

WEED CONTROL IN CORN

(Jeffrey L. Gunsolus)

- C1.** Weed management in corn should be based on an optimum combination of cultural, mechanical, and chemical practices. The most effective and economical weed management system depends on the kinds of weeds in the field, severity of the weed infestation, soil characteristics, tillage practices, crop rotation, selection of herbicide(s) with the highest level of effectiveness at the lowest cost per acre, and availability of time and labor.

Cultural and Tillage Practices

- C2.** The development of sound corn production practices that encourage vigorous corn growth and development will increase corn's competitive advantage over weeds. Weeds that germinate before corn planting can be destroyed with tillage operations or herbicides. Killing weeds just before planting gives the young corn seedlings a competitive advantage over the weeds and can improve the performance of preplanting or preemergence herbicides. For effective weed control, herbicides applied preemergence need to be moved into the soil by rainfall before weed seeds germinate. If rainfall has not been sufficient for herbicide activation, control the weed seedlings with a rotary hoe, harrow, or cultivator as soon as they emerge. Cultivation of weed escapes is an effective and economical weed control tool. Cultivation should be done when weeds are small and should be shallow (1 to 2 inches) to avoid corn root damage.

Crop Rotation Practices

- C3.** Crop rotation can be an important component of a weed management program. Most annual grass weeds can be more easily and/or economically managed in soybeans than in corn. The opposite is true for most annual broadleaf weeds. In addition, crop rotation encourages the use of different types (families and sites of action) of herbicides on the same field over the years. This helps to prevent the accelerated microbial degradation of some herbicides, the residue buildup of some other herbicides, and the buildup of difficult to control or herbicide resistant weeds. See the Applied Weed Science web site at: <http://appliedweeds.coafes.umn.edu/>, for more details about the classification of herbicide families and biochemical sites of action.

Herbicides

- C4.** Herbicides are the newest and often the most efficient weed management tool. Although herbicides have become a necessity in most corn production systems, far too many growers equate weed management solely with herbicides. Remember that herbicides are only one of the available weed control tools and that weed management is most successful and economical when all the tools for weed control are utilized in an integrated program.
- C5.** An herbicide or herbicide combination should be selected on the basis of its effectiveness on the different weed species in the field. The correct herbicide rate must be used to obtain good weed control results and to minimize corn injury. Always consult the herbicide labels for specific rates and instructions. Apply the proper herbicides at the prescribed time and rate with a carefully calibrated applicator to provide the best return on your herbicide investment. Only chemicals that are cleared by the Environmental Protection Agency for the specific use intended should be used.

No-Till or Minimum Till

- C6.** In no-till or minimum till corn production, herbicides may be required to control or suppress emerged weeds. **Glyphosate (numerous formulations) or paraquat (Gramoxone Max or Gramoxone Inteon)** are non-selective herbicides that are applied prior to corn emergence and will kill emerged weeds. These herbicides have no soil activity and are usually tank-mixed with other herbicides that provide residual control of later-germinating weeds.
- C7.** **Atrazine** may be used early preplant to control weed seedlings but are relatively ineffective on larger annual, biennial, and perennial weeds. The use of liquid nitrogen or fertilizer solutions as carriers in preplant or preemergence applications of atrazine improves its burndown effectiveness on larger, emerged weeds. See paragraph **C14** for restrictions due to water quality concerns.
- C8.** **Glyphosate (Roundup WeatherMax, Roundup Original Max)** is applied prior to corn emergence for annual and perennial weed control in reduced tillage situations. For difficult to control annual weeds such as crabgrass up to two inches tall and Pennsylvania smartweed up to six inches tall, apply at 22 ounces/acre to actively growing weeds. Apply at 32 ounces/acre when weeds exceed six inches in height. Perennial weeds may not be at the proper stage of growth for control. However, 52 to 104 oz/acre may suppress emerged perennials. See the perennial weed control section for additional information. **Do Not** add buffering agents or pH adjusting agents to these products. Surfactants may be added to Roundup Original MAX, but should **NOT** be added to Roundup WeatherMAX. Ammonium sulfate (AMS) should be added if one of the following conditions exists: hard water (greater than 500 ppm), cool temperatures (below 55F), drought, or in tank mixtures with certain residual herbicides (see label). Roundup Original MAX has the same rate structure as Roundup WeatherMAX.

* or generic equivalent.

- C9. Glyphosate Formulations** are increasing in the marketplace. Current formulations are as follows: Dow AgroSciences – Glyphomax XRT and Durango (similar to Roundup Ultra Max); Syngenta - Touchdown Total and Hi-Tech. Glyphosate formulations vary in amount of a.e./A, type of salt formulation and adjuvant system. See labels for specific application instructions.
- C10. Paraquat (Gramoxone Max or Gramoxone Inteon)** is applied prior to corn emergence for annual weed control in reduced tillage situations. Apply Gramoxone Max 3L at 1.3 to 1.7 pt/A on 1-3 inch weeds, 1.7 to 2 pt/A on 3-6 inch weeds, and 2 to 2.7 pt/A on 6-inch weeds. Increase rates by 50% for Gramoxone Inteon as the formulation is 2 lbs./gal. When applying by ground, paraquat should be mixed with 0.125 to 0.25% v/v nonionic surfactant and applied at 10 gallons/A. Aerial applications require 0.25% v/v nonionic surfactant applied at 5 gallons/A. **Paraquat is a restricted use pesticide.**

Preplant Incorporated Applications

- C11.** Proper herbicide application and incorporation as well as favorable soil conditions are necessary for optimum herbicide performance. Ideally, the soil should be dry on the surface and moist, but not wet, just below the surface to ensure maximum mixing of the herbicide and soil. To provide good control, adequate moisture is needed at the point where the emerging weed seedling contacts the herbicide. Good incorporation thoroughly mixes the herbicide with 2 to 3 inches of soil. For best results, incorporate the herbicide twice with a disk, field cultivator with sweep shovels, or similar implement, or once with a power-driven rotary tiller. The second incorporation should be carried out at a right angle to the direction of the first incorporation to ensure thorough mixing of the herbicide with the soil. A one-pass incorporation may be effective but is dependent upon the incorporation implement, soil type, moisture, tillage, and plant residue cover. Read the label for more specific incorporation procedures.

Preplant Incorporated or Preemergence Applications

- C12.** Several herbicides including **acetochlor (Harness, Degree, Surpass), alachlor (Lasso*), atrazine, dimethenamid-P (Outlook), flufenacet (Define), and s-metolachlor (Dual II Magnum*)** are suggested for use either preplant incorporated or preemergence. These herbicides may be left on the soil surface or incorporated with one or two tillage operations. Preplant incorporated applications of these herbicides are most effective when there is inadequate rainfall to activate preemergence applications. However, pre-emergence applications provide more effective weed control when adequate rainfall does occur. If weed seedlings begin to emerge following a preemergence application, due to lack of rainfall, an early harrowing, rotary hoeing, or shallow cultivation will improve weed control.
- C13. Acetochlor (Harness, Degree, Surpass), alachlor (Lasso*), dimethenamid-P (Outlook), flufenacet (Define), and s-metolachlor (Dual II Magnum*)** control annual grasses, nutsedge, redroot pigweed, and nightshade. Control of other broadleaf weeds has been erratic. However, atrazine may be tank mixed with either acetochlor, alachlor, dimethenamid-p, flufenacet or s-metolachlor to improve broadleaf weed control. Preemergence applications of Harness/Surpass*, Lasso*, Outlook, and Dual II Magnum* control nutsedge on coarse soils that are low in organic matter, but on fine-textured dark soils, preplanting incorporated applications give better control. **Harness/Surpass* and Lasso* are restricted use pesticides.** Where groundwater is less than 30 feet deep, **Harness/Surpass*** may **Not** be applied to the following soils: sand less than 3% organic matter, loamy sand less than 2% organic matter, and sandy loam less than 1% organic matter. **For acetochlor, alachlor, metolachlor, and metribuzin Current Voluntary Best Management Practices for Minnesota can be found at:**
- <http://www.mda.state.mn.us/appd/bmps/finalcoreherbicide.pdf>
- C14. Atrazine** controls many annual broadleaf weeds with no injury to corn. Atrazine's effectiveness depends on moisture to move it into the root zone of weeds. Therefore, in western Minnesota, where rainfall is less certain, an early postemergence treatment of atrazine may be more effective. Atrazine residues can sometimes carry over and affect atrazine sensitive crops the next spring. Atrazine tolerant crops may be safely planted. These crops are: corn, sorghum, sudangrass, and proso millet. Atrazine residue can be minimized by using the lowest rate consistent with good weed control, using band rather than broadcast applications, plowing the soil before planting the next rotational crop, and using labeled tank mixtures which reduce the amount of atrazine applied. **Atrazine and package mixtures containing atrazine are restricted use pesticides.** There are several label restrictions to reduce atrazine use rates and to reduce surface runoff from treated fields. Surface runoff reduction is related to the erodibility and crop residue levels of the treated field.

The atrazine label restrictions are:

Application Rates:

- A. For soil applications (early preplant, preplant incorporated, or preemergence)
1. On "highly erodible" soils (by SCS definition)
 - a. Max. of 2.0 lb. ai/A for \geq 30% crop residue at application
 - b. Max of 1.6 lb. ai/A for < 30% crop residue at application.
 2. Other than "highly erodible" soils (by SCS definition)
 - a. Max of 2.0 lbs ai/A

* or generic equivalent.

- B. Post-emergence applications
 - 1. With no soil applied atrazine the same year
 - a. Max. of 2.0 lb ai/A
 - 2. With soil applied atrazine in the same year
 - a. Total combined rate of atrazine can not exceed 2.5 lb ai/A per year.

Application Site Best Management Practices:

- A. No *application* or *mixing/loading* within 50 ft. of sink holes or any well including abandoned wells and drainage wells. If chemicals must be mixed at the well site, use hoses to maintain at least a 150 ft. buffer from the well to the spray tank, 100 ft. buffer with safeguards, or 50 ft. with safeguards and a roof present.
- B. No *mixing/loading* within 50 ft. of intermittent streams and rivers, or natural or impounded lakes or reservoirs.
- C. No *application* within 200 ft. of natural or impounded lakes and reservoirs.
- D. No *application* within 66 ft. of the points where field surface runoff enters perennial or intermittent streams and rivers. If on highly erodible soils, this 66 ft. buffer from runoff entry points must be planted to a crop or seeded to grass or other suitable crop providing cover.
- E. When applying to tile outletted fields containing standpipes:
 - Do not apply within 66 feet of standpipes in tile-outletted fields.
 - Apply this product to the entire tile-outletted field and immediately incorporate it to a depth of 2-3 inches in the entire field.
 - Apply this product to the entire tile-outletted field under a no-till practice only when a high crop residue management practice is practiced. High crop residue management is described as a crop management practice where little or no crop residue is removed from the field during and after crop harvest.

For Atrazine, Current Voluntary Best Management Practices for Minnesota can be found at:

<http://www.mda.state.mn.us/appd/bmps/finalcoreherbicide.pdf>

- C15. Callisto (mesotrione)** controls several annual broadleaf weeds and is not effective for the control of most grass weeds. Callisto is not effective as a preplant incorporated herbicide, however, dry conditions and lack of an activating rain (approximately 0.25 inches) within 7-10 days after application can reduce herbicidal activity and a rotary hoeing is recommended. Callisto may be used on field corn, production seed corn, sweet corn, yellow popcorn and corn grown for silage. **Do Not** apply to white popcorn, or ornamental corn. See seed company recommendations for use on inbred lines. **Do Not** apply more than 7.7 oz/A (0.24 lb ai/A) in a single season. To improve grass control a package mixture of Callisto and Dual II Magnum is marketed as **Camix** and to improve grass and broadleaf control a package of Callisto and Dual II Magnum and atrazine is marketed as **Lumax**.
- C16. Python (flumetsulam)** controls a number of broadleaf weeds and is sold as a single entity (Python) or as a package mixture with Clopyralid under the name of Hornet. **Python is** labeled for field, silage, and seed corn planted at least 1.5 inches deep. Corn inbred lines should be tested for crop tolerance. **Do Not** apply to sweet corn or popcorn. **Do Not** apply on peat or muck soils. **Do Not** apply to soils with a pH less than 5.9 and organic matter greater than 5% or to soils with a pH greater than 7.8. Use on soils that average less than 1.5% O.M. may result in crop injury. Hornet is labeled for field and seed corn planted at least 1.5 inches deep. Corn inbred lines should be tested for crop tolerance. **Do Not** apply to sweet corn or popcorn. **Do Not** apply on peat or muck soils. **Do Not** apply to soil with a pH less than 5.9 and organic matter greater than 5% or to soils with a pH greater than 7.8 and organic matter less than 3%. Use on soils that average less than 1.5% O.M. may result in crop injury. Soil insecticides should be used in a T-band to avoid serious crop injury when using flumetsulam. If Thimet or Counter insecticides have been applied to corn, Hornet or Python should **Not** be used.

