

CORN

PRECAUTIONS ON USE OF HERBICIDES CONTAINING ATRAZINE AND SIMAZINE NEAR GROUND OR SURFACE WATER

Herbicide products which contain **atrazine** (i.e. AAtrex, Acuron, Anthem ATZ, Atrazine, Bicep II Magnum, Brawl II ATZ, Breakfree NXT ATZ, Callisto Xtra, Cinch ATZ, Charger Max ATZ, Confidence Xtra, Degree Xtra, Expert, FulTime NXT, Guardsman Max, Harness Xtra, Impact Z, Keystone NXT, Lexar EZ, Lumax EZ, Marksman, Metal II AT, Parallel Plus, Simazat, Sterling Plus, Stratos, Trizmet II, Volley ATZ NXT, etc.) and **simazine** (Princep, Simazine, Simazat) have special label restrictions for use near ground or surface waters. Current label guidelines emphasize the use of low rates, buffer zones, and conservation tillage practices as methods for reducing the risk of contamination of water sources. The maximum rate of these herbicide products for early preplant, preplant incorporated, or preemergence applications depends on soil erodibility, as defined by the Natural Resources Conservation Service, and percent of ground covered with plant residue.

Rate Restrictions - For soils that are not highly erodible the maximum use rate for **atrazine** is 2.0 lb ai (active ingredient) per acre and for **simazine** is 2.0 lb ai per acre per season. For highly erodible soils the maximum rate is also 2.0 lb ai per acre for atrazine or simazine if conservation tillage is utilized and at least 30% of the soil is covered with plant residue. If ground cover is less than 30%, the maximum atrazine or simazine rate is 1.6 lb ai/A for highly erodible soils. The total amount of **atrazine** applied to a field should not exceed 2.5 lb ai/A; the total amount for **simazine** should not exceed 2.0 lb ai/A per calendar year. For atrazine the rate for postemergence applications should not exceed 2.0 lb ai/A if no previous atrazine applications were made.

Setbacks - Caution is needed when mixing, loading, or applying **atrazine** and **simazine** near sources of water. According to label directions, atrazine containing products should not be **mixed** or **loaded** within 50 feet of wells (including abandoned wells, drainage wells, or sink holes), rivers, intermittent streams, lakes, or reservoirs. This setback does not apply to the use of properly designed impervious pads and properly diked mixing/loading areas.

These products should not be **applied** within 50 feet of wells or sink holes, within 66 feet of points where field surface water enters permanent or intermittent streams or rivers, or within 200 feet around lakes or reservoirs. If applied to highly erodible soils, the 66 feet buffer area must be planted to a crop or seeded with grass. When atrazine or simazine is to be applied near tile riser pipes applicators can choose to: 1) use a 66 feet setback buffer around the tile riser pipes; 2) apply atrazine and simazine products if field is under no-tillage practices and high crop residue management is maintained; or 3) incorporate atrazine and simazine products in the soil to a depth of 2-3 inches.

Some situations will require a high level of management in order to comply with these restrictions. The maximum labeled rate of atrazine or simazine may not be sufficient to provide season-long control of some problem weeds. Therefore, more emphasis may be needed on using postemergence herbicides, tillage, or crop rotation to help manage such problem weeds as burcucumber, cocklebur, morningglory, giant ragweed, and velvetleaf.

Crop Replant Situations or Volunteer Corn

Emerged corn can be a problem in fields where corn must be replanted due to poor stands, flooding and other unforeseen weather conditions, or where volunteer corn plants emerge prior to planting. For conventional corn hybrids Roundup or other glyphosate products are often used to kill emerged corn prior to replanting. With the introduction of herbicide-tolerant crops such as "Roundup Ready" corn and "Liberty Link" corn hybrids, herbicide options are more limited for control of emerged corn prior to replanting. The table below indicates herbicide options depending on the genetic tolerance of the previous corn hybrid grown.

Herbicide options for replanting field corn or control of volunteer corn based on previous corn hybrid grown.				
HERBICIDE	Previous Corn Hybrid			
	Conventional hybrid	Roundup Ready	ENLIST hybrid	Liberty Link
Glyphosate (Roundup, etc.)	++	X	X	++
Paraquat + Atrazine	+	+	+	+
Paraquat + Linex (linuron)	+	+	+	+
Select MAX	+	++	++	+
+ = Recommended; ++ = Highly recommended; X = No control				

Herbicide treatments for control of volunteer corn plants or killing existing stands of corn for replant situations.

GLYPHOSATE

See page 22 for examples of glyphosate formulations. Consult label for specific rate of product and if a surfactant is needed and the type and rate of surfactant to include. Dry Ammonium Sulfate at 1 to 2% by weight (8.5 to 17 lb/100 gal) or an equivalent amount of AMS in a liquid formulation may improve glyphosate activity under certain conditions such as dry weather, or when mixed in hard water or with certain herbicides. Will not control hybrids with Roundup Ready corn technology.

