table 12. Weed Response to Corn

Herbicides	Aim	Clarity	Glyphosate	2, 4-D	Gramoxone	Atrazine	Bicep II Magnum, etc.
Application Timing	BURNDOWN					PRE	
Site of Action Group	14	4	9	4	22	5	5 + 15

Weeds

PERENNIAL WEEDS							
Barnyardgrass	N	N	E	N	F–G	F	G
Broadleaf Signalgrass	N	N	G–E	N	F–G	P	G
Fall panicum	N	N	G	N	F–G	P	E
Foxtail	N	N	E	N	F–G	F	
Goosegrass	N	N	E	N	F–G	F	E
Johnsongrass (rhizome)	N	N	P	N	P	N	F
Johnsongrass (seedling)	N	N	E	N	G	N	G
Italian ryegrass	N	N	F–G	N	F		G
Large crabgrass	N	N	G	N	F–G	F–G	E
Annual sedge	N	N	E	N	G	P	F
Purple nutsedge	N	N	F	N	P	P	P
Yellow nutsedge	N	N	F–G	N	P	P	P
BROADLEAF WEEDS							
Bristly starbur	P	E	G		G	G	
Carolina geranium		G	F	F–G	G–E	G	
Chickweed		G	E	G–E	E	G	
Common cocklebur	E	E	G	E	G	G–E	G
Showy croton	F	G	G	G	G	G–E	
Common ragweed	G	E	G	E	E	E	
Ccutleaf eveningprimrose		F	F	P–F	F	G	
Henbit		F	F	F	G	G	
Horsenettle		F	P	P	P	P	
Horseweed	P	F–G	P	G	F		
Jimsonweed	G	E	G	E	G	E	
Lambsquarter	F–G	E	G	E	F–G	E	E
Morningglory	E	E	F–G	G	G	G	G
Palmer pigweed	G–E	G–E	G–E*	G–E	G	E	E
Smooth pigweed	G	G–E	G–E	G–E	G	E	E
Prickly sida	F–G	E	G	G	F–G	E	G
Common purslane	G	E	G	G	G	E	
Hemp sesbania		E	F	G	P–F	E	F
Sicklepod	P	E	G	E	G	F–G	F
Smartweed	G	E	G	P–F	E	G–E	
Tropic croton	G	G		G	E	G	
Velvetleaf	E	P	G	G	G	G	
Wild radish		G–E	G	G	G	G	

E = >90% control G = 80–90% control F = 70–80% control P = <70% control N = No control

*WILL NOT CONTROL GLYPHOSATE-RESISTANT PALMER PIGWEED

¹ Will not control ALS-resistant ryegrass² Weeds must not be larger than 2 inches at time of application.

Table 12. Weed Response to Corn (cont.)

Herbicides	Prowl H20	Sharpen	Verdict	Zidua	2, 4-D	Accent	Armezon, Impact
Application Timing	PRE				POST		
Site of Action Group	3	14	14 + 15	15	4	2	27

Weeds

PERENNIAL WEEDS							
Barnyardgrass	G	P	G	E	P	G	F–G
Broadleaf signalgrass	F	P	F	G	P	G	G
Fall panicum	G	P		G	P	G–E	F
Foxtail		P			P	E	
Goosegrass	G	P	G	E	P	G–E	F
Johnsongrass (rhizome)	P	N		P	N	E	P
Johnsongrass (seedling)	F	P		F	P	E	F
Italian ryegrass	F	P		E	P	G	P
Large crabgrass	G	P		E	P	P	G
Annual sedge	N				P	P	P
Purple nutsedge	N	N		P	P	P	P
Yellow nutsedge	N	N		P	P	P	P
BROADLEAF WEEDS							
Bristly starbur				P			
Carolina geranium							
Chickweed							
Common Cocklebur	E	F	F	P	E	F	E
Showy croton				P			
Common ragweed					G–E		
Cutleaf eveningprimrose							
Henbit							
Horsenettle					P	P	
Horseweed		G–E	E	F	F–G	P	
Jimsonweed					G	F–G	
Lambsquarter		F	F	P	G	P	E
Morningglory	P		F	F	E	F–G	F–G
Palmer pigweed	F	E	E	G	G	P–F	G
Smooth pigweed	G	E	E	G	E	G	E
Prickly sida		F	F	F	G	P	E
Common purslane							
Hemp sesbania		F	F	P		F	F–G
Sicklepod		P	P		G	P–F	P–F
Smartweed					F	G	
Tropic croton							
Velvetleaf					G	F–G	
Wild radish						G	