Preemergence Applications

- C17. Dicamba (Banvel) (Clarity) (Marksman)** may be applied preemergence for broadleaf weed control. Tank mixtures with alachlor (Lasso*), atrazine, dimethenamid-p (Outlook), s-metolachlor (Dual II Magnum*), or pendimethalin (Prowl*) add annual grass control compared to dicamba alone. Dicamba should be applied preemergence only on medium or fine-textured soils with more than 2.5 percent organic matter. **Do Not** incorporate prior to corn emergence. Harrowing or dragging before corn emergence may increase corn injury. Rotary hoeing after corn emergence will not increase corn injury.
- C18. Pendimethalin (Prowl*)** may be used preemergence or early postemergence at .75 to 2 lbs/A of active ingredient or in mixtures at .75 to 1.5 lb/A of active ingredient for annual grass and some broadleaf weed control. Tank mixtures with atrazine or dicamba (Banvel) provide a broader spectrum of weed control. Corn root injury and lodging have occurred from application of pendimethalin, especially on sandy soils. **Plant corn at least 1.5 inches deep. Do Not** incorporate pendimethalin in corn; corn injury may increase if the pendimethalin gets incorporated or moved into the row during cultivation. However, it is safe to use a rotary hoe after corn emergence, if one is necessary.
- C19. Resolve (rimsulfuron)** may be used preemergence at 1.0 oz/A of product (0.25 oz/A of active ingredient) for improved control of foxtail species, barnyardgrass and small-seeded broadleaf weeds such as common

* or generic equivalent.

lambsquarter, kochia, and wild mustard. The primary uses for Resolve in MN include a preemergence tank mixture with a low rate of atrazine followed by glyphosate (in Roundup Ready hybrids) or glufosinate (in Liberty Link hybrids). **Consult with the seed supplier** before applying to Hi-Lysine or white corn or corn hybrids with a relative maturity (RM) of less than 77 days. **Do Not** apply to corn grown for seed, popcorn, or sweet corn. **Do Not** apply preemergence to coarse-textured soils.

Postemergence Applications

- C20. Accent (nicosulfuron)** at 0.031 lb/A effectively controls many annual grasses, quackgrass, and several broadleaf weeds. Annual weeds should be sprayed when they are approximately 3 inches in height. Accent may be applied as a single or a split application with 0.031 lb/A to be applied each time. For optimum performance and crop safety, apply broadcast to corn up to 20 inches or that exhibits 6 or fewer collars, whichever is most restrictive. For late or rescue applications, use drop nozzles to direct spray to weeds when corn is between 20 to 36 inches. **Do Not apply to corn that is in the 10-leaf stage or exceeds 36 inches as the risk of crop injury increases.** For optimum weed control, Accent must thoroughly cover actively growing weeds and the proper adjuvant must be used. Always add a nonionic surfactant at a rate of 0.25% v/v (1 qt per 100 gal of spray solution) or crop oil concentrate at a rate of 1% v/v (1 gal per 100 gal of spray solution). Ammonium nitrogen fertilizer may be added to either nonionic surfactant or crop oil concentrate to improve weed control. University of Minnesota research shows a significant improvement in green and yellow foxtail control when liquid nitrogen is used. See the label for proper adjuvant use when tank mixing with broadleaf herbicides. Crop injury potential from Accent can be minimized by spraying corn before it has reached the 10-leaf stage, avoid spraying during periods of cool weather (daily high temperature less than 50°F) or during periods of high relative humidity and temperature. Application of Accent to corn that has been treated with a band application of Counter 20 CR is labeled by BASF. However, on lighter soils or under certain environmental conditions, crop injury can occur. DuPont will not assume any responsibility for 20 CR-Accent interactions on soil less than or equal to 4% organic matter. Application of Accent to corn treated with other organophosphate soil insecticides is permitted but may result in temporary crop injury. **Do Not** apply a foliar application of an organophosphate insecticide or the herbicides bentazon (Basagran), bentazon plus atrazine (Laddok), or 2,4-D within 7 days before or after an Accent application. Accent may be used on certain sweet corn varieties grown for processing. See label for details.
- C21. Accent Gold (rimsulfuron + nicosulfuron + flumetsulam + clopyralid)** controls several annual grass and broadleaf weeds. Accent Gold can be applied up to 12-inch or 6-collar corn. **Consult with the seed supplier** before applying to Hi-Lysine or white corn or corn hybrids with a relative maturity (RM) of less than 77 days. **Do Not** apply to corn grown for seed, popcorn, or sweet corn. See label for weed height restrictions. Be prepared to cultivate if adequate (0.5 inch) rainfall is not received within 5 days after application. **Do Not** apply Accent Gold if one of the following products were applied earlier in the same cropping season: Python (>0.7 oz/A); Hornet; Scorpion III; Stinger. Crop oil concentrate (1% v/v) must be added to Accent Gold; addition of liquid ammonium nitrogen fertilizer is also recommended. **Do Not** apply Accent Gold when minimum high temperatures are below 40°F or maximum high temperatures are above 92°F. Applications made when daytime temperatures DONot exceed 50°F may decrease weed control and increase crop injury potential.
- C22. Aim (carfentrazone)** controls several broadleaf weed species when applied up to 8-collar (V8) corn. Apply to actively growing weeds up to 4 inches tall and waterhemp up to 2-inches tall. Velvetleaf is especially susceptible to Aim. Aim is a contact herbicide with no residual weed control. Any registered crop can be planted any time after an Aim application. However, replant to alfalfa is 12 months. Use 0.25% v/v nonionic surfactant unless tank mixture label states otherwise. Drop-nozzle, directed applications can be applied from V8 – V14.
- C23. Atrazine** and crop or vegetable oil applied to weeds less than 1.5 inches tall effectively controls most annual broadleaf and some annual grass weeds. It is important to apply atrazine and oil to small weeds or weed control may not be adequate. Surfactants and wetting agents are less effective than any of the oil additives. An atrazine application may be made until corn is 12 inches tall. Early postemergence applications are preferred to preemergence if the soil is higher in clay or organic matter or if applied in western Minnesota where rainfall is less certain. Corn injury has occurred when atrazine and oil are applied to corn growing under cold, wet conditions. Corn injury has also resulted from adding 2,4-D to the atrazine. **Atrazine and package mixtures containing atrazine are restricted use pesticides. See C14 for details on application rates.**
- C24. Basagran (bentazon)** may be applied postemergence to control most small annual broadleaf weeds, Canada thistle, and yellow nutsedge. Corn is tolerant to bentazon at all stages of growth but **Do Not** apply it when corn is stressed from adverse growing conditions. Weed control is dependent upon weed size. With most weeds, best results are obtained when bentazon is applied before the 2- to 6-leaf stage. See the label for details. Crop oil concentrate or 28% UAN may be mixed with bentazon or bentazon and atrazine to improve weed control. Thorough coverage of the weeds is necessary for adequate control.
- C25. Basis (rimsulfuron + thifensulfuron)** controls several annual small-seeded grass and broadleaf weeds. Basis may be applied after harvest but before the ground freezes, or as a spring burndown or postemergence from spike up through 4-leaf (2-collar) stage. Risk of crop injury increases as the corn

* or generic equivalent.

grows past the 2 collar growth stage. **Do Not** apply to corn having 3 fully emerged collars or over 6 inches tall. **Do Not** apply to corn grown for seed, popcorn, sweet corn or waxy corn. **Consult with the seed supplier** before applying to Hi-Lysine or white corn or corn hybrids with a relative maturity (RM) of less than 88 days. To be effective on labeled weeds, Basis must be applied to 1 to 2 inch tall grass and 1 to 3 inch tall broadleaf weeds. Rainfall within 5 to 7 days after application may suppress or control some later germinating grasses but a properly timed cultivation or follow-up broadleaf herbicide, application is often necessary. Either nonionic surfactant (1 to 2 qt/100 gal) or crop oil concentrate (1 to 2 gal/100 gal) plus either liquid nitrogen fertilizer (2 to 4 qt/A) or ammonium sulfate (2 to 4 lb/A) must be added to Basis. **Do Not** apply Basis to corn previously treated with Counter 15G. Application of Basis to corn previously treated with Counter 20 CR or Thimet may cause unacceptable injury, especially on soils of less than 4% O.M. They're no insecticide precautions for Basis to corn hybrids with the IR (imazethapyr resistant) designation. **Do Not** apply Basis when minimum nighttime temperature are below 40°F or maximum daytime temperatures are above 92°F.

- C26. Basis Gold (rimsulfuron + nicosulfuron + atrazine)** controls several annual and perennial grasses and annual broadleaf weeds. Basis Gold can be applied up to 12 inches, or (6-Collar) corn. **Consult with seed supplier** before applying to High-Lysine, white corn, or corn hybrids with a relative maturity (RM) of less than 77 days. **Do Not** apply to corn grown from seed, popcorn, or sweet corn. See label for weed height restrictions. Be prepared to cultivate if adequate (0.5 inch) rainfall is not received within 5 to 7 days after application. Crop oil concentrate (1 % v/v) must be added to Basis Gold; liquid nitrogen fertilizer (1 to 2 pts/A) or ammonium sulfate (2 lb/A) is recommended. See label for soil insecticide interactions. **Do Not** apply Basis Gold when minimum high temperatures are below 40°F or maximum high temperatures are above 92°F. **Basis Gold contains approximately 0.75 lb/A of atrazine.**
- C27. Beacon (primisulfuron)** at 0.036 lb/A effectively controls quackgrass, and also controls a number of broadleaf weeds. The 0.036 lb/A rate of Beacon can be applied as a single application or as a split application of 0.018 lb/A, twice. However, Beacon must be applied when the free-standing height of field corn is between 4 and 20 inches or directed applications to 10 to 48 inch tall inbred lines and popcorn to reduce crop injury potential. **Do Not** apply to sweet corn. For optimum weed control, Beacon must be applied at the proper weed sizes listed in the label, spray coverage of the weeds must be complete, and the proper adjuvant must be used. A nonionic surfactant at 0.25% v/v (1 qt per 100 gal of spray volume) or a petroleum- or vegetable-based crop oil concentrate at 1-4 pts/A must be tank mixed with Beacon. Liquid nitrogen fertilizer (i.e. 28% or 34% N) may also be added at a rate of 2-4 qts/A or 2-4 lbs/A of ammonium sulfate. When Beacon is to be tank mixed with products containing more than 2 oz/A of dicamba (Banvel or Clarity, Marksman), bromoxynil (Buctril + Atrazine), or 2,4-D, **Do Not use crop oil concentrate or liquid nitrogen as adjuvants. Use only a nonionic surfactant, else crop injury could result. Do Not** apply Counter 15 G or CR at planting, before, or after applying Beacon as the likelihood of severe crop injury is increased. **Do Not** apply a foliar or soil application of an organophosphite insecticide within 10 days before and 7 days after a Beacon application. **Note—these restrictions apply to all corn hybrids except the IR hybrids.** Be sure to check the supplemental label for a listing of field corn hybrids that are classified as “potentially susceptible” to Beacon. **Do Not apply Beacon to these hybrids.**
- C28. Buctril* (bromoxynil)** controls most annual broadleaf weeds. Bromoxynil does not control grasses or perennial weeds. For best results, bromoxynil must be applied when broadleaf weeds have 2 to 4 leaves. Bromoxynil is a contact herbicide. Therefore, thorough coverage of the weeds is necessary. When corn is large enough to interfere with the spray pattern (greater than 10 inch corn) drop nozzles should be used to obtain uniform coverage of weeds. Corn tolerance is good but leaf burn may occur under conditions of high temperatures or humidity. The addition of a spray additive or liquid fertilizer to bromoxynil used alone or in tank mixtures may cause crop injury. See the specific label information for bromoxynil use in tank mixtures.
- C29. Callisto (Mesotrione)** controls several annual broadleaf weeds and is not effective for the control of most grass weeds. Callisto may be used on field corn, production seed corn, sweet corn, yellow popcorn and corn grown for silage. **Do Not** apply to white popcorn, or ornamental corn. See seed company recommendations for use on inbred lines. **Do Not** apply more or less than 3 oz/A (0.094 lb ai/A) in a single postemergence application. **Do Not** apply Callisto followed by Lumax or Camax. **Do Not** make more than two applications per season and **Do Not** make the second application within 14 days of the first application: **Do Not** apply Callisto after Lumax or Camax. **Avoid drift to adjacent crops (see label for specific recommendations),** Callisto may be applied to corn up to 30 inches tall or up to the 8-leaf stage of growth. **Do Not** apply Callisto postemergence in a tankmix with EC formulations of grass herbicides. Always add crop oil concentrate at 1 gallon per 100 gallons of water. Always add UAN at 2.5% v/v or AMS at 8.5 lb/100 gallons of water. **Do Not** use methylated seed oil (MSO) or MSO blend adjuvants. Use only COC without UAN or AMS for yellow popcorn.
- C30. Dicamba (Banvel) (Clarity) (Marksman)** controls many annual and perennial broadleaf weeds. However, dicamba is weak on nightshade and wild mustard and does not control grasses. Dicamba does control Canada thistle, wild sunflower, and smartweed better than 2,4-D with less injury to corn. Up to 1 pt/A (.5 lb/A) may be used on corn through 5 leaf or 8 inches tall whichever comes first. Apply 1/2 pt/A (.25 lb/A) before corn is 3 feet tall or until 15 days before tassel emergence, whichever occurs first. **Do Not** apply Clarity to corn that exceeds 30 inches or V8. **Do Not** use on corn grown for seed. The lower rate of dicamba will control most annual broadleaf weeds with less effect to corn than the higher rate. **Do Not** use oils with dicamba. Nonionic surfactants or liquid fertilizers may be used, particularly in dry growing conditions. Late

* or generic equivalent.

application of dicamba may result in corn injury. Read the label carefully to prevent corn injury. **Caution:** Soybeans and other broadleaf plants are very sensitive to **dicamba**. In recent years, there were many instances in which dicamba drift affected soybeans. Users of dicamba must take special precautions to avoid spray drift at the time of application or vapor drift for several days after application. Spray drift can be minimized by reducing sprayer pressure, increasing water volumes with larger nozzles, and using drop nozzles to keep the spray release as low as possible and still give weed coverage. Drift potential is greater with windy or high temperature conditions. Applications are not recommended at temperatures above 85°F. Reduce spray and vapor drift effects on soybeans by spraying corn early in the season when temperatures are lower and before soybeans have emerged, or when they are small. The **Clarity** formulation of dicamba reduces vapor drift potential but does **Not** eliminate it. **Do Not** graze or harvest for dairy feed prior to the milk stage of the grain if corn is treated with dicamba. Read the label carefully for details on reducing soybean injury due to dicamba.