GLYPHOSATE Product	Volunteer Corn Plant Height		
	6" tall (0.38 lb ae/A)	12" tall (0.56 lb ae/A)	20" tall (0.75 lb ae/A)
Roundup (3 lb ae/gal)	16 oz	24 oz	32 oz
Duramax (4 lb ae/gal)	12 oz	18 oz	24 oz
Roundup PowerMax (4.5 lb ae/gal)	11 oz	16 oz	22 oz

Gramoxone SL [2.0] (2.5 to 3.5 pt/A) + Linex 4L (0.67 to 1 pt/A) –OR– Atrazine 4L (0.5 to 1 qt/A)
+
Non-ionic Surfactant (0.25% to 0.5% v/v)

For control of volunteer corn up to 6 inches in height. Apply the higher rate of both herbicides for corn 7 to 12 inches in height. FIRESTORM, HELMQUAT and PARAZONE are similar paraquat products applied at 1.67 to 2.33 pt/A. With Atrazine maximum rate allowed may depend on previous applications. Apply with a non-ionic surfactant (NIS). Corn or grain sorghum may be planted at any time following application provided the combined maximum label rate has not been exceeded (consult label).

SELECT MAX –OR– INTENSITY ONE (6 fl oz/A) + NIS (0.25% v/v) + AMS (2.5 to 4 lbs/A)

For control of an existing stand of Roundup Ready field corn or other volunteer corn plants prior to replanting to field corn. Apply on field corn up to 12 inches tall. **Replant no sooner than 6 days after application.** Apply with a non-ionic surfactant (NIS) plus Ammonium Sulfate (AMS). Do not use COC or MSO as a spray additive. Do not apply more than 6 oz/A per season.

GENERIC PRODUCTS: For other clethodim products (eg. ARROW, INTENSITY) consult individual product for application rates.

24 Corn

NO TILLAGE

NOTE: *Herbicides used in no tillage corn production can be applied as either an early preplant treatment (15 to 30 days before planting) or at time of planting (prior to or after planting but before crop emerges). Consult the herbicide labels for specific directions.*

EARLY PREPLANT treatments are soil residual herbicides applied in early spring before weeds emerge, generally 15 to 30 days before planting; thus, the use of a “burndown” herbicide may not be necessary. If vegetation is present, a “burndown” herbicide may be included at time of application to kill the existing weedy vegetation. In addition, use of an early preplant program may require a sequential herbicide treatment applied at or after planting to provide additional length of weed control. Tillage after application may reduce effectiveness of the herbicide treatment.

AT PLANTING treatments include foliar “burndown” herbicides to kill existing vegetation plus a soil residual herbicides for preemergence control of annual grasses and broadleaf weeds. Depending on the amount of vegetation present and herbicide used, spray volume per acre may vary between 10 to 40 gallons of liquid per acre.

Foliar “Burndown” Herbicides for No-Tillage Corn

HARMONY SG 50DF

0.45 to 0.9 oz/A

thifensulfuron-methyl (0.014 to 0.028 lb ai/A)

Weeds Controlled: HARMONY SG provides control of wild garlic, curly dock and wild mustard species

Additives: Apply with a Non-Ionic Surfactant at 0.25 - 0.5% v/v (1-2 qt/100 gal spray solution), or with a petroleum based Crop Oil Concentrate or vegetable-seed oil-based product at 1% v/v (1 gal/100 gal of spray solution). An ammonium nitrogen fertilizer or a high quality, sprayable grade of ammonium sulfate may be added to enhance control.

General Comments: Apply pre-plant for “burndown” control of emerged wild garlic and cool-season broadleaf weeds. Apply to actively growing wild garlic and other broadleaf weeds when temperatures are generally above 60 F or more. HARMONY may be applied to corn anytime pre-plant, at-planting (0 days before planting), and/or postemergence. Do not make more than one pre-plant application per growing season.

Tank Mixtures: Tank mixtures in corn may include other pre-plant application products such as paraquat, glyphosate (eg. Roundup), dicamba (eg. Banvel/Clarity), and/or 2,4-D (consult individual labels).

	<u>Rate/A</u>	<u>[2,4-D acid equivalent]</u>
2,4-D LV Ester or Amine [3.8 lb ae/gal] (various) or	1 to 2 pt/A	[0.47 to 0.95 lb ae/A]
ENLIST ONE [3.8 lb ae/gal] or	1.5 to 2 pt/A	[0.71 to 0.95 lb ae/A]
WEEDONE 638 [2.8 lb ae/gal] or	1.5 to 2.5 pt/A	[0.52 to 0.88 lb ae/A]
WEEDONE 650 [5.64 lb ae/gal]	0.67 to 1.33 pt/A	[0.47 to 0.94 lb ae/A]

[NOTE: Rates vary with formulation of 2,4-D product used (consult label)]

Weeds Controlled: For control of annual and certain perennial broadleaf weeds including dandelion, prickly lettuce, marestail, mustard spp., and giant ragweed.

Additives: An additive may be used to increase the effectiveness on some weeds. Consult product labels on use of additives in tank mixtures.

Spray Volume: Apply in 10 or more gallons per acre of spray solution.

General Comments: Product formulations vary from 3 to 6 lb ae/gal. Most 2,4-D ESTER or 2,4-D AMINE products can be applied prior to planting corn (Preplant 7 to 14 days before planting) or Preemergent from 3 to 5 days after planting [some product labels indicate any time before or after planting, but before corn emerges]. Be cautious about applications near sensitive broadleaf crops, such as tobacco, soybean, vegetables or ornamental plantings, and avoid potential injury caused by spray drift.

