

# Suggestions for Weed Control in Corn



# Suggestions for Weed Control in Corn

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The suggestions contained herein are based primarily on herbicide labels researched by the Texas Agricultural Experiment Station and Texas Cooperative Extension. The use of product names is not intended as an endorsement of the product or of a specific manufacturer, nor is there any implication that other formulations containing the same active chemical are not equally as effective. Product names are included solely to aid readers in locating and identifying the herbicides suggested.

The information given herein is for educational purposes only. Reference to commercial products or trade names is made with the understanding that no discrimination is intended and no endorsement by Texas Cooperative Extension is implied.

**This publication is no substitute for the herbicide product labels! It is intended to serve only as a guide for controlling weeds in corn. Labeled rates and restrictions change constantly, therefore, consult a current product label before use.**

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Weeds can be controlled in cropland through cultural, mechanical and chemical means. Judiciously using these methods individually or in combination can effectively manage weeds without causing economic loss or environmental harm. Deciding which practice to employ will depend largely on the weed(s) being controlled and the infestation level. Also, the crop being planted will play a major role in determining the timing of mechanical measures.

Considerations for cultural and mechanical weed control include:

- Remove light or spotty infestations of weeds by hand hoeing or spot cultivation to prevent spreading weed seed, rhizomes or roots. Exercise caution when plowing perennial weeds, being careful to prevent the transport and spread of plant parts to other areas of the field.
- Use weed-free planting seed to protect against weed infestations in the row and the introduction of new weed species.
- Thoroughly clean harvesting equipment before moving from one field to the next or require it of custom harvesters before they enter your fields.
- Use mechanical tillage to remove initial weed flushes before planting, thereby reducing or eliminating the potential for continued infestation.
- Consider the economics of using mechanical cultivation alone for weed control in the crop, especially where only light infestations of annual weeds are present.
- Rotate crops that physically out-compete certain weeds, resulting in their gradual decline.



**Table 1. Winter weed control.**

Weeds controlled	Product (Herbicide common name) Company	Application rate per acre	Time to apply	Remarks
Annual broadleaf weeds such as thistles, henbit and seedling dock  (Refer to label for specific weeds controlled.)	<b>AAtrex 4L®</b> <b>atrazine 4L</b> <b>AAtrex Nine-O®</b> (atrazine) Syngenta and others	0.8 to 1.0 qt.  0.9 to 1.1 lbs.	Postemergence to small weeds in November or December on winter fallowed lands.	For use in the Texas Gulf Coast and Blacklands only. Plant only corn, grain or forage sorghum in the spring. Normal weed control programs will be necessary at crop planting time.
Numerous annual broadleaf weeds  (Refer to label for specific weeds controlled.)	<b>Harmony Extra 75DF®</b> (thifensulfuron-methyl [50%] plus tribenuron-methyl [25%]) DuPont	0.3 to 0.6 oz.	Apply postemergence at least 45 days before planting to weeds less than 4 inches tall or wide.	Add nonionic surfactant or crop oil concentrate to spray mixture. Tank mixes with Roundup Ultra® or Roundup UltraMax® hasten burndown. Total amount of product applied not to exceed 1.0 oz. per acre per crop season.

**Table 2. Preplant herbicides for postemergence control**

Weeds controlled	Product (Herbicide common name) Company	Application rate per acre	Time to apply	Remarks
Emerged annual broadleaf and grass weeds  (Refer to label for specific weeds controlled.)	<b>Gramoxone Extra®</b>  <b>Gramoxone Max®</b> (paraquat dichloride) Syngenta	1.5 to 3.0 pts. plus nonionic surfactant or crop oil concentrate  1.3 to 2.7 pts. plus nonionic surfactant or crop oil concentrate	Prior to, during or after planting but before crop emergence; optimal when weeds are 1 to 6 inches tall.	Avoid drift to emerged crops. Beds should be preformed to permit maximum weed and grass emergence. This herbicide is useful in minimum tillage systems. Add nonionic surfactant to spray solution at 16 to 32 oz. per 100 gals. of water or crop oil concentrate at 1.0% v/v.  <b>Note: Gramoxone Extra or Max® may be combined with atrazine or Bladex® for residual control</b>
Annual broadleaf and grass weeds with suppression of perennials  (Refer to label for specific weeds controlled.)	<b>Roundup Ultra®</b> <b>Roundup UltraMax®</b> (glyphosate) Monsanto	0.5 to 1.5 qts. 0.4 to 1.2 qts	Prior to, during or after planting, but before crop emergence or after harvesting corn.	For henbit, use 1 pt./A on weeds < 3 inches tall, 1 qt./A on 3- to 6-inch weeds. Apply when weeds are growing vigorously and are less than 6 inches tall. Consult label for specific rates for weeds. Do not apply when winds are gusty or cause product to drift. Allow at least 7 days before tillage. Tank mixtures with 2,4-D or dicamba must be made at least 7 days before planting corn.

**Table 2. Preplant herbicides for postemergence control (continued)**

Weeds controlled	Product (Herbicide common name) Company	Application rate per acre	Time to apply	Remarks
Bermudagrass	<b>Roundup Ultra®</b> <b>Roundup UltraMax®</b> (glyphosate) Monsanto	3.0 and 5.0 qts 2.4 and 4.0 qts.	Before planting or after harvest.	Low rate per acre will provide partial control whereas the high rate will provide control. Apply when bermudagrass is actively growing and seed-heads are present. Retreatment may be necessary to maintain control. Allow at least 7 days before tillage.
Field bindweed	<b>Roundup Ultra®</b> <b>Roundup UltraMax®</b> (glyphosate) Monsanto  <b>Roundup Ultra® + Banvel®</b> <b>Roundup UltraMax® + Banvel®</b> (dicamba at 0.5lb.ai) BASF  <b>Roundup Ultra® + 2,4-D</b> <b>Roundup UltraMax® + 2,4-D</b> (2,4-D at 1.0 lb. ai.) Monsanto	4.0 to 5.0 qts. (control) 3.2 to 4.0 qts. (control)  2 qts. + 1 pt. (control) 1.6 qts. + 1 pt. (control)  2 qts. + 1 qt. (partial) 1.6 qts. + 1 qt. (partial)	Before planting or after harvest.	Apply when bindweed is actively growing and at or beyond full bloom. For best results, apply in late summer or fall. Wait at least 7 days to till. Apply with ground equipment only. Refer to Banvel or 2,4-D label for crop rotation restrictions and cautionary statements. (See Roundup Ultra® and Roundup UltraMax® labels for this use.)
Johnsongrass	<b>Roundup Ultra®</b> <b>Roundup UltraMax®</b> (glyphosate) Monsanto	1.0 to 3.0 qts. 0.8 to 2.4 qts.	Before planting or after harvest.	Apply when actively growing and in boot stage for best results. Do not apply after johnsongrass turns brown in fall. Allow 7 days before tillage. Do not tank mix with residual herbicide when using the 1 qt./A rate. Fall applications must be made before frost.
Johnsongrass (burndown control only)	<b>Roundup Ultra®</b> <b>Roundup UltraMax®</b> (glyphosate) Monsanto	0.5 qt. 0.4 qt.	Before planting or after harvest	Apply before johnsongrass reaches 12 inches tall. Allow 7 days before tillage.  <b>Note: In annual cropping systems a rate of 1.0 qt./A of Roundup Ultra® or 0.8 qt/A of Roundup UltraMax® may be applied. Use a spray volume of 3 to 10 gals. per acre. For spot treatment in corn, use a 1.0 percent solution and spray before silking. Apply to johnsongrass 12 to 18 inches tall, but treat no more than 10 percent of the total field.</b>