- C31. Distinct (diflufenzopyr + dicamba)** controls many annual and perennial broadleaf weeds and provides some stunting and injury of many annual grasses. Apply 6 oz/A on corn 4 to 10 inches tall and 4 oz/A on corn 10 to 24-inches tall. Maintain a boom height of 20 inches above the crops to ensure uniform application. Use nonionic surfactant at 1 qt/100 gals and 28% nitrogen at 1 qt/A or AMS at 1 lb/A. **Do Not** exceed a total of 10 oz/A/ growing season and allow a minimum of 15 days between sequential applications.
- C32. Equip (foramsulfuron + iodosulfuron)** at .03 lb ai/A controls many annual grasses and broadleaf weeds. Equip can be broadcast-applied through 4 collar corn. **Do Not** apply to popcorn or sweet corn. Application to corn grown for seed (inbreds) is **Not Recommended**. For best control, spray weeds when they are 1 to 3 inches in height. **Do Not** apply Equip to corn treated with Thimet or Dyfonate. Foliar applications of organophosphate insecticides should not be made within 7 days of an Equip herbicide application. Always add methylated or ethylated seed oil at a rate of 1.5 pt/A and UAN at 1.5 to 2 qt/A or AMS at 1.5-3 lb/A. **Do Not** use non-ionic surfactants, crop oil concentrates (COC), COC methylated seed oil blends, or refined vegetable oils as unacceptable weed control will result.
- C33. Hornet (flumetsulam + clopyralid)** effectively controls both small and large seeded broadleaf weeds and Canada thistle and Jerusalem artichoke. Hornet provides excellent control of annual composite weeds such as common cocklebur, sunflower, common ragweed, and giant ragweed. Effectiveness is dependent upon weed species, weed size at application, environmental and growing conditions, and amount of Hornet applied. Hornet may be applied up to V6 or corn that exhibits 6 or fewer collars. Hornet should be applied when weeds are less than 8 inches for optimum weed control. Use a nonionic surfactant (1 qt per 100 gal of spray solution) or crop oil concentrate (1 qt/100 gallons) with Hornet. Under dry growing conditions, liquid nitrogen fertilizer (28%, 30%, or 32% UAN) at 2.5 gal/100 gal or ammonium sulfate (2-4 lbs/A) may enhance control of some weeds. Control of pigweed, labsquarters, and kochia may be enhanced by tank mixing with Banvel or atrazine. When tank mixing with products containing dicamba (Banvel or Clarity), bromoxynil (Buctril), or 2,4-D, **Do Not** use crop oil concentrate as an adjuvant. **Do Not** apply Hornet if corn has been previously treated with Counter. **Do Not** tank mix Hornet with foliar postemergence organophosphate insecticides as severe crop injury may result. To avoid crop injury, apply the foliar insecticide treatments at least 7 days before or 7 days after the application of Hornet.
- C34. Option (foramsulfuron)** at 0.033 lb ai/A controls many annual grass and broadleaf weeds. Option can be broadcast-applied through 6-collar corn. **Do Not** apply to popcorn or sweet corn. Application to corn grown for seed (inbreds) is **Not Recommended**. For best control, spray weeds when they are 1 to 3 inches in height. **Do Not** apply Option to corn treated with Thimet or Dyfonate. Foliar applications of organophosphate insecticides should not be made within 7 days of an Option herbicide application. **Always add** methylated or ethylated seed oil at a rate of 1.5 pt/A and UAN at 1.5 to 2 qt/A or AMS at 1.5 to 3 lb/A. **Do Not** use non-ionic surfactants, crop oil concentrates (COC), COC/methylated seed oil blends, or refined vegetable oils as unacceptable weed control will result.
- C35. Permit (halosulfuron)** controls several broadleaf weeds and nusedge in seed and field corn. When used alone Permit can be applied over-the-top or with drop nozzles to corn in the spike through layby stage. Nonionic surfactant (1 to 2 qt per 100 gal of spray solution) or petroleum or vegetable-based crop oil concentrate (1 gal per 100 gal of spray solution) are the only additives necessary. Liquid nitrogen fertilizer (2 to 4 qt per acre) or spray grade ammonium sulfate (2 to 4 lbs per acre) may be added to the nonionic surfactant or crop oil concentrate solution under dry conditions.
- C36. Prowl* (pendimethalin)** in mixtures with atrazine or dicamba + atrazine may be applied after corn emergence but before the 5th leaf is visible or the corn exceeds 12 inches. and when weeds are no more than 1 inch tall. Mixtures with nicosulfuron (Accent) can be made to corn up through the 6-leaf stage on grass weeds up to 4 inches tall. These tank mixtures are effective against many annual grass and broadleaf weeds.
- C37. Resolve (rimsulfuron)** may be used early postemergence at 1.0 oz/A of product (0.25 oz/A of active ingredient) for improved control of foxtail species, barnyardgrass and small-seeded broadleaf weeds such as common lambsquarter, kochia, and wild mustard. The primary uses for Resolve in MN include an early postemergence application of Resolve tank mixed with a low rate of atrazine plus glyphosate (glufosinate can **Not** be tank mixed with Resolve). **Do Not** apply to corn taller than 12 inches or exhibiting 6 or more leaf collars, whichever is more restrictive. **Consult with the seed supplier** before applying to Hi-Lysine or white corn or corn hybrids with a relative maturity (RM) of less than 77 days. **Do Not** apply to corn grown for seed, popcorn, or sweet corn. **Do Not** apply a foliar application of an organophosphate insecticide or the

* or generic equivalent.

herbicides bentazon (Basagran), bentazon plus atrazine (Laddok), or 2,4-D within 7 days before or 3 days after a Resolve application. Postemergence application must include a nonionic surfactant and an ammonium nitrogen fertilizer. If applied in a tank mixture with a glyphosate formulation that already contains adjuvants, additional surfactant may not be necessary.

- C38. Resource (flumiclorac)** controls several broadleaf weeds species when applied to 2-collar to 10-collar field corn. Velvetleaf is especially susceptible to Resource. **Do Not** use Resource on popcorn or sweet corn. Adjuvant use is dependent upon the tank mix partner but overall, Resource effectiveness is improved by the addition of either crop oil concentrate or nonionic surfactant with or without nitrogen fertilizer.
- C39. Steadfast (nicosulfuron + rimsulfuron)** controls several annual grass and broadleaf weeds. **Do Not** apply Steadfast to corn taller than 20-inches or exhibiting more than 6 collars. **Steadfast ATZ (nicoculfuron + rimsulfuron + atrazine)** should **Not** be applied to corn taller than 12-inches or exhibiting 7 or more collars. **Consult with the seed supplier** before applying to high-lysine, white-corn, or corn hybrids with a relative maturity (RM) less than 77 days. Applications to corn hybrids of 77-88 RM should be limited to 12-inch tall, or 5-collar corn, and tank mixtures with dicamba should not exceed 0.125 lb ai/A of dicamba. **Do Not** apply to corn grown for seed, popcorn, or sweet corn. See label for weed height restrictions. Be prepared to cultivate if adequate (0.5 inch) rainfall is not received within 5 days after application. **Do Not** tank mix Steadfast with Basagran or Laddock herbicides or foliar-applied organophosphate insecticides as severe injury may occur. See the label for injury potential induced by soil insecticides. A tank mixture with 2,4-D may result in antagonism of grass control. Crop oil concentrate (1% v/v) plus ammonium nitrogen fertilizer is the preferred adjuvant system, however a nonionic surfactant (0.25-0.5% v/v) can be used, especially if this meets the adjuvant requirements of a broadleaf-herbicide tank mix partner. **Do Not** apply Steadfast when minimum high temperatures are below 40F or maximum high temperatures are above 92F. Applications made when daytime temperatures **Do Not** exceed 50F may decrease weed control and increase crop injury potential. When applying Steadfast ATZ **Do Not** exceed 2 lb ai/A of atrazine if no atrazine was applied prior to corn emergence. If atrazine was applied prior to corn emergence, the total atrazine applied may not exceed 2.5 lb ai/A.
- C40. Stinger* (clopyralid)** controls two perennial weeds common in corn: Canada thistle and Jerusalem artichoke and several annual broadleaf weeds. Stinger is especially active on weeds in the composite family such as: sunflower, cocklebur, ragweed, and the two perennials previously mentioned. Stinger can be applied to actively growing weeds any time up to 24 inch tall corn. See the label for specific weed height restrictions. Adequate spray coverage of the weed is important and use of adjuvants is not generally necessary, except under adverse conditions. For Canada thistle control, use 1/3 to 2/3 pt/A of Stinger applied to rosettes at least 4 inches tall or 4 inches in diameter **but before bud stage**. Use the higher rates for dense weed patches but **Do Not apply more than 2/3 pt/A of Stinger per year**. For best Canada thistle control, **Do Not** cultivate prior to application and wait 14 to 20 days after application before cultivating. Stinger* may be used on seed corn, sweet corn up to 18 inches tall, and popcorn up to 24 inches tall.
- C41. 2,4-D** controls most annual broadleaf weeds. However, 2,4-D is weak on smartweed and does not control grasses. Small weeds are easiest to control. If dry conditions or larger weeds are present the low volatile ester formulation is more effective than the amine. However, the amine formulation is less likely to volatilize and injure sensitive crops and is also less likely to injure corn. Apply 2,4-D broadcast when corn is in the 2- to 5-leaf stage or until corn is 8 inches tall. After corn exceeds the 8 inch height use drop nozzles to prevent corn injury by avoiding treatment of upper leaves and the whorl. Most corn injury from 2,4-D occurs when it is applied to rapidly elongating corn under hot (generally greater than 85°F) and humid conditions. Also, corn hybrids vary in their tolerance to 2,4-D. **Do Not** tank mix crop oil or atrazine with 2,4-D as the potential for corn injury increases. **Do Not** apply 2,4-D from tasseling to dough stage or poor kernel set may occur. After the dough stage 2,4-D can be applied at 0.5 to 1 lb/A but it is more beneficial to control weeds earlier.
- C42. Widematch (fluroxypyr + clopyralid)** provides excellent control of annual composite weeds such as common cocklebur, sunflower, common ragweed, and giant ragweed plus other annual weeds such as: kochia, velvetleaf, volunteer soybeans and wild buckwheat. Perennial composites such as Canada thistle and dandelion are also controlled. A single product herbicide, **Starane (fluroxypyr)** is also available but does not provide control of perennial composites, volunteer soybeans and wild buckwheat. Apply **Widematch or Starane** to field corn up to and including V5 growth stage and before susceptible weeds become 8 inches tall or vining (e.g. wild buckwheat). Applications beyond V5 should be made using drop nozzles. The use of adjuvants is not generally necessary, except under adverse conditions.

Herbicide Resistant Crops

- C43. Clearfield (IMI) corn hybrids** will allow for postemergence application of imazethapyr - based products such as Lightning, Pursuit Plus, and Pursuit. Misuse of Clearfield hybrids could encourage the continuous use of imazethapyr herbicide over several crop rotations (corn and soybean) thereby enhancing the potential for weed species shifts and imazethapyr resistant weeds. Some suggested weed resistance management strategies would include using a half-rate of a soil applied grass herbicide followed by Lightning or tank mixing a broadleaf herbicide with Lightning for common tall waterhemp and common ragweed control. See *Herbicide Resistant Weeds*, FO-6077, for management strategies for avoiding and managing herbicide resistant weeds.
- C44. Liberty (glufosinate) tolerant corn hybrids** will allow for postemergence applications of glufosinate.

* or generic equivalent.

Glufosinate is a fast-acting nonselective herbicide that can only be used on hybrids designated as LibertyLink or warranted as being tolerant to Liberty herbicide. **Do Not** allow spray to contact desirable vegetation other than crops tolerant to glufosinate. Glufosinate does not have soil residual activity. Tank mixes with atrazine will improve residual broadleaf weed control. Liberty may be tank mixed with specific postemergence corn herbicides. See the label for details. **Do Not** apply more than two applications of glufosinate per season and **Do Not** exceed 62 oz/A of this product per season. Application should be made between dawn and two hours before sunset for maximum weed control. Always add 3 lb/A of ammonium sulfate. **Do Not** use any surfactant.