E = >90% control G = 80–90% control F = 70–80% control P = <70% control N = No control

*WILL NOT CONTROL GLYPHOSATE-RESISTANT PALMER PIGWEED

¹ Will not control ALS-resistant ryegrass² Weeds must not be larger than 2 inches at time of application.

Table 12. Weed Response to Corn (cont.)

Herbicides	Atrazine+Oil	Atrazine+ Dual II Magnum	Basagran	Callisto	Capreno	Clarity, etc.	Glyphosate (RR only)
Application Timing	POST						
Site of Action Group	5	5 + 15	6	27	2 + 27	4	9

Weeds**PERENNIAL WEEDS**

Barnyardgrass	P	F	p	F–G	G	P	E
Broadleaf signalgrass	F	P	p	F	G	P	G
Fall panicum	F	P	p	F–G	P	P	E
Foxtail	F–G	F–G	p	P	P	P	E
Goosegrass	F–G	F	p	P	P	P	E
Johnsongrass (rhizome)	N	N	P	P	P	P	F–G
Johnsongrass (seedling)	N	P	p	P	F–G	P	E
Italian ryegrass	P		p	P		P	F
Large crabgrass	F	F	p	F–G	G	P	G–E
Annual sedge	P	P	F			P	G
Purple nutsedge	P	P	P	P–F		P	G
Yellow nutsedge	P	F–G	F	P–F		P	G

BROADLEAF WEEDS

Bristly starbur		G	E			E	E
Carolina geranium	E	E					
Chickweed							
Common cocklebur	E	E	E	G–E	G	E	E
Showy croton	G	G	P		P	G	G
Common ragweed	G	G	F		P	E	E
Cutleaf eveningprimrose							
Henbit							
Horsenettle	P	P	P		P		
Horseweed	P	P	N		P	G	G
Jimsonweed	E	E	E	G–E		E	E
Lambsquarter	E	E	P	G–E	E	E	E
Morningglory	E	E	P	F–G	G	E	E
Palmer pigweed	E	E	P	G	E	G	G–E
Smooth pigweed	E	E	P	G	E	G	G–E
Prickly sida	E	E	G	P	F–G	G	G
Common purslane	E	E	P			E	G
Hemp sesbania	F–G	F–G	P			E	F
Sicklepod	G	G	P	P	F–G	G	G–E
Smartweed	G–E	G–E	G–E	G–E		E	G–E
Tropic croton	G	G	P			G	G
Velvetleaf	E	E	G–E			F–G	F
Wild radish			F			G–E	G

E = >90% control G = 80–90% control F = 70–80% control P = <70% control N = No control

*WILL NOT CONTROL GLYPHOSATE-RESISTANT PALMER PIGWEED

¹ Will not control ALS-resistant ryegrass² Weeds must not be larger than 2 inches at time of application.

Table 12. Weed Response to Corn (cont.)