**Table 2. Preplant herbicides for postemergence control (continued)**

Weeds controlled	Product (Herbicide common name) Company	Application rate per acre	Time to apply	Remarks
Nutsedge (yellow, purple)	<b>Roundup Ultra<sup>®</sup></b> <b>Roundup UltraMax<sup>®</sup></b> (glyphosate) Monsanto	3 qts. (control) 2.4 qts. (control)	Before planting or after harvest.	Treat when plants are flowering or have new nutlets at rhizome tips. Repeat applications are required for long-term control. Wait 7 days after treatment to till. Nutlets not germinated will not be controlled and may germinate after treatment.
	<b>Roundup Ultra<sup>®</sup></b> <b>Roundup UltraMax<sup>®</sup></b> (glyphosate) Monsanto	0.5 to 2 qts. (partial) 0.4 to 1.6 qts. (partial)		Treat when plants have 3 to 5 leaves (6 inches tall). Repeat applications are required for long-term control. Wait 7 days after treatment to till.
Silverleaf nightshade	<b>Roundup Ultra<sup>®</sup></b> <b>Roundup UltraMax<sup>®</sup></b> (glyphosate) Monsanto	2 qts. 1.6 qts	Before planting or after harvest	Treat when at least 60 percent of the plants have berries. Fall treatments must be made before a killing frost. Plants must be actively growing. Allow 7 or more days after treatment before tillage.
Annual and perennial weeds (Refer to label for specific weeds controlled.)	<b>Touchdown<sup>®</sup></b> <b>Touchdown 5<sup>®</sup></b> (sulfosate) Syngenta	0.5 to 5.3 pts. 0.6 to 6.4 pts.	Apply before, during or after planting, but before crop emergence.	Can be tank-mixed with other herbicides to provide preemergence control or suppression of annual weeds. Consult label for mixing rates. Do not apply more than 5.3 pts. or 6.4 pts. per acre per year of Touchdown <sup>®</sup> or Touchdown 5 <sup>®</sup> , respectively. Apply 90 days before harvest or fodder.

**Table 3. Preplant incorporated, preplant surface applied, and preemergence herbicides for residual control**

Weeds controlled	Product (Herbicide common name) Company	Application rate per acre	Time to apply	Remarks
Annual broadleaf and grass weeds (Refer to label for specific weeds controlled.)	<b>Aatrex 4L<sup>®</sup> or atrazine 4L<sup>®</sup></b> <b>AAatrex Nine-O<sup>®</sup></b> (atrazine) Syngenta and other companies	3.2 to 4.0 pts. 1.8 to 2.2 lbs.	Preplant incorporated at least 2 weeks before planting. Preemergence apply during or shortly after planting, but before crop and weeds emerge.	Consult label for appropriate rates for soil classification. Products can be mixed with other compounds to control small-seeded grass better. Apply no more than 2.5 pounds of active ingredient per acre per calendar year (i.e. 2.5 quarts per acre of atrazine 4L; 2.7 pounds per acre of AAatrex Nine-O <sup>®</sup> ). May be tank-mixed with several other products to strengthen grass control.
Annual broadleaf and grass weeds Partial control of yellow nutsedge (Refer to label for specific weeds controlled.)	<b>Axiom DF<sup>®</sup></b> (flufenacet + metribuzin) Bayer	8 to 23 oz.	Early preplant (15-45 days prior to planting), preplant (14 days prior to planting), preplant incorporated (into top 1 to 2 inches of soil) or surface applied preemergence.	Consult the label for tank mix and crop rotation recommendations. Rates vary by soil texture and organic matter. Rotational crops - 2 years. Do not apply by chemigation or air.
Annual broadleaf and grass weeds (Refer to label for specific weeds controlled.)	<b>Balance WDG<sup>®</sup></b>  <b>Balance Pro<sup>®</sup></b> (isoxaflutole) Aventis	1.5 to 3 oz.  2.25 to 3 oz.	Preplant surface-applied or preplant incorporated. Apply 0 -14 days before planting. Pre-emergence during or after =planting but before emergence of weeds or crops.	Rates vary by soil texture, OM, and tillage. Do not forage grain or feed fodder to livestock. Do not plant rotational crops until the following year. No rotational crops may be planted within 4 months following a Balance herbicide application. Consult the label for tank mix and crop rotation restrictions and recommendations. Balance herbicide is not recommended for use on soils containing less than 1.5% organic matter or with a pH greater than 7.5 due to the potential for crop injury.
Annual broadleaf and grass weeds. Partial control of seedling johnsongrass, shattercane and volunteer sorghum. (Refer to label for specific weeds controlled.)	<b>Bicep II Magnum<sup>®</sup></b> (atrazine + s-metolachlor)  <b>Bicep Lite II Magnum<sup>®</sup></b> (atrazine + s-metolachlor + safener) Syngenta	1.6 to 1.9 qts.  1.1 to 1.4 qts.	Preplant surface applied 30 to 45 days before planting	For use on medium- and fine-textured soils after final seedbed preparation in the Blacklands and Gulf Coast areas of Texas. Grass suppression for 2 to 3 weeks after planting can be expected as a result of this application. Do not incorporate or disturb the soil before planting and avoid moving the soil during the planting operation. A follow-up application of a preemergence grass herbicide may be needed in fields with heavy grass pressure. Consult the label for additional information and restrictions.

**Table 3. Preplant incorporated, preplant surface applied, and preemergence herbicides for residual control (continued)**

<b>Weeds controlled</b>	<b>Product (Herbicide common name) Company</b>	<b>Application rate per acre</b>	<b>Time to apply</b>	<b>Remarks</b>
Annual broadleaf and grass weeds. Partial control of seedling johnsongrass, shattercane and volunteer sorghum. (continued)	<b>Bicep II Magnum®</b> (atrazine + s-metolachlor)  <b>Bicep Lite II Magnum®</b> (atrazine + s-metolachlor + safener) Syngenta	1.3 to 2.6 qts.  0.9 to 2.2 qts.	Preplant surface applied, preplant incorporated or preemergence.	If crop is lost, corn can be replanted, but don't retreat. Do not plant rotational crops for 18 months. May cause some temporary stunting in wet, sandy soils. This combination may be applied preplant and incorporated into the top 2 inches of soil with a disk, harrow or rolling cultivator if furrow irrigation is used or if a period of dry weather is expected after application.
Annual broadleaf and grass weeds (Refer to label for specific weeds controlled.)	<b>Bullet®</b> (alachlor + atrazine) Monsanto	2.5 to 4.5 qts.	Preplant incorporated (into top 1 to 2 inches of soil), preemergence or postemergence to corn 5 inches or less tall and 2 leaf grasses and weeds.	Bullet® contains a micro-encapsulated formulation of alachlor. Most effective if to inch rainfall or irrigation occurs within 7 days after preemergence application. If weeds emerge after treatment because of insufficient rainfall, use a rotary hoe or shallow cultivation to improve performance. Bullet® offers expanded broadleaf weed control over Lasso® and MicroTech®. Refer to label for rotational crop restrictions.
Annual broadleaf weeds (Refer to label for specific weeds controlled.)	<b>Callisto®</b> (mesotrione) Syngenta	6 to 7.7 oz.	Preemergence	Callisto® is not effective for control of most grass weeds. Can be combined with preemergence grass herbicides to provide broad spectrum weed control. If activating rain is not received within 7-10 days following application, rotary hoeing is recommended to activate herbicide.
Annual broadleaf and grass weeds (Refer to label for specific weeds controlled.)	<b>Dual II Magnum®</b> <b>Dual Magnum®</b> (s-metolachlor) Syngenta	1 to 2 pts.	Preplant incorporated, preplant surface applied or preemergence.	Dual II Magnum® or Dual Magnum® may be tank mixed with other products, such as atrazine, to expand broadleaf control.
Annual broadleaf and grass weeds (Refer to label for specific weeds controlled.)	<b>Frontier 6.0®</b> (dimethenamid) BASF	20 to 32 oz.  Use rate determined by C.E.C. (cationexchange capacity) or soil texture and organic matter content, consult label.	Preemergence, preplant incorporated (into top 1 to 2 inches of soil) or surface applied within 2 weeks of planting. Early postemergence before corn is 8 inches tall, but before weeds emerge.	Several other products may be used with Frontier® for additional weed control. Consult the product label. Rotational crop restrictions will vary for use of these combinations with other products. If Frontier® is used alone, cereal crops such as wheat or oats may be planted 4 months after application. Other crops may follow in the spring after the previous year's application of Frontier®.