Tank Mixtures: Consult other herbicide product labels for the tank mix partner(s) to be used. For allowed tank mixtures with Enlist One consult the www.EnlistTankMix.com website.

ENLIST DUO [3.3L] 3.5 to 4.75 pt/A [2,4-D choline salt:glyphosate (0.7:0.75 to 0.95:1.0 lb ae/A)]

Weeds Controlled: For control of annual and certain perennial broadleaf weeds including dandelion, prickly lettuce, marestail, mustard spp., and giant ragweed.

Additives: None

Spray Volume: Apply in a broadcast spray volume of 10 to 15 gallons of water per acre.

General Comments: For corn that does not contain the Enlist trait apply Preplant (burndown) 7 to 14 days before planting corn to control emerged grass and broadleaf weeds or Preemergent 3 to 5 days after planting, but before corn emerges. Be cautious about applications near sensitive broadleaf crops, such as tobacco, soybean, vegetables or ornamental plantings, and avoid potential injury caused by spray drift. *CONSULT LABEL FOR SPECIFIC GUIDELINES FOR APPLICATIONS AND PROTECTION OF SENSITIVE AREAS.*

Rain Delay: Heavy rainfall soon after application may wash this product off foliage.

Rotation Restrictions: During the growing season following application, do not replant treated fields with crops other than those labeled for use with 2,4-D or glyphosate.

Harvest & Forage Restrictions: Do not harvest or feed treated vegetation for at least 8 weeks after application.

Tank Mixtures: ENLIST DUO may only be tank-mixed with products that have been tested. A list of approved products can be found at www.EnlistTankmix.com website which should be consulted no more than 7 days before applying.

	<u>Rate/A</u>	<u>(dicamba)</u>
BANVEL, CLARITY, DIFLEXX, VISION, STERLING BLUE [DGA salt] (4 lb ae/gal)	8 to 16 fl.oz/A (0.5 to 1 pt/A)	[0.25 to 0.5 lb ae/A]
or		
XTENDIMAX or FEXAPAN [DGA salt] (2.9 lb ae/gal) plus 'VaporGrip' plus 'VaporGrip'	11 to 22 fl.oz/A	[0.25 to 0.5 lb ae/A]
or		
ENGENIA [BAPMA salt] (5 lb ae/gal)	12.8 fl.oz/A	[0.25 to 0.5 lb ae/A]

Weeds Controlled: For control of annual and perennial broadleaf weeds including dandelion, annual fleabane, marestail (horseweed), prickly lettuce, musk thistle, and giant ragweed. Consult label for applications to legume sods such as alfalfa or clover.

Additives: Although not required, the addition of a surfactant may improve control of emerged weeds. Use of crop oil concentrate (COC or HSOC) or methylated seed oil (MSO) may also be used but may cause temporary crop response. **Do not tank mix with products that contain ammonium salts such as ammonium sulfate or urea ammonium nitrate.** Consult all product labels on use of additives in tank mixtures.

Spray Volume: Apply at 10 to 50 GPA with ground equipment (consult product label)

General Comments: Apply before, during, or after corn planting to emerged and actively growing broadleaf weeds. For legume sods (e.g. alfalfa and clover) apply after 4-6" of growth has occurred. Be cautious about applications near sensitive broadleaf crops, such as tobacco, soybean, vegetables or ornamental plantings, and avoid potential injury caused by spray drift.

Tank Mixtures: For tank mixtures allowed consult specific product label. For tank mixtures with ENGENIA consult www.engeniatankmix.com website; XTENDIMAX consult www.xtendimaxapplicationrequirements.com website; for FEXAPAN consult www.fexapanapplicationrequirements.dupont.com website.

26 Corn

GLYPHOSATE

Below are examples of GLYPHOSATE formulations and their rates for burndown applications in no-till corn. The application rate of product may vary depending on GLYPHOSATE product used. Dry Ammonium Sulfate at 1 to 2% by weight (8.5 to 17 lb/100 gal) may be included with any of the of the following products to improve weed control during dry weather conditions, or when mixed in hard water or with certain other herbicides.

Recommendations for use of surfactants will vary depending on product. ALWAYS CONSULT THE PRODUCT LABEL FOR SPECIFIC DIRECTIONS.