Herbicides	Halex GT (RR Only)	Laudis	Liberty 280 (LLink Only)	Permit	Realm Q	Status	Gramoxone SL
Application Timing	POST						PDS
Site of Action Group	15 + 9 + 27	27	10	2 + 2	2 + 27	4 + 19	22

Weeds

PERENNIAL WEEDS

Barnyardgrass	E	F	N	P	G	P	G
Broadleaf signalgrass	E	G	G	P	F–G	P	G
Fall panicum	E		G	P	G	P	G
Foxtail	E		G	P		P	G
Goosegrass	E	F	G	P	G	P	G
Johnsongrass (rhizome)	E	P	P	P	F–G	P	P
Johnsongrass (seedling)	E	P–F	G	P	E	P	G
Italian ryegrass	E		G	P	P	N	G
Large crabgrass	E	G	G	P	G	P	G
Annual sedge	G		G	E	G	N	F
Purple nutsedge			P	G	F	N	F
Yellow nutsedge			P	E		N	F

BROADLEAF WEEDS

Bristly starbur			G	G			G
Carolina geranium			G				
Chickweed			E				
Common cocklebur	E	G	E	G–E	E	E	G
Showy crotonaria				P			G
Common ragweed	G		G				G
Cutleaf eveningprimrose			F–G				
Henbit			P–F				
Horsenettle	E		F				
Horseweed	F–G		G–E	P		G–E	P
Jimsonweed			E				G
Lambsquarter	G	E	E	P–F	G	E	F–G
Morningglory	G	G	E	F	G	E	G
Palmer pigweed	E	G	F–G	F	G	E	G
Smooth pigweed	E	G	G	G	G	E	G
Prickly sida	E	F–G	F	F–G	E	E	F–G
Common purslane			F–G				G
Hemp sesbania	G		E	F–G			P–F
Sicklepod	E	F–G	E	P	F–G	E	G
Smartweed	G		G–E	F–G			
Tropic croton			G				G
Velvetleaf	E		F	E			
Wild radish			F	G–E			G

E = >90% control G = 80–90% control F = 70–80% control P = <70% control N = No control

*WILL NOT CONTROL GLYPHOSATE-RESISTANT PALMER PIGWEED

¹ Will not control ALS-resistant ryegrass² Weeds must not be larger than 2 inches at time of application.

Table 12. Weed Response to Corn (cont.)

Herbicides	2, 4-D	Glyphosate	Aim
Application Timing	HARVEST AID		
Site of Action Group	4	9	14

Weeds

PERENNIAL WEEDS			
Barnyardgrass	N	G	P
Broadleaf signalgrass	N	E	N
Fall panicum	P	E	N
Foxtail	P		N
Goosegrass	P	E	N
Johnsongrass (rhizome)	N	E	N
Johnsongrass (seedling)	N	E	N
Italian ryegrass	N	G	N
Large crabgrass	N	E	N
Annual sedge	P		N
Purple nutsedge	P	F–G	N
Yellow nutsedge	P	F	N
BROADLEAF WEEDS			
Bristly starbur		G	P
Carolina geranium		P	
Chickweed		E	
Common cocklebur	E	G	G
Showy croton	G	G	F
Common ragweed	E	G	F
Cutleaf eveningprimrose		P–F	
Henbit		F–G	
Horsenettle			
Horseweed		G	
Jimsonweed	E	G	G
Lambsquarter	E	G	G–E
Morningglory	E	F–G	E
Palmer pigweed	E	G–E	G–E
Smooth pigweed	E	G–E	G–E
Prickly sida	G	G	F
Common purslane	G	G	G
Hemp sesbania	E	F	
Sicklepod	G	G–E	P
Smartweed	P–F	G–E	G
Tropic croton	G	G	G
Velvetleaf	G	G	E
Wild radish	G	F–G	

E = >90% control G = 80–90% control F = 70–80% control P = <70% control N = No control

*WILL NOT CONTROL GLYPHOSATE-RESISTANT PALMER PIGWEED

¹ Will not control ALS-resistant ryegrass

² Weeds must not be larger than 2 inches at time of application.

Weed Control section prepared by **David Russell**, *Assistant Extension Professor/Assistant Research Professor*, 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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