**Table 3. Preplant incorporated, preplant surface applied, and preemergence herbicides for residual control (continued)**

Weeds controlled	Product (Herbicide common name) Company	Application rate per acre	Time to apply	Remarks
Broadleaf and grass weeds (Refer to label for specific weeds controlled.)	<b>FulTime®</b> (acetochlor + atrazine + safener) Dow AgroSciences	2.5 to 3.5 qts.	Early preplant 40 days before planting; preplant incorporated in top 2 inches anytime within 10 days before planting.	Wheat may be planted 15 months after treatment Rotational crops include corn, soybeans and grain sorghum. Provides expanded broadleaf control over Topnotch®.
Annual broadleaf and grass weeds (Refer to label for specific weeds controlled.)	<b>Guardsman®</b> <b>Guardsman Max®</b> (dimethenamid + atrazine) BASF	3 to 5 pts. 2.4 to 4 pts.	Preemergence, preplant incorporated (into top 1 to 2 inches of soil) or surface applied within 2 weeks of planting. Early postemergence before corn is 12 inches tall, but before weeds are 1.5 inches.	This combination product provides expanded broadleaf weed control over Frontier® used alone.  Use rate is determined by C.E.C. (cation exchange capacity) or soil texture and organic matter content. Can make split applications. Refer to label for rotational crop restrictions.
Annual broadleaf and grass weeds (Refer to label for specific weeds controlled.)	<b>Harness®</b> (acetochlor + safener) Monsanto	1.25 to 2.75 pts.	Preplant incorporated (shallowly) within 14 days of planting or preemergence after planting.	This product may be tank-mixed with other products for expanded broadleaf weed control. Consult labels, and refer to rotational crop restrictions.  Performance improves when moisture is received within 7 days after application and before weed emergence.
Annual broadleaf and grass weeds (Refer to label for specific weeds controlled.)	<b>Harness Xtra®</b> (acetochlor + safener + atrazine) Monsanto	1.8 to 2.3 qts.	Preplant incorporated (shallowly) within 14 days of planting or preemergence after planting.	This product provides expanded broadleaf weed control over Harness®. Do not apply if crop is more than 11 inches in height or weeds exceed the 2-leaf stage. Refer to label for additional rotational crop restrictions.
Annual broadleaf and grass weeds (Refer to label for specific weeds controlled.)	<b>Lariat 3.75®</b> (alachlor + atrazine) Monsanto	2.5 to 3.75 qts.	Preplant incorporated (into top 1 to 2 inches of soil), preemergence or postemergence until grasses and weeds reach the 2-leaf stage and crop is no more than 5 inches tall.	Most effective if 1/3 to 3/4 inch rainfall or irrigation occurs within 7 days after preemergence application. If weeds emerge after treatment because of insufficient rainfall, use a rotary hoe or shallow cultivation to improve performance.  Lariat 3.75 offers expanded broadleaf weed control over Lasso®, and MicroTech®.  Refer to label for rotational crop restrictions.

**Table 3. Preplant incorporated, preplant surface applied, and preemergence herbicides for residual control (continued)**

Weeds controlled	Product (Herbicide common name) Company	Application rate per acre	Time to apply	Remarks
Annual broadleaf and grass weeds (Refer to label for specific weeds controlled.)	<b>Lasso®</b> (alachlor) Monsanto	2 to 3 qts.	Preplant incorporated (into top 1 to 2 inches of soil), preemergence or postemergence.	Most effective if <sup>1</sup> / <sub>3</sub> to <sup>3</sup> / <sub>4</sub> inch rainfall or irrigation occurs within 7 days after preemergence application. Postemergence applications should be made before corn is 5 inches tall. If weeds emerge after treatment because of insufficient rainfall, use a rotary hoe or shallow cultivation to improve performance. Do not make more than two applications or exceed a total of 4 quarts of Lasso® per acre per year.
Annual broadleaf and grass weeds (Refer to label for specific weeds controlled.)	<b>LeadOff®</b> (dimethenamid + atrazine) DuPont	2.5 to 4.5 pts.	Preplant incorporated, preplant surface applied or preemergence. Can also be applied early post on corn up to 8 inches tall.	When making early preplant applications (15-45 days prior to planting) use the highest rate recommended for the specific soil type. When utilizing the preemergence surface applied method, will need rainfall, sprinkler irrigation, or shallow mechanical incorporation to move the product into the upper soil surface. Consult the label for tank mix recommendations.
Annual broadleaf and grass weeds (Refer to label for specific weeds controlled.)	<b>MicroTech 4 ME®</b> (alachlor) Monsanto	2 to 3 qts.	Preplant incorporated or preemergence; post-emergence applications can be made before corn reaches 5 inches tall.	MicroTech® is a micro-encapsulated formulation of alachlor. Most effective if <sup>1</sup> / <sub>3</sub> to <sup>3</sup> / <sub>4</sub> inch rainfall or irrigation occurs within 7 days after pre-emergence application. If weeds emerge after treatment because of insufficient rainfall, use a rotary hoe or shallow cultivation to improve performance. Refer to label for additional approved tank-mix combinations.
Annual broadleaf weeds, annual grass weeds, and sedges (Refer to label for specific weeds controlled.)	<b>Outlook®</b> (s-dimethenamid) BASF	12 to 21 oz.	Preplant, preplant incorporated, preemergence, or early postemergence	Can be applied up to 45 days prior to planting. If applying early postemergence do so prior to weed emergence. Can also be applied lay-by and in split applications. Consult label for specific instructions, tank mix recommendations, and crop rotation restrictions. Do not apply more than 21 oz. per acre per season.