- C45. Roundup Ready (glyphosate) tolerant corn hybrids** will allow for postemergence applications of glyphosate. Glyphosate can only be used on hybrids designated as Roundup Ready. **Do Not** allow spray to contact desirable vegetation other than crops tolerant to glyphosate. Glyphosate does not have soil residual activity. Therefore one of three options should be considered: 1. Apply a preemergence corn herbicide followed by Roundup. 2. Apply a two-pass sequential application of Roundup, with the first pass applied on 3-4 inch weeds. 3. Apply Roundup tank mixed with a labeled soil-residual herbicide at weed and crop sizes designated on the label. Roundup may be applied from emergence through 8-collar corn or until corn is 30 inches tall. Single in-crop application of Roundup should not exceed 1 qt/A. In-season applications should not exceed 2 qts./A. Misuse of Roundup Ready crops could encourage the continuous use of glyphosate herbicide over several crop rotations (corn and soybean) thereby enhancing the potential for weed species shifts and resistant weeds.

Table C1.**Package mixtures labeled for use in Corn are as follows:**

Trade Name	Formulation	Common Name	Active Ingredient
Accent Gold	78.1 WDG	clopyralid & flumetsulam & nicosulfuron & rimsulfuron	51.4% & 15.9% & 5.4% & 5.4%
Basis	75 DG	rimsulfuron & thifensulfuron	50% & 25%
Basis Gold	89.46 DF	nicosulfuron & rimsulfuron & atrazine	1.34% & 1.34% & 86.78%
Bicep Lite II Magnum	6 F	atrazine & s-metolachlor	2.67 lb/gal & 3.33 lb/gal
Buctril + atrazine	3 F	bromoxynil & atrazine	1 lb/gal & 2 lb/gal
Bullet	4 L	alachlor & atrazine	2.5 lb/gal & 1.5 lb/gal
Camix	3.67 E	s-metolachlor & mesotrione	3.34 lb/gal & 0.33 lb/gal
Celebrity Plus	75.3 DF	dicamba & diflufenzopyr & nicosulfuron	46.6% & 18.1% & 10.6%
Charger MAX ATZ	5.5 F	atrazine & s-metolachlor	3.1 lb/gal & 2.4 lb/gal
Charger MAX ATZ Lite	6 F	atrazine & s-metolachlor	2.67 lb/gal & 3.33 lb/gal
Cinch ATZ	5.5 F	atrazine & s-metolachlor	3.1 lb/gal & 2.4 lb/gal
Cinch ATZ Lite	6 F	atrazine & s-metolachlor	2.67 lb/gal & 3.33 lb/gal
Confidence Xtra	6 L	acetochlor & atrazine	4.3 lb/gal & 1.7 lb/gal
Confidence Xtra 5.6L	5.6 L	acetochlor & atrazine	3.1 lb/gal & 2.5 lb/gal
Degree Xtra	4.04 ME	acetochlor & atrazine	2.7 lb/gal & 1.34 lb/gal
Distinct	0.7 L	diflufenzopyr & dicamba	20% & 50%
Equip	32 DF	foramsulfuron & iodosulfuron	30% & 2%
Field Master	4.06 F	acetochlor & atrazine & glyphosate	2 lb/gal & 1.5 lb/gal & 0.56 lb/gal
Fultime	4 SC	acetochlor & atrazine	2.4 lb/gal & 1.6 lb/gal
G-Max Lite	5 EC	dimethenamid & atrazine	2.25 lb/gal & 2.75 lb/gal
Harness Xtra	6 L	acetochlor & atrazine	4.3 lb/gal & 1.7 lb/gal
Harness Xtra 5.6L	5.6 L	acetochlor & atrazine	3.1 lb/gal & 2.5 lb/gal
Hornet	68.5 WDG	flumetsulam & clopyralid	18.5% & 50%
Keystone	5.25 SE	acetochlor & atrazine	3 lb/gal & 2.25 lb/gal
Keystone LA	5.5 SE	acetochlor & atrazine	4 lb/gal & 1.5 lb/gal
Laddock S-12	5 F	bentazon & atrazine	2.5 lb/gal & 2.5 lb/gal
Lariat	4 F	alachlor & atrazine	2.5 lb/gal & 1.5 lb/gal
Lumax	3.948 L	s-metolachlor & atrazine & mesotrione	2.68 lb/gal & 1.0 lb/gal & 0.268 lb/gal
Marksman	3.2 F	dicamba & atrazine	1.1 lb/gal & 2.1 lb/gal
Northstar	47.4 DF	primisulfuron & dicamba	7.5% & 39.9%
Shotgun	3.25 F	atrazine & 2,4-D	2.25 lb/gal & 1 lb/gal
Steadfast	75 WDG	nicosulfuron & rimsulfuron	50% & 25%
Steadfast ATZ	89.3 WDG	nicosulfuron & rimsulfuron & atrazine	2.7% & 1.3% & 85.3%
Sterling Plus	3.2 F	dicamba & atrazine	1.1 lb/gal & 2.1 lb/gal
WideMatch	1.5 E	clopyralid & fluroxypyr	0.75 lb/gal & 0.75 lb/gal
Yukon	67.5 DG	halosulfuron & dicamba	12.5% & 55%

Table C1.

Package mixtures labeled for use in Herbicide Resistant Corn are as follows:

Trade Name	Formulation	Common Name	Active Ingredient
Field Master	4.06 F	acetochlor & atrazine & glyphosate	2 lb/gal & 1.5 lb/gal & 0.56 lb/gal
Lightning	70 SG	imazethapyr & Imazapyr	52.5% & 17.5%

Table C2. Crop Stage and Harvest Restrictions for Corn

Herbicide Name	Minimum Crop Stage	Maximum Crop Stage	Grain Harvest Restriction (days)
<u>Conventional Corn</u>			
2,4-D, others (2,4-D)	none	8 inches	7
Aatrex (atrazine)	none	12 inches	21
Accent (nicosulfuron)	none	20 inches or 6 collars	30
Accent Gold WDG (clopyralid & flumetsulam & nicosulfuron & rimsulfuron)	none	12 inches or 5 collars	85
Aim (carfentrazone-ethyl)	none	up to 8 collar, up to 14 collar for directed applications	none
atrazine, others (atrazine)	none	12 inches	21
Avalanche (carfentrazone-ethyl)	none	8 collars	none
Banvel (dicamba)	none	8 inches or 5 leaf (see label)	none
Basagran (bentazon)	none	none	12
Basis (rimsulfuron & thifensulfuron)	spike (emergence)	6 inches or before 3 collars	30
Basis Gold (nicosulfuron & rimsulfuron & atrazine)	none	12 inches or 6 collars	30
Beacon (primisulfuron)	4 inches	20 inches or 6 collars	60 (grain) 45 (silage)
Bicep Lite II Magnum (atrazine & s-metolachlor)	n.a.	5 inches	21
Buctril (bromoxynil)	emergence (1 pt) or 4 leaf (1.5 pt)	prior to tassel emergence	none
Buctril + atrazine (bromoxynil & atrazine)	emergence (1.5-2 pt) or 4 leaf (3 pt)	12 inches	none
Bullet (alachlor & atrazine)	n.a.	5 inches	21
Callisto (mesotrione)	none	30 inches or 8 leaf	none
Camix (s-metolachlor & mesotrione)	n.a.	12 inches	45
Celebrity Plus (dicamba & diflufenzopyr & nicosulfuron)	4 inch	24 inch	72
Charger MAX (s-metolachlor & benoxacor)	n.a.	40 inches	30
Charger MAX ATZ (atrazine & s-metolachlor)	n.a.	5 inches	21
Charger MAX ATZ Lite (atrazine & s-metolachlor)	n.a.	5 inches	21
Cinch (s-metolachlor & benoxacor)	n.a.	n.a.	none
Cinch ATZ (atrazine & s-metolachlor)	n.a.	5 inches	21
Cinch ATZ Lite (atrazine & s-metolachlor)	n.a.	5 inches	21
Clarity (dicamba)	emergence	30 inches or V8 stage	none
Clopyr AG (clopyralid)	emergence	24 inches	40
Confidence (acetochlor)	none	11 inches	none
Confidence Xtra (acetochlor & atrazine)	none	11 inches	none
Confidence Xtra 5.6L (acetochlor & atrazine)	none	11 inches	none
Define (flufenacet)	n.a.	5 leaf-collar	none
Degree (acetochlor)	none	11 inches	none
Degree Xtra (acetochlor & atrazine)	none	11 inches	none
Distinct (diflufenzopyr & dicamba)	4 inches	24 inches	72

Table C2. Crop Stage and Harvest Restrictions for Corn

Herbicide Name	Minimum Crop Stage	Maximum Crop Stage	Grain Harvest Restriction (days)
Dual II Magnum (s-metolachlor & benoxacor)	n.a.	40 inches	30
Dual Magnum (s-metolachlor)	n.a.	40 inches	30
Equip (foramsulfuron & iodosulfuron)	emergence	V4 stage	70
Fultime (acetochlor & atrazine)	n.a.	11 inches	21
Glyphomax XRT (glyphosate)	n.a.	n.a.	n.a.
glyphosate, others (glyphosate)	n.a.	n.a.	n.a.
G-Max Lite (dimethenamid & atrazine)	none	12	none
Harness (acetochlor)	none	11 inches	none
Harness Xtra (acetochlor & atrazine)	none	11 inches	none
Harness Xtra 5.6L (acetochlor & atrazine)	none	11 inches	none
Hornet (flumetsulam & clopyralid)	none	V6 or 6 collars	85
Keystone (acetochlor & atrazine)	n.a.	11 inches	none
Keystone LA (acetochlor & atrazine)	none	8 collars or 30 inches	none
Laddock S-12 (bentazon & atrazine)	none	12 inches	21
Lariat (alachlor & atrazine)	n.a.	n.a.	none
Lasso (alachlor)	n.a.	5 inches	none
Lorox (linuron)	n.a.	n.a.	none
Lumax (s-metolachlor & atrazine & mesotrione)	n.a.	12 inches	45
Marksman (dicamba & atrazine)	none	12 inches	none
Moxy (bromoxynil)	emergence (1 pt) or 4 leaf (1.5-2 pt)	prior to tassel emergence	30
Northstar (primisulfuron & dicamba)	4 inches (V2)	20 inches (V6)	60 (grain) 45 (silage)
Option (foramsulfuron)	emergence	V6 stage	70
Outlook (dimethenamid-P)	n.a.	12 inches (up to 36 inches layby)	none
Parallel (metolachlor & benoxacor)	n.a.	n.a.	none
Pendant (pendimethalin)	n.a.	30 inches or V8 stage	none
Pendimax (pendimethalin)	n.a.	5 leaf	none
Permit (halosulfuron)	spike	layby stage	30
Princep (simazine)	n.a.	n.a.	none
Prowl (pendimethalin)	n.a.	30 inches or V8 stage	none
Prowl H20 (pendimethalin)	n.a.	30 inches or V8 stage	none
Python (flumetsulam)	n.a.	n.a.	85
Resolve (rimsulfuron)	none	12 inches or 5 collars	30
Resource (flumiclorac)	2 collar	10 collar	28
Saber (2,4-D)	spike	8 inches	none
Salvo (2,4-D)	spike	8 inches	none
Sencor (metribuzin)	emergence	30 inches	60
Shotgun (atrazine & 2,4-D)	spike	4 leaf or 8 inches	21
Starane (fluroxypyr)	none	through 5 collars	90

Table C2. Crop Stage and Harvest Restrictions for Corn

Herbicide Name	Minimum Crop Stage	Maximum Crop Stage	Grain Harvest Restriction (days)
Steadfast (nicosulfuron & rimsulfuron)	none	up to 20 inches or up to and including 6 collars (12 inches or up to 5 collars on 77 to 88 day corn)	30
Steadfast ATZ (nicosulfuron & rimsulfuron & atrazine)	none	up to 12 inches or up to and including 6 collars (do not apply if 7 or more collars are visible)	30
Sterling (dicamba)	none	8 inches or 5 leaf (see label)	none
Sterling Plus (dicamba & atrazine)	none	12 inches	none
Stinger (clopyralid)	emergence	24 inches	40
Surpass (acetochlor)	n.a.	11 inches	none
Topnotch (acetochlor)	n.a.	11 inches	none
WideMatch (clopyralid & fluroxypyr)	none	up to 5 leaf collar	90
Yukon (halosulfuron & dicamba)	spike	36 inches (drop nozzles)	30
<u>Clearfield Corn</u>			
Lightning (imazethapyr & imazapyr)	emergence	20 inches (broadcast)	45
<u>Liberty Link Corn</u>			
Liberty (glufosinate)	none	24 inches or 7 collars (broadcast)	70
<u>Roundup Ready Corn</u>			
Cornerstone (glyphosate)	none	8 collar or 30 inches	7 days for preharvest applications
Durango (glyphosate)	none	8 collar or 30 inches	7 days for preharvest applications
Field Master (acetochlor & atrazine & glyphosate)	n.a.	11 inches	none
Glyphomax XRT (glyphosate)	none	8 collar or 30 inches	7 days for preharvest applications
glyphosate, others (glyphosate)	emergence	6 leaf	60
Roundup (glyphosate)	none	8 collar or 30 inches	7 days for preharvest applications
Roundup Original MAX (glyphosate)	none	8 collar or 30 inches	7 days for preharvest applications
Roundup Ultra (glyphosate)	none	8 collar or 30 inches	7 days for preharvest applications
Roundup WeatherMAX (glyphosate)	none	8 collar or 30 inches	7 days for preharvest applications
Touchdown (glyphosate)	n.a.	V8 stage	7