Glyphosate formulation ¹	Annuals <6" tall	Annuals >6" tall
Roundup, Glyphosate, etc. (3 lb ae/gal)	1.5 to 2 pt/A (24 to 32 fl oz/A) (0.56 to 0.75 lb ae/A)	2 to 3 pt/A (32 to 48 fl oz/A) (0.75 to 1.13 lb ae/A)
Buccaneer 5 (3.75 lb ae/gal)	1.2 to 1.75 pt/A (19 to 28 oz/A) (0.56 to 0.82 lb ae/A)	1.75 to 2.5 pt/A (28 to 40 oz/A) (0.82 to 1.17 lb ae/A)
Duramax Durango DMA (4 lb ae/gal)	1.13 to 1.5 pt/A (18 to 24 fl oz/A) (0.56 to 0.75 lb ae/A)	1.5 to 2.25 pt/A (24 to 36 fl oz/A) (0.75 to 1.13 lb ae/A)
Roundup PowerMAX Roundup Weather MAX (4.5 lb ae/gal)	1 to 1.4 pt/A (16 to 22 fl oz/A) (0.56 to 0.77 lb ae/A)	1.4 to 2 pt/A (22 to 32 fl oz/A) (0.77 to 1.13 lb ae/A)

¹ See page 21 for a detailed list of glyphosate products

Annual Weeds Controlled: Annual fleabane, barnyardgrass, brome spp., chickweed, common ragweed, crabgrass, fall panicum, giant foxtail, giant ragweed, henbit, johnsongrass (seedling), lambsquarters, mustards, prickly lettuce, rye, smartweed, wheat.

Perennial Weeds: CONSULT LABEL FOR GLYPHOSATE RATE FOR SPECIFIC PERENNIAL WEED SPECIES. Best control of perennial weeds is usually achieved at late growth stages approaching maturity and when soil moisture is adequate for active plant growth. At normal application times for no-till corn, perennial weeds may not be at the proper growth stage. Control may be reduced if plants are mowed or grazed and not allowed to regrow to recommended growth stage. Perennial weeds may require multiple applications for optimum control.

Spray Volume: Apply in 10 to 20 gallons of clean water/A when mixing with other herbicides. A spray volume of 3 to 10 gallons of water/A is often recommended when glyphosate is used alone at reduced labeled rates for certain annual weed species.

General Comments: Apply before, during, or after planting but before crop emergence. Glyphosate is a translocated herbicide. Rainfall soon after application may reduce effectiveness.

Tank Mixtures: Other foliar and soil residual herbicides are labeled for tank mixing with glyphosate products (consult the label of product used).

GRAMOXONE SL 2.0

	Rate/A	(paraquat)
Annual weeds 1-3 " tall	2 to 2.5 pt/A	0.5 to 0.625 lb ai/A
Annual weeds 3-6 " tall	2.5 to 3.0 pt/A	0.65 to 0.75 lb ai/A
Annual weeds >6 " tall	3.0 to 4.0 pt/A	0.75 to 1.0 lb ai/A

OR

OR

OR

FIRESTORM or PARAZONE 3S

	Rate/A	(paraquat)
Annual weeds 1-3 " tall	1.3 to 1.7 pt/A	0.5 to 0.65 lb ai/A
Annual weeds 3-6 " tall	1.7 to 2.0 pt/A	0.65 to 0.75 lb ai/A
Annual weeds >6 " tall	2.0 to 2.7 pt/A	0.75 to 1.0 lb ai/A

Weeds Controlled: Controls small annual grasses and broadleaf weeds including foxtails, common chickweed, and henbit. Regrowth may occur from treated perennial grasses and broadleaf weeds, legume sods, perennial grass sods, or grass cover crops such as wheat treated between tillering and boot stage of growth. Also, emerged annual weeds such as marehail, prickly lettuce, smartweed, and giant ragweed may not be effectively controlled. Split applications 5 to 7 days apart may be more effective on certain hard-to-control weeds.

Additives: Crop Oil Concentrate at 4 qt/100 gal or Non-Ionic Surfactant at 1 to 2 pt/100 gal.

Spray Volume: Apply with at least 10 to 20 GPA of clean water or in a complete clear liquid fertilizer solution. Do not use suspension type fertilizers. A spray volume of more than 20 GPA may be needed if weeds > 6" tall.

PARAQUAT (continued)

General Comments: GRAMOXONE, FIRESTORM, and PARAZONE (paraquat) are non-selective contact-type herbicides that are classified as RESTRICTED USE PESTICIDES due to acute toxicity. It is essential to obtain complete coverage to get good control. Apply as a broadcast spray before, during, or after planting, but before crop emergence. Split applications may be more effective on hard-to-control grass species. Rainfall occurring within 15 to 30 minutes after application should not reduce effectiveness. Do not use around home gardens, schools, recreational parks, golf courses or playgrounds.

Tank Mixtures: Atrazine, Balance, Banvel, Bicep II Magnum, Callisto, Cinch, Cinch ATZ, Clarity, 2,4-D, Define, Degree, Degree Xtra, Distinct, Dual II Magnum, Epic, Frontier, FullTime, Guardsman, Harmony Extra, Harness, Harness Xtra, Hornet, Keystone, Lexar, Lorox, Lumax, Outlook, Princep, Prowl, Python, Sharpen, Simazine, Surpass, TopNotch. Tank mixtures with 2,4-D Ester should be applied 7 to 14 days prior to planting corn.

LIBERTY 280 SL

32 to 43 fl oz/A (glufosinate-ammonium 0.58 to 0.79 lb ai/A)

Weeds Controlled: Chickweed, marestail (horseweed), giant foxtail, crabgrass, johnsongrass (seedling), lambsquarters, common ragweed, giant ragweed, smartweed, vetch.

Additives: Ammonium sulfate (AMS) can be used at 1.5 to 3 lb/A to improve control of difficult-to-control weeds. Anti-foams or drift control agents may be added if needed.