**Table 3. Preplant incorporated, preplant surface applied, and preemergence herbicides for residual control (continued)**

Weeds controlled	Product (Herbicide common name) Company	Application rate per acre	Time to apply	Remarks
<p>Crabgrass, junglerice, pigweed (carelessweed), purslane</p> <p>Weeds generally not controlled include <i>Brachiaria</i> spp. (signalgrass), browntop panicum, johnsongrass and Texas panicum (Coloradograss)</p>	<p><b>Princep 4L<sup>®</sup></b> <b>Princep Caliber 90<sup>®</sup></b> (simazine) Syngenta</p>	<p>2.0 to 4.0 qts. 2.2 to 4.4 lbs.</p>	<p>Preplant within 2 weeks of planting and preemergence.</p>	<p>Use in eastern Texas on medium textured soils. Plant only corn within 12 months after application. If soil remains dry, incorporation by shallow cultivation may improve control. Do not graze treated areas during the year of treatment.</p>
<p>Annual broadleaf and grass weeds (Refer to label for specific weeds controlled.)</p>	<p><b>Prowl 3.3 EC<sup>®</sup></b> (pendimethalin) BASF</p>	<p>1.8 to 4.8 pts.  (rates depend on soil texture and organic matter content)</p>	<p>Preemergence.</p>	<p>Most effective if rainfall or overhead irrigation is received within 7 days of application. Plant corn at least 1<sup>1</sup>/<sub>2</sub> inches deep to ensure good seed coverage and help avoid injury. Prowl 3.3 EC<sup>®</sup> can be used in combination with other products such as atrazine and Bladex for expanded weed control. Consult product label for rates and rotational restrictions.</p>
<p>Annual broadleaf weeds and a few annual grasses (Refer to label for specific weeds controlled.)</p>	<p><b>Pursuit DG<sup>®</sup></b> (imazethapyr) BASF</p>	<p>1.44 oz.</p>	<p>Preplant, preplant incorporated, preemergence or early postemergence.</p>	<p>Use only on imidazolinone resistant or tolerant (IR or IT) corn varieties. Consult your seed dealer. Refer to the label for specific weed treatment stages of growth for postemergence applications. Pursuit<sup>®</sup> may be mixed with several other herbicides for broader spectrum grass and broadleaf weed control. Do not rotate to wheat for 4 months, field corn for 8<sup>1</sup>/<sub>2</sub> months and cotton or sorghum for 18 months after applying Pursuit<sup>®</sup>. Postemergence application should include the use of a surfactant or crop oil concentrate plus liquid fertilizer solution. Refer to label for additional recommendations and precautions.</p>
<p>Annual broadleaf weeds and a few annual grasses (Refer to label for specific weeds controlled.)</p>	<p><b>Pursuit<sup>®</sup> Plus EC</b> (imazethapyr + pendimethalin) BASF</p>	<p>2.5 pts.</p>	<p>Preplant, preemergence or postemergence.</p>	<p>Same as above.</p>

**Table 3. Preplant incorporated, preplant surface applied, and preemergence herbicides for residual control (continued)**

<b>Weeds controlled</b>	<b>Product (Herbicide common name) Company</b>	<b>Application rate per acre</b>	<b>Time to apply</b>	<b>Remarks</b>
Broadleaf weeds (Refer to label for specific weeds controlled.)	<b>Python WDG<sup>®</sup></b> (flumetsulam) Dow AgroSciences	0.8 to 1.33 oz.	Preplant incorporated, preplant surface applied or preemergence.	Consult the label for tank mix recommendations and crop rotation restrictions.
Some annual broadleaf and grass weeds (Refer to label for specific weeds controlled.)	<b>Ramrod 4F<sup>®</sup></b> (propachlor) Monsanto	4 to 5.5 qts.	Preemergence.	Most effective if 1/3 to 3/4 inch of rainfall occurs within 10 days after application. Weed control spectrum from Ramrod <sup>®</sup> is less extensive than other preemergence herbicides. However, it can be tank-mixed with atrazine for additional weed control. These herbicides are available in the product Ramrod <sup>®</sup> and atrazine by Monsanto.
Annual broadleaf and grass weeds (Refer to label for specific weeds controlled.)	<b>Surpass EC<sup>®</sup></b> (acetochlor + safener) Dow AgroSciences	1.5 to 2.75 pts.	Same as above.	If rainfall or irrigation does not take place within 7 days following preemergence application, a shallow incorporation will improve herbicide performance. Surpass may be applied up to 30 days before planting when used in combination with other products. Consult label for tank mix recommendations.
Annual broadleaf and grass weeds (Refer to label for specific weeds controlled.)	<b>Topnotch<sup>®</sup></b> (acetochlor + safener) Dow AgroSciences	2 to 3 qts.  2.5 to 3.75 qts.	30 days prior to planting through crop emergence.  30 to 40 days before planting.	Topnotch <sup>®</sup> is a microencapsulated formulation of acetochlor.  Incorporate herbicide into soil not more than 10 days before planting or more than 2 inches deep. Preemergence application needs rain or irrigation 7 days after application. Planting should be as soon as possible following the application of Topnotch <sup>®</sup> . Application can be made 40 days before planting, but highest control is when applications are made as close to planting as possible.

**Table 4. Postemergence and post-directed herbicides**

Weeds controlled	Product (Herbicide common name) Company	Application rate per acre	Time to apply	Remarks
Cocklebur, morningglory, pigweed, sunflower, and other broadleaves	<b>2,4-D amine or oil-soluble amine</b> (2,4-D) Several manufacturers	0.5 to 1.5 pt. ( 4 lbs./gal. product)	Postemergence	Use as directed spray after corn exceeds 10 inches and before tasseling. Do not use near susceptible crops. High rates may injure corn. Corn hybrids vary in tolerance to 2,4-D. Use surfactant or crop oil concentrate in mixture to improve performance.
Small annual broadleaf and grass weeds  (Refer to label for specific weeds controlled.)	<b>AAtrex 4L® or atrazine 4L</b> <b>AAtrex Nine-O®</b> (atrazine) Syngenta and other manufacturers	up to 2.0 qts. up to 2.2 lbs.	Postemergence topical spray before weeds exceed 1 1/2 inches and corn is less than 10 inches tall. Layby applications may be made when corn is 20 to 30 inches high and weeds are not more than 1 1/2 inches high.	Do not plant treated areas to any crop except corn and sorghum until the following year. If applied after June 10 or on the High Plains under arid conditions, a crop of untreated corn or sorghum should be planted preceding the next rotational crop. The total atrazine applied per acre per =calendar year may not exceed 2.5 lbs. active ingredient (i.e., 2.7 lbs. of AAtrex Nine-O®, or 2.5 qts. of atrazine 4L). Add crop oil concentrate for improved performance of postemergence applications.
Many annual grasses, rhizome johnsongrass and some broadleaf weeds  (Refer to label for specific weeds controlled.)	<b>Accent®</b> (nicosulfuron) DuPont	0.67 to 1.33 oz.	Postemergence when grasses are 1 to 12 inches tall. See label for optimum weed height. Apply after corn reaches the 2-leaf stage through the 10-leaf stage.	Do not use where organophosphate materials have been or will be applied except as specifically allowed on the product label. Always add surfactant or crop oil concentrate. Do not apply to stressed corn. Do not cultivate for at least 7 days after application. Do not exceed 1.33 oz./A per year. Avoid spray drift to non-target crops, especially sorghum. Take special care to clean spray equipment properly after use, as per label.  Consult the label for tank mix and crop rotation recommendations.
Many annual grasses, rhizome johnsongrass and some broadleaf weeds  (Refer to label for specific weeds controlled.)	<b>Accent Gold®</b> (clopyralid + flumetsulam + nicosulfuron + rimsulfuron) DuPont	2.9 oz.	Postemergence to corn ≤ 12 inches tall and young, actively growing weeds that do not exceed sizes listed in the label.	Adequate soil moisture is required for residual activity. Rainfall or sprinkler irrigation within 5 days of application will enhance residual activity. If unable to activate with rainfall or sprinkler irrigation, a shallow cultivation or sequential application of Accent may be necessary. Applications must include crop oil concentrate and the inclusion of an ammonium nitrogen fertilizer is recommended.