Table C3. Summary of herbicides for use in Corn

<u>Application Type</u>		Crop	
Herbicide / Formulation	Rate Range	Tolerance	Remarks
<u>Conventional Corn</u>			
<u>No-Till or Minimum Till</u>			
atrazine 4 F	3.2 to 4 pts	G	Kills emerged weed seedlings and provides preemergence control of most annual broadleaf and some grass weeds. No more than 3 lb/A can be applied per calendar year and fall application of atrazine is no longer labeled. Use of nitrogen fertilizer solutions or herbicide carriers will improve burndown. Atrazine is a restricted use pesticide. Rate structure has been changed to reduce surface runoff from fields.
atrazine 90 DF (atrazine)	1.8 to 2.2 lbs (1.6 to 2 lb ai/A)		
Basis 75 DG (rimsulfuron & thifensulfuron)	0.33 to 0.5 oz/A (0.015 to 0.023 lb ai/A)	-	For burndown applications, always use a crop oil concentrate. Do not apply early preplant or preemergence to coarse textured soils with less than 1% organic matter.
Cornerstone 3 S	0.5 to 8 pts	-	Apply prior to corn emergence. At lower rates, controls emerged annual grasses and broadleaf weeds. At higher rates, suppresses emerged perennial weeds. A nonselective translocated herbicide with no soil activity so commonly combined with residual herbicides.
Durango 4 S	0.4 to 6 pts		
Glyphomax XRT 4 S	0.4 to 6 pts		
Roundup Original MAX 4.5 S	10 to 83 oz		
Roundup WeatherMAX 4.5 S (glyphosate)	10 to 83 oz (0.19 to 3 lb ai/A)		
Gramoxone Inteon 2 S	2 to 4 pts	-	Apply prior to corn emergence. Controls emerged annual grass and broadleaf weeds; rate is dependent upon weed size. A nonselective contact herbicide with no soil activity so commonly combined with residual herbicides. Apply with a 1 to 2 pt nonionic surfactant or 1 gal crop oil concentrate per 100 gal of spray solution. A restricted use pesticide.
Gramoxone Max 3 S (paraquat)	1.3 to 2.7 pts (0.5 to 1 lb ai/A)		
Touchdown Hi-Tech 5 L	0.8 to 6.4 pts	-	Apply prior to corn emergence. At lower rates, controls emerged annual grasses and broadleaf weeds. At higher rates, suppresses emerged perennial weeds. A nonselective translocated herbicide with no soil activity so commonly combined with residual herbicides.
Touchdown Total 4.17 L (glyphosate)	0.9 to 6.8 pts (0.5 to 4 lb ai/A)		
<u>Preplant Incorporated</u>			
atrazine 4 F	3.2 to 4 pts	G	Controls many broadleaf and some grass weeds. Use split application for quackgrass (see the perennials section). May carryover and injure sensitive crops. See reference C15 for details. Atrazine and package mixtures containing atrazine are restricted use pesticides. Rate structure has been changed to reduce surface runoff from fields.
atrazine 90 DF (atrazine)	1.8 to 2.2 lbs (1.6 to 2 lb ai/A)		
Charger MAX 7.64 E (s-metolachlor & benoxacor)	1 to 2 pts (0.96 to 1.91 lb ai/A)	G	Controls annual grass and some broadleaf weeds. Can also be applied fall preplant, either alone or in tank mixtures for weed control in minimum- or no-till corn. In tank mixtures with atrazine or Banvel, another 1.5 to 2.5 pts/A of s-metolachlor can be applied to corn less than 5 inches tall.
Cinch 7.64 E (s-metolachlor & benoxacor)	1 to 2.6 pts (0.96 to 0.91 lb ai/A)	G	Controls annual grass and some broadleaf weeds. Can also be applied fall preplant, either alone or in tank mixtures for weed control in minimum- or no-till corn. In tank mixtures with atrazine or Banvel, another 1.5 to 2.5 pts/A of s-metolachlor can be applied to corn less than 5 inches tall.

Table C3. Summary of herbicides for use in Corn

Application Type			
Herbicide / Formulation	Rate Range	Crop Tolerance	Remarks
Conventional Corn			
Preplant Incorporated			
Confidence 7 E (acetochlor)	1.25 to 2.75 pts (1.1 to 3 lb ai/A)	G	Controls annual grass and some broadleaf weeds including nightshade. See label for application restrictions. Can also be applied fall preplant, early preplant, either alone or in tank mixtures for weed control in minimum- or no-till corn. Acetochlor may be applied on corn up to 11 inches tall. Post emergence applications must be made prior to weed emergence or in tank mixtures that control emerged weeds. Acetochlor is a restricted use pesticide.
Define SC 4 SC (flufenacet)	14 to 24 oz (0.45 to 0.75 lb ai/A)	G	Controls annual grasses and some broadleaf weeds. May be applied in the fall (after 10/15 and when the soil at 4 inches <50°F), early preplant either alone or in tank mix combinations for weed control in minimum or no-till corn. Define may also be applied postemergence on corn up to V5 stage but preemergence to weeds.
Degree 3.8 EC (acetochlor)	2.3 to 6.3 pts (1.1 to 3 lb ai/A)	G	Controls annual grass and some broadleaf weeds including nightshade. See label for application restrictions. Can also be applied fall preplant, early preplant, either alone or in tank mixtures for weed control in minimum- or no-till corn. Acetochlor may be applied on corn up to 11 inches tall. Post emergence applications must be made prior to weed emergence or in tank mixtures that control emerged weeds. Acetochlor is a restricted use pesticide.
Dual II Magnum 16 G Dual II Magnum 7.64 E (s-metolachlor & benoxacor)	6 to 12 lbs 1 to 2 pts (0.96 to 1.91 lb ai/A)	G	Controls annual grass and some broadleaf weeds. Can also be applied fall preplant, either alone or in tank mixtures for weed control in minimum- or no-till corn. In tank mixtures with atrazine or Banvel, another 1.5 to 2.5 pts/A of s-metolachlor can be applied to corn less than 5 inches tall.
Dual Magnum 7.62 E (s-metolachlor)	1 to 2 pts (0.96 to 1.91 lb ai/A)	G	Controls annual grass and some broadleaf weeds. Can also be applied fall preplant, either alone or in tank mixtures for weed control in minimum- or no-till corn. In tank mixtures with atrazine or Banvel, another 1.5 to 2.5 pts/A of s-metolachlor can be applied to corn less than 5 inches tall.
Harness 20 G Harness 7 E (acetochlor)	6 to 15 lbs 1.25 to 2.75 pts (1.1 to 3 lb ai/A)	G	Controls annual grass and some broadleaf weeds including nightshade. See label for application restrictions. Can also be applied fall preplant, early preplant, either alone or in tank mixtures for weed control in minimum- or no-till corn. Acetochlor may be applied on corn up to 11 inches tall. Post emergence applications must be made prior to weed emergence or in tank mixtures that control emerged weeds. Acetochlor is a restricted use pesticide.
Hornet 68.5 WDG (flumetsulam & clopyralid)	4 to 5 oz (0.17 to 0.21 lb ai/A)	G	Hornet WDG contains 18.5% ad 60% of flumetsulam and clopyralid, respectively. This package mixture controls many annual broadleaf weeds. Hornet can be tank mixed with any preplant or preemergence herbicide registered for use on field corn unless tank mixing is prohibited by the label of the tank mix product. This herbicide combination has no grass activity.
Lasso 10 G Lasso 4 EC Micro-Tech 4 MT (alachlor)	16 to 26 lbs 3 to 8 pts 3 to 8 pts (1.5 to 4 lb ai/A)	G	Controls annual grass and some broadleaf weeds including nightshade. Weak on wild mustard. Alachlor can be used at rates as high as 6 lb/A on muck or peat soils. Can also be applied fall preplant, early preplant, either alone or in tank mixtures for weed control in minimum- or no-till corn. Lasso EC, Microtech, and Bullet are labeled postemergence on corn up to 5 inches tall but less effective on emerged weeds. Cropstar is for custom application only. Alachlor is a restricted use pesticide.
Outlook 6 E (dimethenamid-P)	10 to 21 oz (0.47 to 0.98 lb ai/A)	G	Controls annual grass and some broadleaf weeds. Can be applied early preplant, either alone or in tank mixtures, for weed control in minimum or no-till corn. Outlook can be applied postemergence on corn up to 12 inches tall but preemergence to the weeds.

Table C3. Summary of herbicides for use in Corn

Application Type			
Herbicide / Formulation	Rate Range	Crop Tolerance	Remarks
Conventional Corn			
Preplant Incorporated			
Parallel 7.8 E (metolachlor & benoxacor)	1 to 2 pts (0.96 to 1.95 lb ai/A)	G	Controls annual grass and some broadleaf weeds.
Python 80 WDG (flumetsulam)	0.8 to 1.3 oz (0.425 to 0.07 lb ai/A)	F/G	Python controls many annual broadleaf weeds. Can be tank mixed with all preplant or preemergence grass herbicides labeled for corn.
Surpass 20 G Surpass 6.4 E (acetochlor)	5.5 to 15 lbs 1.5 to 3.75 pts (1.1 to 3 lb ai/A)	G	Controls annual grass and some broadleaf weeds including nightshade. See label for application restrictions. Can also be applied fall preplant, early preplant, either alone or in tank mixtures for weed control in minimum- or no-till corn. Acetochlor may be applied on corn up to 11 inches tall. Post emergence applications must be made prior to weed emergence or in tank mixtures that control emerged weeds. Acetochlor is a restricted use pesticide.
Preemergence			
atrazine 4 F atrazine 90 DF (atrazine)	3.2 to 4 pts 1.8 to 2.2 lbs (1.6 to 2 lb ai/A)	G	Controls many broadleaf and some grass weeds. Use split application for quackgrass (see the perennials section). May carryover and injure sensitive crops. See reference C15 for details. Atrazine and package mixtures containing atrazine are restricted use pesticides. Rate structure has been changed to reduce surface runoff from fields.
Banvel 4 S (dicamba)	8 to 16 oz (0.25 to 0.5 lb ai/A)	F	Controls many broadleaf weeds. Apply preemergence only on medium- or fine-textured soils with more than 2.5 percent organic matter. Do Not incorporate prior to corn emergence. The high rate of dicamba can be used on corn through 5 leaf or 8 inches, whichever comes first.
Callisto 4 SC (mesotrione)	6 to 7.7 oz (0.188 to 0.24 lb ai/A)	G	Controls several annual broadleaf weeds. Can be tank mixed with preemergence grass herbicides, see the label for specific tank mix partners. Callisto is most effective when applied preemergence.
Camix 3.67 E (s-metolachlor & mesotrione)	2 to 2.4 qts (1.8 to 2.2 lb ai/A)	G	Controls annual grass and some broadleaf weeds. Can be applied preplant up to 14 days before planting; preemergence but before grass weed emergence; postemergence when tank-mixed with a postemergence grass herbicide (see Table C2 for maximum crop stage). For postemergence applications, add NIS or COC but do not add AMS or UAN unless directed for a specific tank mix; in Liberty or glyphosate tank mixtures use AMS as the only adjuvant.
Charger MAX 7.64 E (s-metolachlor & benoxacor)	1 to 2 pts (0.96 to 1.91 lb ai/A)	G	Controls annual grass and some broadleaf weeds. Can also be applied fall preplant, either alone or in tank mixtures for weed control in minimum- or no-till corn. In tank mixtures with atrazine or Banvel, another 1.5 to 2.5 pts/A of s-metolachlor can be applied to corn less than 5 inches tall.
Cinch 7.64 E (s-metolachlor & benoxacor)	1 to 2.6 pts (0.96 to 0.91 lb ai/A)	G	Controls annual grass and some broadleaf weeds. Can also be applied fall preplant, either alone or in tank mixtures for weed control in minimum- or no-till corn. In tank mixtures with atrazine or Banvel, another 1.5 to 2.5 pts/A of s-metolachlor can be applied to corn less than 5 inches tall.
Clarity 4 S (dicamba)	8 to 16 oz (0.25 to 0.5 lb ai/A)	F	Controls many broadleaf weeds. Apply preemergence only on medium- or fine-textured soils with more than 2.5 percent organic matter. Do Not incorporate prior to corn emergence. The high rate of dicamba can be used on corn through 5 leaf or 8 inches, whichever comes first.