Timing: Apply preplant or prior to crop emergence of any conventional or transgenic corn hybrid.

Spray Volume: A minimum of 15 GPA; for dense weed canopies use 20 GPA. Use proper nozzles with uniform spray coverage to achieve optimum weed control.

General Comments: Weed control may be reduced when applied to weeds stressed from drought or cool temperatures. *If LIBERTY is applied in a burndown application, no additional application may be made postemergence to the crop during the growing season.*

Harvest & Forage Restrictions: Do not apply within 60 days of harvesting corn as a forage or within 70 days of harvesting corn as grain or fodder.

Tank Mixtures: Consult label for tank mixtures options.

Generic Products: Other glufosinate-ammonium products include CHEETAH, FORFEIT, INTERLINE, and SURMISE.

Preplant Foliar “Burndown” plus Residual Herbicides**ATRAZINE**

ATRAZINE 4L 3 to 4 pt/A or
AATREX NINE-O 1.6 to 2.2 lb/A

(atrazine 1.5 to 2 lb ai/A)

Weeds Controlled: Black nightshade, burcucumber, cocklebur, jimsonweed, lambsquarters, morningglories, pigweeds, prickly sida, common ragweed, giant ragweed, smartweed, velvetleaf. Can be used to “burndown” emerged small annual weeds (generally less than 3” tall).

Crop Stage: Apply to the soil either preplant incorporated or preemergence at or before planting. ATRAZINE can also be applied up to 30 days before planting, either as a single or split application. For treatments after planting apply before corn reaches 12 inches in height.

General Comments: AATREX 4L or ATRAZINE 4L contains 4 lb ai atrazine per gal. AATREX NINE-O contains 0.9 lb ai of atrazine per lb product. Foliar “burndown” weed control is improved when applied with crop oil and/or a liquid fertilizer solution. Low soil moisture or soil pH above 7.0 may increase persistence; whereas, ATRAZINE dissipates more rapidly when soil pH is acidic.

Environmental Statements: ATRAZINE containing products are RESTRICTED-USE pesticides and contain a GROUND and SURFACE WATER ADVISORY statement on the label. Do not use on very permeable soils or where groundwater is close to the soil surface. [NOTE: See page 22 for PRECAUTIONS on use of ATRAZINE (AATREX) near ground or surface water]

Rain Delay: None

Rotation Restrictions: Do not plant small grains or small-seeded legumes and grasses in the fall of the same year or the year following application, or injury may occur. Plant only corn, sorghum or soybeans in the spring following use of ATRAZINE. If applied after June 10, plant only corn or sorghum the following season.

Harvest & Forage Restrictions: Wait 60 days before grazing or feeding forage from treated areas.

Tank Mixtures: Dual, glyphosate, Gramoxone, Partner, Princep, Prowl, simazine, Roundup. Also consult the product label of the tank mix partner(s) to be used. If annual grasses and broadleaf weeds exceed 3 inches in height at time of application, use of 2,4-D, dicamba, glyphosate (eg. Roundup, Touchdown, etc.), or paraquat (eg. Gramoxone) is recommended.

28 Corn

BALANCE FLEXX

BALANCE FLEXX 5 fl.oz/A

(isoxaflutole 0.078 lb ai/A)

NOTE: Apply up to 6 fl.oz/A for applications 8 to 30 days prior to planting [Use lower rates for course soils.]

Weeds Controlled: Foxtails, jimsonweed, lambsquarters, black nightshade, fall panicum, pigweed, common ragweed, smartweed, velvetleaf. Can also “burndown” emerged small annual weeds (generally less than 3” tall).

Crop Stage: BALANCE FLEXX may be preplant incorporated or preplant surface-applied up to 21 days prior to corn planting (30 days when applied as a planned sequential program). When applied preemergence apply after planting or behind planter after furrow closure, but before weeds and crop emerge. Corn should be planted a minimum of 1.5 inches deep with complete and firm coverage of the seed furrow to avoid direct contact with the seed. BALANCE FLEXX alone or tank mixed with atrazine can also be applied to corn from spiking through the 2 leaf-collar growth stage (V2).

Additives: When BALANCE FLEXX is applied alone Crop Oil Concentrate or Methylated Seed Oil is recommended to enhance “burndown” activity of emerged weeds when applied prior to corn emergence. For weeds not controlled by BALANCE FLEXX or when weeds are greater than 3 inches the addition of another “burndown” herbicide such as Gramoxone, glyphosate, or 2,4-D is recommended.

General Comments: BALANCE FLEXX contains 2 lb ai isoxaflutole per gal plus cyprosulfamide (corn safener). For use on field corn; do not use on other types of corn such as popcorn and sweet corn.

Environmental Statements: BALANCE FLEXX is a RESTRICTED-USE pesticide and has GROUND and SURFACE water advisory statements on the label. Do not apply BALANCE on certain loamy sand and sandy soil types if the water table is less than 25 feet below ground and less than 2% organic matter by weight. BALANCE FLEXX should not be mixed or loaded within 50 feet of any wells, sink holes, perennial or intermittent streams and rivers, and natural or impounded lakes and reservoirs, unless an impervious pad is used.