**Table 4. Postemergence and post-directed herbicides (continued)**

Weeds controlled	Product (Herbicide common name) Company	Application rate per acre	Time to apply	Remarks
Black nightshade, velvetleaf, ivyleaf and pitted morning-glory, lambsquarters, and redroot pigweed	<b>Aim®</b> (carfentrazone) FMC	0.33 oz.	Postemergence up to 8 leaf corn and 4 inch weeds.	For best performance, apply to actively growing weeds. Always include a nonionic surfactant. When corn is under dry soil moisture conditions, a high quality sprayable liquid nitrogen fertilizer can be included. Do not apply more than 1.24 oz. per acre per season. Consult the label for tank mix recommendations.
Cocklebur, morningglory, pigweed, sunflower, and other broadleaves	<b>Banvel®</b> (dicamba) Micro Flo	0.5 to 1 pt. (4 lbs./gal. formulation)	Postemergence. Spike to 36 inch tall corn.	Apply 1 pt. rate from emergence to 8 inch tall corn or 5-leaf stage, whichever comes first. Reduce the rate to 1/2 pt. on coarse-textured soils, and on corn 8 to 36 inches tall. Use directed sprays if needed for adequate weed coverage. Do not use near susceptible crops. Not registered for sweet corn.
Numerous annual broadleaf weeds  (Refer to label for specific weeds controlled.)	<b>Basagran®</b> (bentazon) BASF	1.0 to 2.0 pts.	Postemergence when weeds are small and actively growing. Growth stage of weed determines rate (see label).	Corn is tolerant at all growth stages. Slight speckling may occur but corn generally outgrows this condition. Do not apply more than 4 pts per acre per growing season.  Note: Basagran® may be mixed with atrazine 4L or with AAtrex Nine-O® plus crop oil concentrate to control a broader spectrum of weeds. See label for cocklebur, morningglory and yellow nutsedge application instructions. Repeat treatment may be needed.
Annual broadleaf and grass weeds  (Refer to label to specific weeds controlled.)	<b>Basis Gold®</b> (nicosulfuron + rimsulfuron + atrazine) DuPont	14 oz.	Postemergence when corn is up to 12 inches tall. Do not apply to corn taller than 12 inches or exhibiting 6 collars.	Apply when weeds are small, generally 2-4 inches tall. Refer to label for specific recommendations. This combination product offers limited residual activity, especially if rainfall is received within 5 to 7 days after application. Do not use less than 14 oz. per acre.

**Table 4. Postemergence and post-directed herbicides (continued)**

Weeds controlled	Product (Herbicide common name) Company	Application rate per acre	Time to apply	Remarks
<p>Some annual grasses, rhizome johnsongrass and many annual broadleaf weeds</p> <p>(Refer to label for specific weeds controlled.)</p> <p>Suppresses morningglory</p>	<p><b>Beacon</b><sup>®</sup> (primisulfuron) Syngenta</p>	<p>0.76 oz.</p> <p>0.38 + 0.38 oz. or 0.50 + 0.25 oz. for split application on johnsongrass</p>	<p>Postemergence when corn is 4 to 20 inches tall. Optimum weed height ranges from less than 1<sup>1</sup>/<sub>2</sub> to 9 inches. See label for specific weed species.</p>	<p>Do not use with organophosphate insecticides unless specifically allowed on label. Do not apply if corn is stressed. Add spray adjuvant or crop oil concentrate as per label instructions. Do not apply through irrigation equipment. Do not cultivate for at least 7 days after treatment. Follow equipment cleaning instructions completely.</p> <p>Note: May be tank-mixed with 2,4-D, Banvel<sup>®</sup> and Buctril<sup>®</sup> for increased broadleaf activity.</p>
<p>Numerous annual broadleaf weeds</p> <p>(Refer to label for specific weeds controlled.)</p>	<p><b>Buctril</b><sup>®</sup> (bromoxynil) Aventis</p>	<p>1.0 to 2.0 pts.</p>	<p>Postemergence before weeds are 4 to 6 inches tall and when corn has emerged but prior to tassel emergence.</p>	<p>Application when weeds are small is important. Do not add surfactant or mix with liquid fertilizers. Temporary leaf scorch to corn may occur under cool, cloudy conditions but will soon disappear. Do not plant rotational crops until the following season. Useful for broadleaf weed control near crops where volatile herbicides might cause injury. Refer to label for specific weed susceptibility. May be applied in tank mixture with atrazine to broaden the spectrum of weed control.</p>
<p>Annual and perennial broadleaf and grass weeds</p> <p>Refer to label for specific weeds controlled.)</p>	<p><b>Callisto</b><sup>®</sup> (Mesotrione) Syngenta</p>	<p>3.0 oz.</p>	<p>Postemergence</p>	<p>Do not apply to popcorn, sweet corn, or ornamental corn. Add crop oil concentrate plus UAN or AMS. Apply to weeds less than 5 inches tall. Injury may occur if applied to corn treated with Counter or Lorsban. Apply only with pyrethroid type insecticides. Do not cultivate within 7 days of application. Callisto herbicide is not effective in controlling most grass weeds. Can be combined with a post emergence grass herbicide to provide broad spectrum weed control.</p>
<p>Annual and perennial broadleaf and grass weeds</p> <p>(Refer to label for specific weeds controlled.)</p>	<p><b>Celebrity</b><sup>®</sup> (dicamba + nicosulfuron) BASF</p>	<p>6.67 oz.</p>	<p>Postemergence to corn up to 20 inches tall. Refer to label for optimal weed species height.</p>	<p>Application must include a nonionic surfactant and sprayable urea ammonium nitrate fertilizer. Do not apply more than 13.33 oz. per acre per season. Consult the label for tank mix recommendations.</p>

**Table 4. Postemergence and post-directed herbicides (continued)**

Weeds controlled	Product (Herbicide common name) Company	Application rate per acre	Time to apply	Remarks
Annual and perennial broadleaf and grass weeds  (Refer to label for specific weeds controlled.)	<b>Celebrity Plus®</b> (dicamba + diflufenzopyr + nicosulfuron) BASF	4.7 oz.	Postemergence to corn 4 to 24 inches tall. Refer to label for optimal weed species height.	Application must include a nonionic surfactant and sprayable ammonium nitrate fertilizer. Do not apply more than 9.4 oz. per acre per season. Consult the label for tank mix recommendations.
Cocklebur, morningglory, pigweed, sunflower, and other broadleaf weeds	<b>Clarity®</b> (diglycolamine salt of dicamba) BASF	16 oz. (early post) 8 oz. (late post)	Postemergence to corn early from spike to 8 inch and late from 8 to 36 inches tall.	Can be tank-mixed with other herbicides for expanded weed control. When tank-mixed with Accent or Beacon, corn may be up to 12 inches tall. Consult label. Do not exceed 24 oz. per acre per growing season.
Annual broadleaf and grass weeds  (Refer to label for specific weeds controlled.)	<b>Direx 4L®</b> <b>Direx 80DF®</b> (diuron) Griffin	0.6 to 0.8 qt. 0.75 to 1.0 lbs.	Post direct to corn that is at least 20 inches tall and weeds no taller than 3 inches.	<b>Do not spray over the top of corn.</b> Make a single application of Direx 4L® at 0.6 quarts per acre or Direx 80DF® at 0.75 pounds per acre in combination with non-pressure nitrogen solution. If nitrogen is not used, apply Direx 4L® at 0.8 quarts per acre or Direx 80DF® at 1.0 pound per acre with surfactant. Consult the labels for replant restrictions.
Numerous broadleaf weeds  (Refer to label for specific weeds controlled.)	<b>Distinct®</b> (diflufenzopyr + dicamba) BASF	4 to 6 oz.	Postemergence to corn early at 4 to 10 inches tall, mid 10 to 24 inches tall, and split.	Apply early at 6 ounces per acre and mid at 4 ounces per acre. Do not exceed a total of 10 ounces of Distinct® per acre per year. Allow 15 days between sequential applications. Application must include a nonionic surfactant and urea ammonium nitrate. Consult the label for specific additive rates and tank mix restrictions.
Annual broadleaf weeds and some grasses  (Refer to label for specific weeds controlled.)	<b>Evik DF®</b> (ametryn) Syngenta	0.75 to 2.5 lbs.	Postemergence directed after smallest corn is 12 inches tall and weeds are less than 2 inches tall.	Do not apply over top of corn. Gauge wheels or leaf lifters are recommended to prevent spray contact with corn leaves. Allow 30 days after application before harvesting, grazing or feeding forage to livestock. Do not apply within 3 weeks of tasseling. Wheat, oats and rye may be planted the fall after application.