Table C3. Summary of herbicides for use in Corn

<u>Application Type</u>			
Herbicide / Formulation	Rate Range	Crop Tolerance	Remarks
<u>Conventional Corn</u>			
<u>Preemergence</u>			
Confidence 7 E (acetochlor)	1.25 to 2.75 pts (1.1 to 3 lb ai/A)	G	Controls annual grass and some broadleaf weeds including nightshade. See label for application restrictions. Can also be applied fall preplant, early preplant, either alone or in tank mixtures for weed control in minimum- or no-till corn. Acetochlor may be applied on corn up to 11 inches tall. Post emergence applications must be made prior to weed emergence or in tank mixtures that control emerged weeds. Acetochlor is a restricted use pesticide.
Define SC 4 SC (flufenacet)	14 to 24 oz (0.45 to 0.75 lb ai/A)	G	Controls annual grasses and some broadleaf weeds. May be applied in the fall (after 10/15 and when the soil at 4 inches <50°F), early preplant either alone or in tank mix combinations for weed control in minimum or no-till corn. Define may also be applied postemergence on corn up to V5 stage but preemergence to weeds.
Degree 3.8 EC (acetochlor)	2.3 to 6.3 pts (1.1 to 3 lb ai/A)	G	Controls annual grass and some broadleaf weeds including nightshade. See label for application restrictions. Can also be applied fall preplant, early preplant, either alone or in tank mixtures for weed control in minimum- or no-till corn. Acetochlor may be applied on corn up to 11 inches tall. Post emergence applications must be made prior to weed emergence or in tank mixtures that control emerged weeds. Acetochlor is a restricted use pesticide.
Dual II Magnum 16 G Dual II Magnum 7.64 E (s-metolachlor & benoxacor)	6 to 12 lbs 1 to 2 pts (0.96 to 1.91 lb ai/A)	G	Controls annual grass and some broadleaf weeds. Can also be applied fall preplant, either alone or in tank mixtures for weed control in minimum- or no-till corn. In tank mixtures with atrazine or Banvel, another 1.5 to 2.5 pts/A of s-metolachlor can be applied to corn less than 5 inches tall.
Dual Magnum 7.62 E (s-metolachlor)	1 to 2 pts (0.96 to 1.91 lb ai/A)	G	Controls annual grass and some broadleaf weeds. Can also be applied fall preplant, either alone or in tank mixtures for weed control in minimum- or no-till corn. In tank mixtures with atrazine or Banvel, another 1.5 to 2.5 pts/A of s-metolachlor can be applied to corn less than 5 inches tall.
Harness 20 G Harness 7 E (acetochlor)	6 to 15 lbs 1.25 to 2.75 pts (1.1 to 3 lb ai/A)	G	Controls annual grass and some broadleaf weeds including nightshade. See label for application restrictions. Can also be applied fall preplant, early preplant, either alone or in tank mixtures for weed control in minimum- or no-till corn. Acetochlor may be applied on corn up to 11 inches tall. Post emergence applications must be made prior to weed emergence or in tank mixtures that control emerged weeds. Acetochlor is a restricted use pesticide.
Hornet 68.5 WDG (flumetsulam & clopyralid)	4 to 5 oz 68.5 (0.17 to 0.21 lb ai/A)	F/G	Hornet WDG contains 18.5% ad 60% of flumetsulam and clopyralid, respectively. This package mixture controls many annual broadleaf weeds. Hornet can be tank mixed with any preplant or preemergence herbicide registered for use on field corn unless tank mixing is prohibited by the label of the tank mix product. This herbicide combination has no grass activity.
Lasso 10 G Lasso 4 EC Micro-Tech 4 MT (alachlor)	16 to 26 lbs 3 to 8 pts 3 to 8 pts (1.5 to 4 lb ai/A)	G	Controls annual grass and some broadleaf weeds including nightshade. Weak on wild mustard. Alachlor can be used at rates as high as 6 lb/A on muck or peat soils. Can also be applied fall preplant, early preplant, either alone or in tank mixtures for weed control in minimum- or no-till corn. Lasso EC, Microtech, and Bullet are labeled postemergence on corn up to 5 inches tall but less effective on emerged weeds. Cropstar is for custom application only. Alachlor is a restricted use pesticide.
Lumax 3.948 L (s-metolachlor & atrazine & mesotrione)	2 to 3 qts (1.97 to 2.96 lb ai/A)	g	Controls annual grass and some broadleaf weeds. Can be applied preplant up to 14 days before planting; preemergence but before grass weed emergence; postemergence when tank-mixed with a postemergence grass herbicide (see Table C2 for maximum crop stage). For postemergence applications, add NIS or COC but do not add AMS or UAN unless directed for a specific tank mix; in Liberty or glyphosate tank mixtures use AMS as the only adjuvant.

Table C3. Summary of herbicides for use in Corn

Application Type				
Herbicide / Formulation	Rate Range	Crop Tolerance	Remarks	
Conventional Corn				
Preemergence				
Outlook 6 E (dimethenamid-P)	10 to 21 oz (0.47 to 0.98 lb ai/A)	G	Controls annual grass and some broadleaf weeds. Can be applied early preplant, either alone or in tank mixtures, for weed control in minimum or no-till corn. Outlook can be applied postemergence on corn up to 12 inches tall but preemergence to the weeds.	
Parallel 7.8 E (metolachlor & benoxacor)	1 to 2 pts (0.96 to 1.95 lb ai/A)	G	Controls annual grass and some broadleaf weeds.	
Pendant 3.3 E (pendimethalin)	1.8 to 4.8 pts (0.75 to 2 lb ai/A)	F	Controls annual grass and some broadleaf weeds. Can be applied preemergence or early postemergence. Do not incorporate or move into row during cultivation or root injury or lodging may occur.	
Pendimax 3.3 E (pendimethalin)	1.8 to 4.8 pts (0.75 to 2 lb ai/A)	F	Controls annual grass and some broadleaf weeds. Can be applied preemergence or early postemergence. Do not incorporate or move into row during cultivation or root injury or lodging may occur.	
Prowl 3.3 E (pendimethalin)	1.8 to 4.8 pts (0.75 to 2 lb ai/A)	F	Controls annual grass and some broadleaf weeds. Can be applied preemergence or early postemergence. Do not incorporate or move into row during cultivation or root injury or lodging may occur.	
Prowl H20 3.8 CS (pendimethalin)	2 to 4 pts (0.95 to 1.9 lb ai/A)	F	Controls annual grass and some broadleaf weeds. Can be applied preemergence or early postemergence. Do not incorporate or move into row during cultivation or root injury or lodging may occur.	
Python 80 WDG (flumetsulam)	0.8 to 1.3 oz (0.425 to 0.07 lb ai/A)	F/G	Python controls many annual broadleaf weeds. Can be tank mixed with all preplant or preemergence grass herbicides labeled for corn.	
Resolve 25 DF (rimsulfuron)	1 oz (0.016 lb ai/A)	G	Use preemergence for improved control of foxtail species, barnyardgrass and small-seeded broadleaf weeds such as common lambsquarter, kochia, and wild mustard. In MN, use Resolve in a preemergence tank mixture with a low rate of atrazine followed by glyphosate (in Roundup Ready hybrids) or glufosinate (in Liberty Link hybrids) Consult with the seed supplier before applying to Hi-Lysine or white corn or corn hybrids with a relative maturity (RM) of less than 77 days. Do Not apply to corn grown for seed, popcorn, or sweet corn. Do Not apply preemergence to course-textured soils.	
Surpass 20 G Surpass 6.4 E (acetochlor)	5.5 to 15 lbs 1.5 to 3.75 pts (1.1 to 3 lb ai/A)	G	Controls annual grass and some broadleaf weeds including nightshade. See label for application restrictions. Can also be applied fall preplant, early preplant, either alone or in tank mixtures for weed control in minimum- or no-till corn. Acetochlor may be applied on corn up to 11 inches tall. Post emergence applications must be made prior to weed emergence or in tank mixtures that control emerged weeds. Acetochlor is a restricted use pesticide.	
Postemergence				
2,4-D Amine 4 S 2,4-D Ester 4 E (2,4-D)	0.5 to 2 pts 0.5 to 2 pts (0.25 to 1 lb ai/A)	F	Controls emerged annual and perennial broadleaf weeds. Use drop nozzles after corn is 8 inches tall. Do Not spray from 1 week before tasseling to until the tassels are brown. Corn stalk brittleness commonly occurs when the corn stalk is elongating. Higher 2,4-D rates, 0.5 to 1 lb/A, may be used after the hard dough stage to control perennials and large annuals. Avoid spray drift to soybeans or other sensitive crops.	

Table C3. Summary of herbicides for use in Corn

Application Type			
Herbicide / Formulation	Rate Range	Crop Tolerance	Remarks
Conventional Corn			
Postemergence			
Accent 75 DF (nicosulfuron)	0.66 oz (0.031 lb ai/A)	G	Controls many annual grasses, quackgrass, and several broadleaf weeds. Spray annual weeds when approximately 3 inches tall, up to 12 inches for sorghum alnum. Apply broadcast on corn through 6 collars or 20 inches tall (which ever is more restrictive) or with drop nozzels on corn up to 10 collars or 36 inches tall (which ever is more restrictive.) Always use a surfactant or crop oil concentrate plus ammonium nitrogen. Do not use on corn treated with Counter (all formulations). See label for tank mix applications.
Accent Gold 78.1 WDG (clopyralid & flumetsulam & nicosulfuron & rimsulfuron)	3.5 oz (0.152 lb ai/A)	G	Controls several annual grass and broadleaf weeds. Apply up to 12 inch (5 collar) corn. Generally target 1-3 inch grass and 2-4 inch broadleaf weeds. Consult your seed supplier before applying to Hi-Lysine or, white corn or field corn of 77 day Relative Maturity or less. Do Not apply to field corn grown for seed, popcorn, or sweet corn. Always add 1 % v/v crop oil concentrate and 1-2 qts/A of liquid ammonium fertilizer. Apply product within 4 hours of mixing to prevent herbicide inactivation or add a commercial tank buffer. Do Not use on corn treated with Counter (all formulations) or Thimet insecticide. See label for tank mix applications.
Aim 1.9 EW (carfentrazone-ethyl)	0.5 oz (0.008 lb ai/A)	G	Controls several broadleaf weed species; especially effective on velvetleaf. Apply up to 8-collar corn. To avoid excessive crop injury Do Not use crop oil concentrate unless dry or tank-mixed with Accent, Accent Gold or Basis Gold. Use 0.25% v/v nonionic surfactant.
atrazine 4 F atrazine 90 DF (atrazine)	2 to 4 pts 1.1 to 2.2 lbs (1 to 2 lb ai/A)	G	Controls many broadleaf weeds up to 4 inches tall and some grasses up to 1.5 inches tall. Atrazine must be applied before corn is 12 inches in height. See reference and label for more details. If weed control is poor cultivation will be required. Atrazine and package mixtures containing atrazine are restricted use pesticides. Rate structure has been changed to reduce surface runoff from fields.
Avalanche 1.9 E (carfentrazone-ethyl)	0.5 oz (0.008 lb ai/A)	G	Controls several broadleaf weed species; especially effective on velvetleaf. Apply up to 8-collar corn. To avoid excessive crop injury Do Not use crop oil concentrate unless dry or tank-mixed with Accent, Accent Gold or Basis Gold. Use 0.25% v/v nonionic surfactant.
Banvel 4 S (dicamba)	0.5 to 1 pt (0.25 to 0.5 lb ai/A)	G	Controls many annual and perennial broadleaf weeds. No grass control. Use up to .5 lb/A on corn through 5 leaf or 8 inches tall, whichever comes first; use up to .25 lb/A on corn less than 24-30 inches tall (varies by label). Avoid drift to sensitive species.
Basagran 4 S (bentazon)	1.5 to 2 pts (0.75 to 1 lb ai/A)	G	Controls small annual broadleaf weeds, Canada thistle, and yellow nutsedge. A second application may be required for Canada thistle and yellow nutsedge. Thorough coverage of the weeds is essential.
Basis 75 DG (rimsulfuron & thifensulfuron)	0.33 oz (0.015 lb ai/A)	F/G	Controls several annual grass and broadleaf weeds. Apply to 1 to 2 inch grass and 1 to 3 inch broadleaf weeds. Apply after harvest but before ground freezes, or as a spring burndown, or postemergence from spike through 4-leaf (2-collar) stage. May be tank mixed with full or reduced rates of preemergence grass herbicides. Basis should Not be tank mixed with some herbicides or insecticides. See label for details. Consult with seed company before applying to corn hybrids with a 77 RM or less. Cultivation is often necessary. See label for recommended adjuvants.
Basis Gold 89.46 DF (nicosulfuron & rimsulfuron & atrazine)	14 oz (0.783 lb ai/A)	G	Controls several annual and perennial grass and annual broadleaf weeds. Apply up to 12 inch (6-collar) corn. Generally target 1 to 3 inch grass and 3 to 4 inch tall broadleaf weeds. Consult with seed company before applying to Hi-Lysine, white corn, or field corn of 77 days RM or less. Atrazine is a restricted use pesticide.