Rain Delay: None.

Rotation Restrictions: Crops that may be planted include wheat after 4 months; soybeans, barley, popcorn, sweet corn, and grain sorghum after 6 months; and alfalfa after 10 months. Other crops may require an 18 month waiting period with a minimum of 15 inches of cumulative precipitation from time of application to planting of rotational crop.

Harvest & Forage Restrictions: Corn forage harvest is permitted at 45 days or more after an early postemergence treatment.

Tank Mixtures: Atrazine, Bicep II Magnum, 2,4-D, Degree, Degree Xtra, Dual II Magnum, Frontier, FulTime, Glyphosate, Gramoxone, Guardsman, Harness, Harness Xtra, Ignite 280 SL, Keystone, Outlook, Princep, Prowl, simazine, TopNotch.

CORVUS

CORVUS 4.5 to 5.6 fl.oz/A

[thiencarbozone-methyl:isoxaflutole (0.026:0.07) to (0.033:0.08) lb ai/A]

Weeds Controlled: Barnyardgrass, crabgrass, foxtails, lambsquarters, black nightshade, fall panicum, pigweed, common ragweed, smartweed, velvetleaf. Can also “burndown” emerged small annual weeds (generally less than 6” tall).

Crop Stage: CORVUS may be preplant incorporated or preplant surface-applied up to 21 days prior to corn planting (30 days when applied as a planned sequential program). When applied preemergence apply after planting or behind planter after furrow closure, but before weeds emerge. Corn should be planted a minimum of 1.5 inches deep with complete and firm coverage of the seed furrow to avoid direct contact with the seed. CORVUS alone or tank mixed with atrazine can also be applied to corn from spiking through the 2 leaf-collar (V2) growth stage.

Additives: When applied alone Crop Oil Concentrate or Methylated Seed Oil is recommended to enhance “burndown” activity of labeled weeds when applied prior to corn emergence. For weeds not controlled by CORVUS or when weeds are greater than 6 inches the addition of another “burndown” herbicide such as paraquat, glyphosate, or 2,4-D is recommended.

CORVUS (continued)

General Comments: CORVUS is a premixture containing thiencarbozone-methyl + isoxaflutole [0.75 + 1.88 lb ai per gal] plus cyprosulfamide (corn safener). For use on field corn and corn grown for silage; do not use on other types of corn such as popcorn and sweet corn. Do not use CORVUS in the same season as Counter, Dyfonate, Lorsban, Thimet, or any other organophosphate or carbamate insecticide. Poncho, Aztec, Regent, and Force insecticides may be used prior to application.

Environmental Statements: CORVUS is a RESTRICTED-USE pesticide and has GROUND and SURFACE water advisory statements on the label. Do not apply BALANCE on certain loamy sand and sandy soil types found in Kentucky if the water table is less than 25 feet below ground and less than 2% organic matter by weight. CORVUS should not be mixed or loaded within 50 feet of any wells, sink holes, perennial or intermittent streams and rivers, and natural or impounded lakes and reservoirs, unless an impervious pad is used.

Rain Delay: None.

Rotation Restrictions: Crops that may be planted include wheat after 4 months; soybeans, barley, popcorn, and sweet corn after 9 months; and alfalfa, canola, oats, and sorghum after 17 months. Rotational interval may be longer for some crops when soil pH is 7.5 or above. Other crops may require a 17 to 24 month waiting period with a minimum of 30 inches of cumulative precipitation from time of application to planting of rotational crop.

Harvest & Forage Restrictions: Do not harvest field corn for forage within 45 days of application.

Tank Mixtures: Atrazine, Buctril, 2,4-D, Define, Glyphosate, Ignite 280SL, Laudis, paraquat, Princep, simazine.

EXPERT

EXPERT	Rate/A	(S-metolachlor:atrazine:glyphosate)
Annual weeds <6 " tall	3 qt/A	[1.3:1.6:0.75 lb ai/A]
Annual weeds 6-12 " tall	3.75 qt/A	[1.6:2.0:0.94 lb ai/A]

Weeds Controlled: Provides "burndown" of existing vegetation and soil residual "preemergence" control of various annual grasses and broadleaf weeds such as barnyardgrass, cocklebur, crabgrass, fall panicum, foxtails, jimsonweed, lambsquarters, morningglory, black nightshade, pigweed, prickly sida, common ragweed, smartweed. Regrowth may occur from treated perennial grasses and broadleaf weeds, legume sods, perennial grass sods, or grass cover crops such as wheat treated between tillering and boot stage of growth.

Crop Stage: Apply up to 30 days before, during or after planting for all types of corn grown under no-tillage or reduced tillage practices, **but prior to emergence of corn that is not designated as Roundup Ready.**

Additives: Dry Ammonium Sulfate at 2% by weight (17 lb/100 gal) may increase performance if emerged annual weeds are growing under adverse conditions.

Spray Volume: Apply with at least 10 to 20 gallons of clean water.

General Comments: EXPERT is a premixture containing S-metolachlor + atrazine + glyphosate [1.74 + 2.14 + 1 lb ai per gal]. Apply before or after weed emergence for control of annual grass and broadleaf weeds in corn.