**Table 4. Postemergence and post-directed herbicides (continued)**

Weeds controlled	Product (Herbicide common name) Company	Application rate per acre	Time to apply	Remarks
<p>Numerous broadleaf weeds and a few grasses.</p> <p>(Refer to label for specific weeds and optimum treatment height.)</p>	<p><b>Exceed CustomPak®</b> (prosulfuron + primisulfuron) Syngenta</p>	<p>0.8 to 1.0 oz.</p>	<p>Postemergence to field corn between 4 and 30 inches tall. Use directed sprays if corn is more than 20 inches tall.</p>	<p>Individual weeds vary greatly in susceptibility to this combination product. Consult label for specific weed problems. Add nonionic surfactant or crop oil concentrate to spray mixture. Refer to label for additional precautions regarding application and rotational crop restrictions.</p>
<p>Small annual broadleaf weeds and grasses</p> <p>(Refer to label for specific weeds controlled.)</p>	<p><b>Gramoxone Extra®</b> <b>Gramoxone Max®</b> (paraquat dichloride) Syngenta</p>	<p>13 to 24 oz. 0.75 to 1.3 pts.</p>	<p>Post-directed sprays only.</p>	<p>Always use a nonionic surfactant or crop oil concentrate with Gramoxone Extra and Max®. Apply when corn is at least 10 inches tall with nozzles arranged to spray no higher than the lower 3 inches of corn stalks. Use shielded sprayer designed to maintain uniform spray height and keep spray off plants. Corn foliage sprayed will be injured but the crop should recover and develop normally.</p>
<p>Broadleaf weeds</p> <p>(Refer to label for specific weeds controlled.)</p>	<p><b>Hornet®</b> (clopuralid + flumetsulam) Dow AgroSciences</p>	<p>1.6 to 4 oz. postemergence  3.2 to 4.8 oz. preemergence</p>	<p>Postemergence from spike stage to 20-inch tall corn. Can apply preemergence, however, higher use rates are required.</p>	<p>Test corn lines for crop tolerance. Rate varies by soil type and weed species and size. Consult the label for tank mix recommendations.</p>
<p>Some annual grasses and broadleaf weeds</p> <p>(Refer to label for specific weeds controlled.)</p>	<p><b>Karmex DF®</b> (diuron) Griffin</p>	<p>0.75 to 1 lb.</p>	<p>Post-directed when corn is at least 20 inches tall and weeds are less than 3 inches tall.</p>	<p>Apply 0.75 lb per acre in combination with non-pressurized nitrogen solution. If nitrogen solution is not used, apply 1 lb. per acre with surfactant.</p>
<p>Broadleaf weeds and grasses</p> <p>(Refer to label for specific weeds controlled.)</p>	<p><b>Liberty®</b> (glufosinate) <b>Liberty ATZ®</b> (glufosinate + atrazine) Aventis</p>	<p>24 to 34 oz.  40 to 48 oz.</p>	<p>Postemergence of Liberty® and Liberty ATZ® until corn is 24 inches or 12 inches tall, respectively.</p>	<p>Apply between dawn and 2 hrs. before sunset. Use only on corn resistant to glufosinate-ammonium (Liberty Link). Do not apply if crop is stressed and make no more than two applications of Liberty® or one of Liberty ATZ®. Rainfast after 4 hrs. Do not exceed 62 ounces of Liberty® per acre per year. Do not add surfactant or COC to spray solution. Ammonium sulfate must be added to both Liberty® and Liberty ATZ® at 3 lbs per acre.</p>

**Table 4. Postemergence and post-directed herbicides (continued)**

Weeds controlled	Product (Herbicide common name) Company	Application rate per acre	Time to apply	Remarks
Some broadleaf weeds and grasses  (Refer to label for specific weeds controlled.)	<b>Lightning®</b> (imazethapyr + imazapyr) BASF	1.28 oz	Postemergence before weeds are 4 inches tall and corn is 20 inches tall.	Use only on IMI-corn hybrids with resistance/tolerance to imidazolinone herbicides (IR/IT). Add both surfactant and liquid fertilizer. Apply only once per growing season. If corn is taller than 20 inches, must use drop nozzles to post direct onto weeds. Consult label for crop rotation restrictions.
Several annual broadleaf weeds  (Refer to label for specific weeds controlled.)	<b>Marksman®</b> (dicamba + atrazine) BASF	3.5 pts.	Early postemergence from corn emergence through 5th true leaf stage.	Do not apply through any type of irrigation system. Do not use aerial application equipment if sensitive broadleaf crops are growing near the area to be treated. Corn hybrids vary in tolerance. Do not apply more than 5.25 pts. per acre per season.
Annual and perennial broadleaf and grass weeds  (Refer to label for specific weeds controlled.)	<b>Northstar®</b> (primisulfuron + dicamba) Syngenta	5 oz	Postemergence to corn that is 4 to 12 inches tall. Consult the label for optimal weed species heights.	Inclusion of an adjuvant is required for applications of Northstar®. Prior to all Northstar® applications, a preemergence herbicide should be applied. Application of Northstar® to corn during rapid growth may result in yellowing and/or temporary leaning. Corn will usually regain color and become erect within 3-7 days. Cultivation should be delayed until after corn is growing normally to avoid breakage.
Numerous annual broadleaf weeds, and yellow and purple nutsedge  (Refer to label for specific weeds controlled.)	<b>Permit 75 WDG®</b> (halosulfuron) Monsanto	0.67 to 1.33 oz. (rate depends on weed species and size)	Postemergence from spike to layby stage of corn. Use drop nozzles to ensure good weed coverage if necessary.	Always use a nonionic surfactant or crop oil concentrate with Permit®. Make no more than 2 applications per season or a total of 2 oz. of product by weight per acre per season. Permit® may be used with several other postemergence broadleaf and grass herbicides for expanded weed control. Refer to the individual product labels for application precautions and rotational crop restrictions.