Table C3. Summary of herbicides for use in Corn

<u>Application Type</u>		Crop	
Herbicide / Formulation	Rate Range	Tolerance	Remarks
<u>Conventional Corn</u>			
<u>Postemergence</u>			
Beacon 75 DF (primisulfuron)	0.38 to 0.76 (0.018 to 0.036 lb ai/A)	F/G	Controls shattercane, sorghum-almum, quackgrass and a number of broadleaf weeds. Can also be applied as a split application of 0.018 lb/A, twice or tank mixed at 0.018 with other herbicides. Apply to 4 to 20 inch field corn or directed application to 10 to 48 inch tall inbred lines or popcorn. With the exception of IR hybrids. Do Not apply Beacon to corn that has been treated with any formulation of Counter insecticide. Check label for potentially susceptible hybrids.
Buctril 2 E (bromoxynil)	1 to 1.5 pt (0.25 to 0.38 lb ai/A)	G	Controls most annual broadleaf weeds. For best results apply to 2- to 4-leaf weeds. Bromoxynil is a contact herbicide; therefore, thorough weed coverage is essential.
Callisto 4 SC (mesotrione)	3 oz (0.094 lb ai/A)	G	Controls several annual broadleaf weeds. Callisto may be applied to corn up to 30 inches tall or up to the 8-leaf stage of growth. Do Not apply Callisto postemergence in a tankmix with EC formulations of grass herbicides. Always add crop oil concentrate at 1 gallon per 100 gallons of water. Always add UAN at 2.5% v/v or AMS at 8.5 lb/100 gallons of water. Do Not use methylated seed oil (MSO) or MSO blend adjuvants. For yellow popcorn use only COC without AMS or UAN.
Clarity 4 S (dicamba)	0.5 to 1 pt (0.25 to .5 lb ai/A)	G	Controls many annual and perennial broadleaf weeds. No grass control. Use up to .5 lb/A on corn through 5 leaf or 8 inches tall, whichever comes first; use up to .25 lb/A on corn less than 24-30 inches tall (varies by label). Avoid drift to sensitive species.
Clopyr AG 3 S (clopyralid)	0.25 to 0.66 pt (0.094 to 0.25 lb ai/A)	G	Apply postemergence to corn up to 24 inches tall. Controls Canada thistle at the 1/3 to 2/3 pt/A rate, however, apply before the bud stage. Controls certain broadleaf weeds including sunflower, cocklebur, and ragweed at the 1/4 to 1/2 pt/A rate.
Distinct 0.7 L (diflufenzopyr & dicamba)	4 to 6 oz (0.18 to 0.26 lb ai/A)	G	Controls many annual and perennial broadleaf weeds and some stunting and injury to annual grasses. Apply 6oz/A on 4 to 10-inch corn and 4 oz./A on 10 to 24 inch corn. Use NIS (1qt/100 gal.) and 28% N (1qt/A) or AMS (1 lb/A).
Equip 32 DF (foramsulfuron & iodosulfuron)	1.5 oz (0.03 lb ai/A)	G	Controls annual grasses and broadleaf weeds. Target 1-3 inch weeds and corn up through 4 collars. Do Not apply to popcorn, or sweet corn. Application to seed corn. Not Recommended. Always add methylated or ethylated seed oil at 1.5 pt/A and UAN at 1.5-2 qt/A or AMS at 1.5-3 lb/A.
Hornet 68.5 WDG (flumetsulam & clopyralid)	4 to 5 oz 68.5 (0.17 to 0.21 lb ai/A)	F/G	Controls both small and large seeded broadleaf weeds. Canada thistle control. For optimum weed control, apply when weeds are less than 8 inches. Apply through 6-collar corn. Do not apply to corn previously treated with Counter insecticide. Hornet may be tank mixed with any other postemergence herbicides registered for use in field corn unless tank mixing is prohibited by the label for the tank mix product. This herbicide combination has no grass activity.
Northstar 47.4 DF (primisulfuron & dicamba)	4 to 5 oz (0.12 to 0.15 lb ai/A)	G	Effectively controls a wide spectrum of broadleaf weeds and quackgrass. Apply 4 to 20 inch tall corn (V2-V6). Use drop nozzle in corn that is between 20 and 36 inches in height. Injury may occur if applied to corn plants less than 4 inches tall. With the exception of IR hybrids see the label regarding soil insecticide application restrictions. Do not apply when soybeans are growing nearby if: 1) Corn is more than 24 inches tall. 2) Soybeans are more than 10 inches tall. 3) Soybeans have begun to bloom.
Option 35 DF (foramsulfuron)	1.5 oz (0.33 lb ai/A)	G	Controls many annual grass and broadleaf weeds. Target 1-3 inch weeds and corn through 6 collars. Do Not apply to popcorn, or sweet corn. Application to field corn grown for seed is Not Recommended. Always add methylated or ethylated seed oil at 1.5 pt/A and UAN at 1.5-2 qt/A or AMS at 1.5-3 lb/A.
Permit 75 DG (halosulfuron)	0.67 to 1.33 oz (0.31 to 0.63 lb ai/A)	G	Controls several broadleaf weeds and nutsedge. Apply to corn from spike through layby. Tank mixtures with 1/8 to 1/4 pt/A of dicamba on corn up to 36 inches tall with improve control of lambsquarters less than 4 inches tall.

Table C3. Summary of herbicides for use in Corn

Application Type			
Herbicide / Formulation	Rate Range	Crop Tolerance	Remarks
Conventional Corn			
Postemergence			
Resolve 25 DF (rimsulfuron)	1 oz (0.016 lb ai/A)	G	Use early postemergence at 1.0 oz/A of product (0.25 oz/A of active ingredient) for improved control of foxtail species, barnyardgrass and small-seeded broadleaf weeds such as common lambsquarter, kochia, and wild mustard. In MN, use an early postemergence application of Resolve tank mixed with a low rate of atrazine plus glyphosate (glufosinate can Not be tank mixed with Resolve). Do Not apply to corn taller than 12 inches or exhibiting 6 or more leaf collars, whichever is more restrictive. Consult with the seed supplier before applying to Hi-Lysine or white corn or corn hybrids with a relative maturity (RM) of less than 77 days. Do Not apply to corn grown for seed, popcorn, or sweet corn. Do Not apply a foliar application of an organophosphate insecticide or the herbicides bentazon (Basagran), bentazon plus atrazine (Laddok), or 2,4-D within 7 days before or 3 days after a Resolve application. Postemergence application must include a nonionic surfactant and an ammonium nitrogen fertilizer. If applied in a tank mixture with a glyphosate formulation that already contains adjuvants, additional surfactant may not be necessary.
Resource 0.86 L (flumiclorac)	4 to 8 oz (0.027 to 0.054 lb ai/A)	G	Controls several broadleaf weed species; especially effective on velvetleaf. Apply to 2-collar to 10-collar corn. Apply 8 oz/A rate with drop nozzles only. Use 1-2 pt/A crop oil concentrate.
Starane 1.5 EC (fluroxypyr)	0.66 (0.12 lb ai/A)	G	Controls several annual broadleaf weeds; fluroxypyr + clopyralid also controls several perennial composite weeds. Apply to field corn up to and including V5 growth stage and before susceptible weeds become 8 inches tall or vining (e.g. wild buckwheat). Applications beyond V5 should be made using drop nozzles. The use of adjuvants is not generally necessary, except under adverse conditions.
Steadfast 75 WDG (nicosulfuron & rimsulfuron)	0.75 oz (0.035 lb ai/A)	G	Controls several annual grass and broadleaf weeds. Apply Steadfast up to 20-inch (not to exceed 6-collar) corn. Generally target 2-4 inch weeds. Consult your seed supplier before applying to Hi-Lysine, white corn, or field corn of less than 77 day relative maturity or less. Do Not apply to field corn grown for seed, popcorn, or sweet corn. The preferred adjuvant system is 1% v/v crop oil concentrate plus 1-2 qts/A of liquid or 2 bs./A of dry ammonium nitrogen fertilizer. Do Not tank mix with Basagran, Laddok, 2,4-D or foliar-applied organophosphate insecticides. Do not apply to corn treated with Counter 15G or 20 CR in-furrow or over the row at cultivation. See label for tank mix applications.
Stinger 3 S (clopyralid)	0.25 to 0.66 pts (0.094 to 0.25 lb ai/A)	G	Apply postemergence to corn up to 24 inches tall. Controls Canada thistle at the 1/3 to 2/3 pt/A rate, however, apply before the bud stage. Controls certain broadleaf weeds including sunflower, cocklebur, and
WideMatch 1.5 E (clopyralid & fluroxypyr)	1.33 pts (0.25 lb ai/A)	G	Controls several annual broadleaf weeds; fluroxypyr + clopyralid also controls several perennial composite weeds. Apply to field corn up to and including V5 growth stage and before susceptible weeds become 8 inches tall or vining (e.g. wild buckwheat). Applications beyond V5 should be made using drop nozzles. The use of adjuvants is not generally necessary, except under adverse conditions.
Dessicants			
Durango 4 S	up to 2.25 qts	-	Preharvest aid for control of annual and perennial weeds. Apply at 35% or less grain moisture and after black layer formation. Allow a minimum of 7 days between application and harvest. Not recommended for corn grown for seed.
Glyphomax XRT 4 S	up to 2.25 qts		
Roundup Original MAX 4.5 S	21 oz to 3.8 qts		
Roundup WeatherMAX 4.5 S	21 oz to 3.8 qts		
Touchdown Hi-Tech 5 L	1.6 pts		
Touchdown Total 4.17 L (glyphosate)	1.7 pts (0.75 to 4.5 lb ai/A)		

Table C3. Summary of herbicides for use in Corn

<u>Application Type</u>		Crop	
Herbicide / Formulation	Rate Range	Tolerance	Remarks
<u>Clearfield Corn</u>			
<u>Postemergence</u>			
Lightning 70 SG (imazethapyr & imazapyr)	1.28 oz (0.056 lb ai/A)	G	Provides control of several annual grass and broadleaf weeds. Use of 0.25% v/v of nonionic surfactant or 1.0 % v/v of crop oil concentrate (under hot, stressful conditions or controlling larger or more difficult to control weed species) and 1-2 qt/A of liquid fertilizer is recommended; see label for details. For best results, apply when weeds are actively growing and less than 3 inches and before corn exceeds 6 visible leaves or 20 inches tall.
<u>Liberty Link Corn</u>			
<u>Postemergence</u>			
Liberty 1.67 S (glufosinate)	28 to 34 oz (0.36 to 0.45 lb ai/A)	G	Labeled for glufosinate (Liberty) tolerant hybrids. Use only on genetically altered hybrids designated as LibertyLink. Provides broadspectrum control of annual grasses and broadleaf weeds. If weeds emerge following a Liberty application a second application may be made. Apply broadcast up to 24 inch tall corn or 7-collars, whichever comes first. Drop nozzles may be used on up to 36 inch tall corn. Always add 3 lb/A of ammonium sulfate. Do Not use any surfactants even where tank mixes call for them. Do Not exceed 62 oz. of Liberty per season.
<u>Roundup Ready Corn</u>			
<u>Postemergence</u>			
Cornerstone 3 S	24 to 32 oz	G	Provides broadspectrum control of annual and some perennial weeds. If weeds emerge after glyphosate application a second application will be required. Must apply prior to 8-collar corn or 30 inches in height. There are no crop rotation restrictions following glyphosate.
Durango 4 S	18 to 24 oz		
Glyphomax XRT 4 S	18 to 24 oz		
Roundup Original MAX 4.5 S	16 to 22 oz		
Roundup WeatherMAX 4.5 S	16 to 22 oz		
Touchdown Hi-Tech 5 L	14 to 19 oz		
Touchdown Total 4.17 L (glyphosate)	15 to 20 oz (0.56 to 0.75 lb ai/A)		

Table C4. Effectiveness of herbicides on major weeds in Corn

Herbicides	Grasses										Broadleaves										Perennials				
	Barryardgrass	Crabgrass	Woolly cupgrass	Giant abnd Robust Foxtail	Green Foxtail	Yellow Foxtail	Wild Proso Millet	Sandbur	Buffalobur	Cocklebur	Kochia	Common Lambsquarters	Wild Mustard	Eastern Black Nightshade	Pigweed spp.	Common Ragweed	Giant Ragweed	Smartweeds (annual)	Waterhemp	Wild Sunflower	Velvetleaf	Canada Thistle	Yellow Nutsedge	Quackgrass	
Conventional Corn																									
Preplant Incorporated																									
atrazine, others (atrazine)	F	P	P	F	F	F	P	F	P	F	G	G	G	G	G	G	G	G	F	F	P	P	P		
Charger MAX (s-metolachlor & benoxacor)	G	G	F	G	G	G	F	F	P	N	P	F/P	P	F	G	P	P	P	G	P	P	N	G	N	
Cinch (s-metolachlor & benoxacor)	G	G	F	G	G	G	F	F	P	N	P	F/P	P	F	G	P	P	P	G	P	P	N	G	N	
Confidence (acetochlor)	G	G	F/G	G	G	G	F/G	F	P	N	P	F	P	F/G	G	F	P	F/P	G	P	F/P	N	G	N	
Define (flufenacet)	G	G	F	G	G	G	F	F	P	N	P	F/P	P	F/G	F/G	P	P	P	F/G	P	P	N	F	N	
Degree (acetochlor)	G	G	F/G	G	G	G	F/G	F	P	N	P	F	P	F/G	G	F	P	F/P	G	P	F/P	N	G	N	
Dual II Magnum (s-metolachlor & benoxacor)	G	G	F	G	G	G	F	F	P	N	P	F/P	P	F	G	P	P	P	G	P	P	N	G	N	
Dual Magnum (s-metolachlor)	G	G	F	G	G	G	F	F	P	N	P	F/P	P	F	G	P	P	P	G	P	P	N	G	N	
Harness (acetochlor)	G	G	F/G	G	G	G	F/G	F	P	N	P	F	P	F/G	G	F	P	F/P	G	P	F/P	N	G	N	
Hornet (flumetsulam & clopyralid)	N	N	N	N	N	N	N	N	G	F/G	G	G	G	G	G	G	G	G	P	G	G	N	N	N	
Lasso (alachlor)	G	G	F	G	G	G	F	F	P	N	P	F/P	P	F	G	P	P	P	G	P	P	N	G	N	
Outlook (dimethenamid-P)	G	G	F	G	G	G	F	F	P	N	P	F/P	P	F	G	P	P	P	G	P	P	N	G	N	
Parallel (metolachlor & benoxacor)	G	G	F	G	G	G	F	F	P	N	P	F/P	P	F	G	P	P	P	G	P	P	N	G	N	
Python (flumetsulam)	N	N	N	N	N	N	N	N	G	F	G	G	G	G	G	F/G	P	G	P	G	G	N	N	N	
Surpass (acetochlor)	G	G	F/G	G	G	G	F/G	F	P	N	P	F	P	F/G	G	F	P	F/P	G	P	F/P	N	G	N	

NOTE: G = Good; F= Fair; P = Poor; N = No control. Effectiveness ratings apply if herbicide is used according to label recommendations as to rate, time of application, etc., and favorable temperature and moisture conditions prevail.