Environmental Statements: EXPERT is a RESTRICTED-USE pesticide with a GROUNDWATER ADVISORY statement on the label. Do not apply to sand or loamy sand soils where the water table is close to the surface and where these soils are very permeable. [NOTE: See page 22 for PRECAUTIONS on use of atrazine containing products near ground or surface water].

Rain Delay: Rainfall within 2 hours of application may reduce control of emerged weeds.

Rotation Restrictions: Corn, sorghum (milo), or soybeans may be planted the spring following application. Do not plant tobacco, vegetables, or small-seeded legumes the year following application, or injury may occur.

Harvest & Forage Restrictions: Do not graze or feed forage for 60 days following application.

Tank Mixtures: When applied before corn emergence EXPERT may be applied in a tank mixture with the following products: Atrazine, Dual II Magnum, Hornet, Princep, Prowl, Python, Roundup (glyphosate), Touchdown. Banvel or 2,4-D (when applied 7 days before planting) may be added as a tank mix partner to obtain acceptable "burndown" control of emerged vegetation prior to corn planting.

30 Corn

INSTIGATE

INSTIGATE 5.25 to 6 oz/A

[rimsulfuron:mesotrione (0.014:0.14) to (0.016:0.16) lb ai/A]

Weeds Controlled: For “burndown” control of small annual weeds (generally less than 3” tall) and residual control for barnyardgrass, foxtail, lambsquarters, black nightshade, pigweeds, common ragweed.

Crop Stage: May be applied either preplant surface (up to 14 days prior to planting), preplant incorporated, preemergence, or at a maximum rate of 5.4 oz/A as an early post emergence treatment (up through 2 leaf collars) to field corn.

Additives: Control of emerged weeds will require the addition of Crop Oil Concentrate, Modified Seed Oil, or Non-Ionic Surfactant. In addition, nitrogen based adjuvant (UAN or AMS) must be used unless prohibited by tankmix partner.

General Comments: INSTIGATE is a selective herbicide for burndown and residual control of certain annual grass and broadleaf weeds in field corn. INSTIGATE 45.8% WDG is a premixture containing rimsulfuron + mesotrione [4.17% + 41.67% per lb product]. INSTIGATE may be applied at 5.25 to 5.4 oz/A for early postemergence rescue treatment on corn exhibiting up to 2 leaf collars. Do not apply more than 1 oz active ingredient rimsulfuron per acre or 3.85 oz active ingredient mesotrione in a growing season from all product sources that contain rimsulfuron (eg. Prequel, Realm Q, Steadfast Q, or Resolve) or mesotrione (eg. Callisto, etc.). DO NOT apply to corn when certain soil insecticides such as “Counter” will be applied within 60 days of application. Consult label directions before applying with other insecticides such as Lorsdan or Thimet. Crop injury may occur under certain environmental conditions such as cold weather and/or wet soils.

Rainfall Delay: Not indicated on the label.

Rotation Restrictions: Rotational crops which may be planted include field corn anytime; winter cereals (wheat, etc.) after 9 months; alfalfa, canola, popcorn, sweet corn, sorghum, and soybean after 10 months following INSTIGATE application. Other crops may require an 18 month waiting period.

Harvest & Forage Restrictions: Do not graze, feed forage, grain or fodder (stover) from treated areas to livestock within 45 days of application.

Tank Mixtures: For improved control of emerged weeds may be tank mixed with glyphosate, glufosinate, 2,4-D, and dicamba products. May also be tank mixed with other soil-residual herbicides for added grass and broadleaf control such as Atrazine, Breakfree brands and Cinch brand herbicides.

LEADOFF or CRUSHER

LEADOFF 1.5 oz/A or

(rimsulfuron:thifensulfuron-methyl 0.016:0.016 lb ai/A)

CRUSHER 1.0 oz/A

Weeds Controlled: For “burndown” control of common chickweed, curly dock, henbit, and certain mustard species; and residual control for barnyardgrass, foxtail, lambsquarters, pigweeds.

Crop Stage: Apply preplant after fall harvest through early spring, up to planting; or preemergence anytime after planting but before corn emergence. Do not apply postemergence to corn. Consult label and your seed supplier before applying to corn hybrids potentially sensitive to ALS-type herbicides.

Additives: Control of emerged weeds will require the addition of Crop Oil Concentrate, Modified Seed Oil, or Non-Ionic Surfactant. In addition an ammonium nitrogen fertilizer (28% or 32% N) or ammonium sulfate may be needed. If applied with glyphosate (eg. Roundup) or glufosinate (eg. Ignite) that contains a built-in adjuvant no additional surfactant needs to be added to the spray tank.

General Comments: LEADOFF 33.4% WDG and CRUSHER 50% WDG are premixtures containing rimsulfuron + thifensulfuron-methyl. Similar products include BASIS and BASIS Blend. These products are selective herbicides for burndown and residual control of certain annual grass and broadleaf weeds. Do not apply more than 1 oz active ingredient rimsulfuron per acre per crop year from all product sources that contain rimsulfuron (eg. Leadoff, Crusher, Prequel, Realm Q, Steadfast Q, Resolve Q, or Solida). DO NOT apply to corn when certain soil insecticides such as “Counter” will be applied within 60 days of application. Consult label directions before applying LEADOFF or CRUSHER with other insecticides such as Lorsdan or Thimet. Crop injury may occur under certain environmental conditions such as cold weather and/or wet soils.