**Table 4. Postemergence and post-directed herbicides (continued)**

Weeds controlled	Product (Herbicide common name) Company	Application rate per acre	Time to apply	Remarks
Annual broadleaf and grass weeds  (Refer to label for specific weeds controlled.)	<b>Prowl 3.3 EC®</b> (pendimethalin) BASF	1.8 to 4.8 pts.	Postemergence and incorporated, when corn is 6 to 8 inches tall or as late as the time of last cultivation. Use drop nozzles if corn foliage will prevent uniform coverage of the soil surface.	Field must be cultivated and all emerged weeds destroyed before application. Rolling cultivator should be operated at a speed to throw at least 1 inch of soil over the base of the corn plants. This covers small weeds and prevents herbicide from directly contacting the zone of brace root formation. Uniformly incorporate herbicide into soil to a depth of 1 to 2 inches with rolling cultivators. Move treated soil over bases of corn plants in the row. Do not apply Prowl 3.3 EC® preplant incorporated. Do not apply Prowl 3.3 EC® prior to use as a postemergence incorporated treatment. Rotational crops may be planted the following year. Plant corn at least 1.5 inch deep. May be used in combination with other approved products for expanded weed control.
Annual and perennial broadleaf and grass weeds  (Refer to label for specific weeds controlled.)	<b>Ready Master ATZ®</b> (glyphosate + atrazine) Monsanto	1.5 to 2 qts.	Postemergence to corn up to 12 inches tall and weeds 2-4 inches tall.	<b>Apply only to Roundup Ready® corn hybrids.</b> A single in crop application not to exceed 2 quarts per acre. Will provide some residual activity on certain broadleaf weeds. Consult label for rotation and tank mix restrictions.
Annual and perennial broadleaf and grass weeds  (Refer to label for specific weeds controlled.)	<b>Roundup Ultra®</b> <b>Roundup UltraMax®</b> (glyphosate) Monsanto	16 to 48 oz. 20 to 40 oz.	Postemergence through hooded sprayer when corn is at least 12 inches tall. Can also be applied pre-emergence up to 14 days prior to planting.	This application can be made broadcast to Roundup Ready® corn varieties or to conventional varieties with hooded sprayers approved for use by Monsanto. A hooded sprayer is a type of shielded applicator, where the spray pattern is enclosed on the top and all four sides by a “hood,” thereby shielding the crop from the spray solution. Consult the label for more information.
Annual, biennial, and perennial broadleaf weeds  (Refer to label for specific weeds controlled.)	<b>Saber®</b> (dimethylamine salt of 2,4-D) UAP	0.5 to 1 pt.	Postemergence or post-directed to corn up to 4 leaf or 8-36 inches tall, respectively.	<b>Do not apply with liquid fertilizer or oil.</b> Consult label for tank mix recommendations.

**Table 4. Postemergence and post-directed herbicides (continued)**

Weeds controlled	Product (Herbicide common name) Company	Application rate per acre	Time to apply	Remarks
Annual and perennial broadleaf weeds  (Refer to label for specific weeds controlled.)	<b>Salvo</b> <sup>®</sup> (isooctyl ester of 2,4-D) UAP	3.2 to 9.6 oz.	Postemergence or post-directed to corn up to 4 leaf or 8-36 inches tall, respectively.	<b>Do not apply with liquid fertilizer or oil.</b> Consult label for tank mix recommendations.
Annual and perennial broadleaf and grass weeds  (Refer to label for specific weeds controlled.)	<b>Spirit</b> <sup>®</sup> (proflurosulfuron + primisulfuron) Syngenta	1 oz.	Postemergence to corn between 4 and 24 inches tall. Refer to the label for optimal weed species heights.	To avoid crop injury, applications made to corn between 20 and 24 inches should be directed using drop nozzles. Apply with a crop oil concentrate or a nonionic surfactant. Additionally, liquid fertilizer or ammonium sulfate are recommended for enhanced activity. Consult the label for tank mix recommendations.
Annual grasses and some annual broadleaf weeds	<b>Steadfast</b> <sup>®</sup> (nicosulfuron + rimsulfuron) DuPont	0.75 oz	Postemergence when corn is up to 12 inches tall. Do not apply to corn taller than 12 inches or exhibiting 6 collars.	Most grasses require treatment at 4-6 inches in height, broadleaves at 4 inches. Consult the label for specific timings and tank mix recommendations. Requires the use of a nonionic surfactant or crop oil concentrate plus ammonium nitrogen fertilizer.
Annual broadleaf and grass weeds  (Refer to label for specific weeds controlled.)	<b>Treflan HFP</b> <sup>®</sup> <b>Treflan TR-10</b> <sup>®</sup> (trifluralin) Dow AgroSciences  <b>Trilin</b> <sup>®</sup> <b>Trilin</b> <sup>®</sup> 10G (trifluralin) Griffin	0.75 to 2.0 pt. 3.75 to 10 lb.  0.75 to 2.0 pt. 3.75 to 10 lb.	Postemergence and incorporated when corn is 8 inches or taller. Use drop nozzles if corn foliage will prevent uniform coverage of the soil surface.	Emerging weeds will not be controlled. Cultivate before application to cover the base of the corn brace roots and remove established weeds. Must incorporate within 24 hrs. of application. May be incorporated with a properly adjusted sweep type or rolling cultivator. Incorporate with sweep type cultivator at 6 to 8 mph to move treated soil into the crop row. Do not apply to corn grown for seed. Do not apply as a preplant or preemergence treatment. Consult the label for tank mix recommendations and crop rotation restrictions.
Annual, biennial and perennial broadleaf weeds.  (Refer to label for specific weeds controlled.)	<b>Weedone</b> <sup>®</sup> 638 (2,4-D + 2,4-D ester)  <b>Weedone</b> <sup>®</sup> Lo Vol 6 <b>Weedone</b> <sup>®</sup> LV4 (2,4-D ester) Nufarm	0.66 to 1 pt.  0.33 to 0.5 pt. 0.5 to 0.75 pt.	Postemergence to corn up to 8 inches tall. Can also use preplant and preemergence.	If corn is more than 8 inches tall, use drop nozzles to direct off of the corn leaves. Do not spray corn from tassel to dough stage. Consult the label for tank mix recommendations.

**Table 5. Product, common and chemical name of herbicides**

<b>Trade Name</b>	<b>Common name</b>	<b>Formulation</b>	<b>Manufacturer</b>
2,4-D amine or oil soluble amine	2,4-D		Several
AAtrex 4L <sup>®</sup> or AAtrex Nine-O <sup>®</sup>	atrazine	4 lb./gal and 85.5% active ingredient	Syngenta
atrazine 4L	atrazine	4 lbs./gal.	Several
Accent <sup>®</sup>	nicosulfuron	75% active ingredient	DuPont
Accent Gold <sup>®</sup>	clopyralid + flumetsulam + nicosulfuron + rimsulfuron	Combination of two water-dispersible granules: 75 and 85.6% active ingredient	DuPont
Aim <sup>®</sup>	carfentrazone	40% active ingredient	FMC
Axiom DF <sup>®</sup>	flufenacet + metribuzin	68% active ingredient	Bayer
Balance WDG <sup>®</sup>	isoxaflutole	75% active ingredient	Aventis
Balance Pro <sup>®</sup>	isoxaflutole	4 lbs./gal.	Aventis
Banvel <sup>®</sup>	dicamba	4 lbs./gal.	Micro Flo
Basagran <sup>®</sup>	bentazon	4 lbs./gal.	BASF
Basis Gold <sup>®</sup>	nicosulfuron + rimsulfuron + atrazine	89.46% active ingredient	DuPont
Beacon <sup>®</sup>	primsulfuron	75% active ingredient	Syngenta
Bicep II Magnum <sup>®</sup>	atrazine + s-metolachlor	5.5 lbs./gal.	Syngenta
Bicep Lite II Magnum <sup>®</sup>	atrazine + s-metolachlor + safener	6 lbs./gal.	Syngenta
Buctril <sup>®</sup>	bromoxynil	2 lbs./gal.	Aventis
Bullet <sup>®</sup>	alachlor + atrazine	4 lbs./gal.	Monsanto
Callisto <sup>®</sup>	mesotrione	4 lbs./gal.	Syngenta
Celebrity <sup>®</sup>	dicamba + nicosulfuron	76.8% active ingredient	BASF
Celebrity Plus <sup>®</sup>	dicamba + nicosulfuron + diflufenzopyr	75.3% active ingredient	BASF
Clarity <sup>®</sup>	dicamba	4 lbs./gal.	BASF
Direx 4L <sup>®</sup> and Direx 80DF <sup>®</sup>	diuron	4 lbs./gal. and 80% active ingredient	Griffin
Distinct <sup>®</sup>	diflufenzopyr + dicamba	76.4% active ingredient	BASF
Dual II Magnum <sup>®</sup> and Dual Magnum <sup>®</sup>	s-metolachlor	7.64 lbs./gal. and 7.62 lbs./gal.	Syngenta
Evik DF <sup>®</sup>	ametryne	80% active ingredient	Syngenta
Exceed CustomPak <sup>®</sup>	prosulfuron + primsulfuron	57% active ingredient	Syngenta