Table C4. Effectiveness of herbicides on major weeds in Corn

Herbicides	Grasses										Broadleaves										Perennials				
	Barryardgrass	Crabgrass	Woolly cupgrass	Giant abnd Robust Foxtail	Green Foxtail	Yellow Foxtail	Wild Proso Millet	Sandbur	Buffalobur	Cocklebur	Kochia	Common Lambsquarters	Wild Mustard	Eastern Black Nightshade	Pigweed spp.	Common Ragweed	Giant Ragweed	Smartweeds (annual)	Waterhemp	Wild Sunflower	Velvetleaf	Canada Thistle	Yellow Nutsedge	Quackgrass	
Preemergence																									
atrazine, others (atrazine)	F	P	P	F	F	F	P	F	P	F	G	G	G	G	G	G	G	G	F	F	P	P	P	P	
Banvel (dicamba)	P	P	P	P	P	P	P	P	P	F	F	G	G	F	G	G	F/G	G	G	F	F	N	N	N	
Callisto (mesotrione)	N	P	N	N	N	N	N	N	G	P	P/F	G	G	G	G	P	P	G	G	F/G	G	P	N	N	
Charger MAX (s-metolachlor & benoxacor)	G	G	F	G	G	G	F	F	P	N	P	F/P	P	G	G	P	P	P	G	P	P	N	F	N	
Cinch (s-metolachlor & benoxacor)	G	G	F	G	G	G	F	F	P	N	P	F/P	P	G	G	P	P	P	G	P	P	N	F	N	
Clarity (dicamba)	P	P	P	P	P	P	P	P	P	F	F	G	G	F	G	G	F/G	G	G	F	F	N	N	N	
Confidence (acetochlor)	G	G	F/G	G	G	G	F/G	F	P	N	P	F	P	G	G	F	P	F/P	G	P	F/P	N	F	N	
Define (flufenacet)	G	G	F	G	G	G	F	F	P	N	P	F/P	P	F/G	F/G	P	P	P	F/G	P	P	N	F	N	
Degree (acetochlor)	G	G	F/G	G	G	G	F/G	F	P	N	P	F	P	G	G	F	P	F/P	G	P	F/P	N	F	N	
Dual II Magnum (s-metolachlor & benoxacor)	G	G	F	G	G	G	F	F	P	N	P	F/P	P	G	G	P	P	P	G	P	P	N	F	N	
Dual Magnum (s-metolachlor)	G	G	F	G	G	G	F	F	P	N	P	F/P	P	G	G	P	P	P	G	P	P	N	F	N	
Harness (acetochlor)	G	G	F/G	G	G	G	F/G	F	P	N	P	F	P	G	G	F	P	F/P	G	P	F/P	N	F	N	
Hornet (flumetsulam & clopyralid)	N	N	N	N	N	N	N	N	G	F/G	G	G	G	G	G	G	G	G	P	G	G	N	N	N	
Lasso (alachlor)	G	G	F	G	G	G	F	F	P	N	P	F/P	P	G	G	P	P	P	G	P	P	N	F	N	
Outlook (dimethenamid-P)	G	G	F	G	G	G	F	F	P	N	P	F/P	P	G	G	P	P	P	G	P	P	N	F	N	
Parallel (metolachlor & benoxacor)	G	G	F	G	G	G	F	F	P	N	P	F/P	P	G	G	P	P	P	G	P	P	N	F	N	
Pendant (pendimethalin)	G	F	G	G	G	G	F	G	-	N	F/G	F/G	N	P	G	N	N	F	G	N	F	N	N	P	
Pendimax (pendimethalin)	G	F	G	G	G	G	F	G	-	N	F/G	F/G	N	P	G	N	N	F	G	N	F	N	N	P	
Prowl (pendimethalin)	G	F	G	G	G	G	F	G	-	N	F/G	F/G	N	P	G	N	N	F	G	N	F	N	N	P	
Prowl H20 (pendimethalin)	G	F	G	G	G	G	F	G	-	N	F/G	F/G	N	P	G	N	N	F	G	N	F	N	N	P	
Python (flumetsulam)	N	N	N	N	N	N	N	N	G	F	G	G	G	G	G	F/G	P	G	P	G	G	N	N	N	
Resolve (rimsulfuron)	G	F/P	P	G	G	G	P	P	-	F/P	G	G	G	F/P	G	F/P	P	F/P	N	P	F/P	N	N	N	
Surpass (acetochlor)	G	G	F/G	G	G	G	F/G	F	P	N	P	F	P	G	G	F	P	F/P	G	P	F/P	N	F	N	

NOTE: G = Good; F= Fair; P = Poor; N = No control. Effectiveness ratings apply if herbicide is used according to label recommendations as to rate, time of application, etc., and favorable temperature and moisture conditions prevail.

Table C4. Effectiveness of herbicides on major weeds in Corn

Herbicides	Grasses								Broadleaves										Perennials						
	Barryardgrass	Crabgrass	Woolly cupgrass	Giant abnd Robust Foxtail	Green Foxtail	Yellow Foxtail	Wild Proso Millet	Sandbur	Buffalobur	Cocklebur	Kochia	Common Lambsquarters	Wild Mustard	Eastern Black Nightshade	Pigweed spp.	Common Ragweed	Giant Ragweed	Smartweeds (annual)	Waterhemp	Wild Sunflower	Velvetleaf	Canada Thistle	Yellow Nutsedge	Quackgrass	
Postemergence																									
2,4-D, others (2,4-D)	N	N	N	N	N	N	N	N	P	G	F	G	G	F	G	G	G	P	G	F	G	F	N	N	
Accent (nicosulfuron)	G	P	G	G	G	G	G	G	-	P	G	F/P	G	P	G	P	P	G	P	-	P	-	P	G	
Accent Gold WDG (clopyralid & flumetsulam & nicosulfuron & rimsulfuron)	G	P	F	G	G	G	F/G	F/G	-	G	F	F	G	F	G	G	G	G	P	G	G	F	P	F/G	
Aim (carfentrazone-ethyl)	N	N	N	N	N	N	N	N	F	P	G	G	F	G	G	P	P	P	F/G	P	G	N	N	N	
atrazine, others (atrazine)	F	P	F	F	F	F	P	F	G	G	G	G	G	G	G	G	G	G	G	G	F	F	F	P	
Avalanche (carfentrazone-ethyl)	N	N	N	N	N	N	N	N	F	P	G	G	F	G	G	P	P	P	F/G	P	G	N	N	N	
Banvel (dicamba)	N	N	N	N	N	N	N	N	P	G	G	G	F	F	G	G	G	G	G	G	G	G	N	N	
Basagran (bentazon)	N	N	N	N	N	N	N	N	P	G	F	F	G	P	P	F	F	G	P	G	G	F/G	G	N	
Basis (rimsulfuron & thifensulfuron)	G	P	P	G	G	G	P	P	P	P	F	G	G	N	G	P	P	G	P	F/G	F/G	N	N	N	
Basis Gold (nicosulfuron & rimsulfuron & atrazine)	G	P	F	G	G	G	F/G	F/G	F	F	F	G	G	G	G	F/G	F	G	P/F	G	F/G	P	P	F/G	
Beacon (primisulfuron)	P	P	P	P	P	P	P	F	-	G	G	F	G	G	G	G	G	G	P	G	F	F	F	G	
Buctril (bromoxynil)	N	N	N	N	N	N	N	N	G	G	G	G	G	G	F	G	G	G	F	G	G	F	N	N	
Callisto (mesotrione)	N	P	N	N	N	N	N	N	G	G	P/F	G	G	G	G	F/G	G	G	G	G	G	P	N	N	
Clarity (dicamba)	N	N	N	N	N	N	N	N	P	G	G	G	F	F	G	G	G	G	G	G	G	G	N	N	
Clopyr AG (clopyralid)	N	N	N	N	N	N	N	N	G	G	P	P	N	F	P	G	G	F/G	P	G	P	G	N	N	
Distinct (diflufenzopyr & dicamba)	F/P	F/P	F/P	F/P	F/P	F/P	F/P	F/P	F	G	G	G	G	G	G	G	G	G	G	G	G	G	N	P	
Equip (foramsulfuron & iodosulfuron)	G	F	F	G	G	G	G	G	-	G	G	G	G	G	G	G	G	G	P	G	G	-	P	G	
Hornet (flumetsulam & clopyralid)	N	N	N	N	N	N	N	N	-	G	F	F/G	G	F	F/G	G	G	G	P	G	G	G	-	-	
Northstar (primisulfuron & dicamba)	P	P	P	P	P	P	P	-	G	G	G	G	G	G	G	G	G	F	G	G	F	F	G		
Option (foramsulfuron)	G	F	F	G	G	G	G	G	-	F	G	G	G	G	G	F	F	P	G	G	-	P	G		
Permit (halosulfuron)	N	N	N	N	N	N	N	N	-	G	F/G	P	F	N	F/G	G	G	F/G	P	G	G	P	G	N	
Resolve (rimsulfuron)	G	F/P	F	G	G	G	F/P	P	-	F/P	G	G	G	P	G	F/P	P	F/P	N	P	F/P	N	P	P	
Resource (flumiclorac)	N	N	N	N	N	N	N	N	-	P	P/F	F	-	P	P/F	F	P	P	P	P	P	G	N	N	
Starane (fluroxypyr)	N	N	N	N	N	N	N	N	F	G	G	N	N	F	P	G	G	N	P	G	G	P	N	N	
Steadfast (nicosulfuron & rimsulfuron)	G	P	F/G	G	G	G	G	F/G	-	P/F	-	F	G	N	G	P	P	G	P	G	F/P	N	N	G	
Stinger (clopyralid)	N	N	N	N	N	N	N	N	G	G	P	P	N	F	P	G	G	F/G	P	G	P	G	N	N	
WideMatch (clopyralid & fluroxypyr)	N	N	N	N	N	N	N	N	G	G	G	N	N	F	P	G	G	F	P	G	G	G	N	N	

Clearfield Corn

Postemergence

Lightning (imazethapyr & imazapyr)	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	F	F	G	P	G	G	P	P	F/P
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Liberty Link Corn

Postemergence

Liberty (glufosinate)	F	F	G	G	G	F	G	P	G	G	G	F	G	G	G	G	G	G	G	G	G	F/P	P	P
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NOTE: G = Good; F= Fair; P = Poor; N = No control. Effectiveness ratings apply if herbicide is used according to label recommendations as to rate, time of application, etc., and favorable temperature and moisture conditions prevail.

Table C4. Effectiveness of herbicides on major weeds in Corn

Herbicides	Grasses										Broadleaves										Perennials					
	Barryardgrass	Crabgrass	Woolly cupgrass	Giant abnd Robust Foxtail	Green Foxtail	Yellow Foxtail	Wild Proso Millet	Sandbur	Buffalobur	Cocklebur	Kochia	Common Lambsquarters	Wild Mustard	Eastern Black Nightshade	Pigweed spp.	Common Ragweed	Giant Ragweed	Smartweeds (annual)	Waterhemp	Wild Sunflower	Velvetleaf	Canada Thistle	Yellow Nutsedge	Quackgrass		
Roundup Ready Corn																										
Postemergence																										
glyphosate, others	glyphosate	G	G	G	G	G	G	G	G	G	G	F/G	G	F	G	F/G	G	F/G	G	G	F/G	F/G	F	F	F/G	

NOTE: G = Good; F= Fair; P = Poor; N = No control. Effectiveness ratings apply if herbicide is used according to label recommendations as to rate, time of application, etc., and favorable temperature and moisture conditions prevail.