**Table 5. Product, common and chemical name of herbicides (continued)**

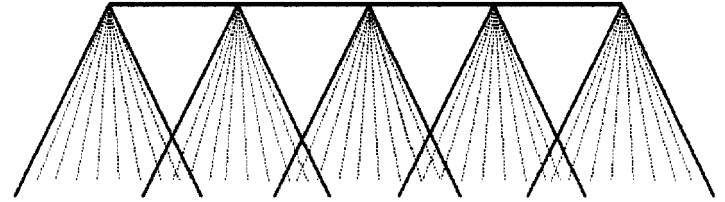
<b>Trade Name</b>	<b>Common name</b>	<b>Formulation</b>	<b>Manufacturer</b>
Frontier 6.0 <sup>®</sup>	dimethenamid	6 lbs./gal.	BASF
FulTime <sup>®</sup>	acetochlor + atrazine + safener	4 lbs./gal.	Dow AgroSciences
Gramoxone Extra <sup>®</sup>	paraquat dichloride	2.5 lbs./gal.	Syngenta
Gramoxone Max <sup>®</sup>	paraquat dichloride	3 lbs./gal	Syngenta
Guardsman <sup>®</sup>	dimethenamid + atrazine	2.33 lbs./gal. and 2.67 lbs./gal.	BASF
Guardsman Max <sup>®</sup>	dimethenamid + atrazine	1.7 lbs./gal. and 3.3 lbs./gal.	BASF
Harness <sup>®</sup>	acetochlor + safener	7 lbs./gal.	Monsanto
Harness Xtra <sup>®</sup>	acetochlor + safener + atrazine	6 lbs./gal.	Monsanto
Hornet <sup>®</sup>	clopyralid + flumetsulam	85.6% active ingredient	Dow AgroSciences
Karmex DF <sup>®</sup>	diuron	80% active ingredient	Griffin
Lariat 3.75 <sup>®</sup>	alachlor + atrazine	4 lbs./gal.	Monsanto
Lasso <sup>®</sup>	alachlor	4 lbs./gal.	Monsanto
Leadoff <sup>®</sup>	dimethenamid + atrazine	5 lbs./gal.	DuPont
Liberty <sup>®</sup>	glufosinate	1.67 lbs./gal.	Aventis
Liberty ATZ <sup>®</sup>	glufosinate + atrazine	4.3 lbs./gal.	Aventis
Lightning <sup>®</sup>	imazethapyr + imazapyr	70% active ingredient	BASF
Marksman <sup>®</sup>	dicamba + atrazine	3.2 lbs./gal.	BASF
MicroTech 4 ME <sup>®</sup>	alachlor	4 lbs./gal.	Monsanto
Northstar <sup>®</sup>	primisulfuron + dicamba	51.4% active ingredient	Syngenta
Outlook <sup>®</sup>	s-dimethenamid	6 lbs./gal.	BASF
Permit 75 WDG <sup>®</sup>	halosulfuron	75% active ingredient	Monsanto
Princep 4L <sup>®</sup> and Princep Caliber 90 <sup>®</sup>	simazine	4 lbs./gal. and 90% active ingredient	Syngenta
Prowl 3.3 EC <sup>®</sup>	pendimethalin	3.3 lbs./gal.	BASF
Pursuit DG <sup>®</sup>	imazethapyr	0.125 lb./soluble packet	BASF
Pursuit Plus EC <sup>®</sup>	imazethapyr + pendimethalin	2.9 lbs./gal.	BASF
Python WDG <sup>®</sup>	flumetsulam	80% active ingredient	Dow AgroSciences

**Table 5. Product, common and chemical name of herbicides (continued)**

<b>Trade Name</b>	<b>Common name</b>	<b>Formulation</b>	<b>Manufacturer</b>
Ramrod 4F <sup>®</sup>	propachlor	4 lbs./gal.	Monsanto
ReadyMaster ATZ <sup>®</sup>	glyphosate + atrazine	4 lbs./gal.	Monsanto
Roundup Ultra <sup>®</sup>	glyphosate	4 lbs./gal	Monsanto
Roundup UltraMax <sup>®</sup>	glyphosate	5 lbs./gal	Monsanto
Saber <sup>®</sup>	dimethylamine salt of 2,4-D	3.8 lbs./gal.	UAP
Salvo <sup>®</sup>	isooctyl ester of 2,4-D	5 lbs./gal.	UAP
Spirit <sup>®</sup>	prosulfuron + primisulfuron	57% active ingredient	Syngenta
Steadfast <sup>®</sup>	nicosulfuron + rimsulfuron	50% and 25 % active ingredients	DuPont
Surpass EC <sup>®</sup>	acetochlor	6.4 lbs./gal.	Dow AgroSciences
Topnotch <sup>®</sup>	acetochlor + safener	3.2 lbs./gal.	Dow AgroSciences
Treflan HFP <sup>®</sup> and Treflan TR-10 <sup>®</sup>	trifluralin	4 lbs./gal. and 10% active ingredient	Dow AgroSciences
Trilin <sup>®</sup> and Trilin 10G <sup>®</sup>	trifluralin	4 lbs./gal. and 10% active ingredient	Griffin
Weedone <sup>®</sup> 638	2,4-D + 2,4-D ester	2.8 lbs./gal.	Nufarm
Weedone <sup>®</sup> Lo Vol 6	2,4-D ester	5.4 lbs./gal.	Nufarm
Weedone <sup>®</sup> LV4	2,4-D ester	3.8 lbs./gal.	Nufarm

# Boom Sprayer Calibration

1. Determine nozzle spacing.
2. Refer to the table below for length of calibration course.
3. Mark off the calibration course on the actual area to be sprayed.
4. Record the time required to drive the calibration course at the desired field gear and rpm to be used while spraying.
5. Park the tractor, maintain the rpm used to drive course, turn on the sprayer and set it at the proper pressure for desired nozzle tips.
6. Catch water from one nozzle for the time equal to that required to drive calibration course.
7. Ounces of water caught = gallons per acre.
8. Divide gallons per acre into the number of gallons in spray tank to determine how many acres will be sprayed. Add the appropriate amount of herbicide for the number of acres to be sprayed.



**Chart for Nozzle Spacing and Length of Calibration Course**

Nozzle spacing (inches)	18	20	30	40
Length of calibration course* (linear feet)	227	204	136	102

\*To determine the calibration course for a nozzle spacing not listed, divide the spacing expressed in feet into 340 (340 sq. ft. = 1/128 of an acre).

**(Example:** Calibration distance for 19-inch nozzle spacing =  $340 \div 19/12 = 215$  feet).







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