Rainfall Delay: Not indicated on the label.

Rotation Restrictions: Rotational crops which may be planted include field corn anytime; soybeans after 1 month [when LEADOFF is applied at >1.5 to 2 oz/A wait 2 months]; winter cereals (wheat) after 3 months; or alfalfa, canola, popcorn, sweet corn, red clover, sorghum, and tobacco after 10 months following application. Tobacco can be planted 1.5 months after LEADOFF application. Other crops may require an 18 month waiting period. Consult label for additional crop rotation intervals for certain crops.

Harvest & Forage Restrictions: Do not graze, feed forage, grain or fodder from treated areas to livestock within 30 days of application.

Tank Mixtures: For improved control of emerged weeds may be tank mixed with glyphosate, paraquat, glufosinate, 2,4-D LVE, and dicamba products. LEADOFF may also be tank mixed with other soil-residual herbicides for added residual control such as Atrazine, Breakfree brands and Cinch brand herbicides.

SHARPEN

SHARPEN

2.5 to 3 fl oz/A

(saflufenacil 0.056 to 0.067 lb ai/A)

Weeds Controlled: For “burndown” and residual control of selected broadleaf weeds such as cocklebur, marehail (horseweed), morningglory, giant ragweed, and velvetleaf.

Crop Stage: May be preplant surface applied up to 14 days before planting field corn (30 days when applied as a planned sequential program with a postemergence herbicide). DO NOT apply after corn emergence or severe crop injury will occur.

Additives: For optimum “burndown” activity of labeled weeds Methylated Seed Oil (MSO) plus Ammonium Sulfate (AMS) or Urea Ammonium Nitrate (UAN) is recommended. For control of emerged grasses and/or broadleaf weeds not controlled by SHARPEN a tank mix with another herbicide (such as glyphosate) is recommended. The use of AMS is recommended when mixing SHARPEN with glyphosate-based herbicides.

General Comments: SHARPEN contains 2.85 lb ai saflufenacil per gal. Spray volumes of 15 to 20 GPA are recommended to increase spray coverage and optimize burndown activity. If limited or no residual broadleaf weed control is desired, SHARPEN can be applied at 1.0 fl.oz/A with an adjuvant system any time prior to corn emergence. Do not apply SHARPEN when an at-planting application of an organophosphate or carbamate insecticide is planned or has been used (consult label for use of other insecticides).

Environmental Statements: SHARPEN has Ground and Surface water advisory statements on the label.

Rain Delay: SHARPEN is rainfast 1 hour after application.

Rotation Restrictions: Corn (field), sorghum, and small grains may be replanted immediately. For sweet corn wait a minimum of 2 months; soybean 2 to 3 months (consult label) after application; Other crops require a minimal of at least 6 months. Crop rotation interval may be reduced for lower use rates.

Harvest & Forage Restrictions: Do not graze or feed forage for 80 days following application.

Tank Mixtures: SHARPEN can be tank mixed or applied sequentially with Atrazine, Clarity, Glyphosate (eg. Roundup), Guardsman MAX, Harness, Harness Xtra, Outlook, Prowl H2O, Status, Verdict.

VERDICT

VERDICT (5.57EC) 13 to 15 fl oz/A

[saflufenacil:dimethenamid-P (0.058:0.51) to (0.067:0.59) lb ai/A]

Weeds Controlled: Barnyardgrass, crabgrass, fall panicum, foxtails, black nightshade, cocklebur, lambsquarters, morningglory, pigweed, prickly sida, common ragweed, giant ragweed, smartweed, velvetleaf.

Crop Stage: Apply as an early preplant surface (15 to 30 days EPP), preplant surface or preplant incorporated treatment (<14 days), preemergence, or as a burndown with residual control of certain broadleaf weeds. Do not apply after corn emergence or severe crop injury will occur.

Additives: For optimum “burndown” activity of labeled weeds Methylated Seed Oil (MSO) plus Ammonium Sulfate (AMS) or Urea Ammonium Nitrate (UAN) is recommended. For control of emerged grasses and/or broadleaf weeds not controlled by VERDICT a tank mix with another herbicide (such as glyphosate) is recommended. The use of AMS is recommended when mixing VERDICT with glyphosate-based herbicides.

General Comments: VERDICT contains saflufenacil + diethenamid-P [0.57 + 5.0 lb ai per gal]. When used as part of a burndown plus residual weed control program an adjuvant system is required for optimum burndown activity. Do not apply more than 25 fl oz/A of VERDICT per crop season or exceed a maximum amount of 0.134 lb ai/A saflufenacil. Do not apply where an at-planting application of an organophosphate or carbamate insecticide is planned (consult label for use with other soil insecticides).

Environmental Statements: VERDICT has GROUND and SURFACE WATER ADVISORY statements on the label.

Rain Delay: Rainfast 1 hour after application for burndown activity. For residual control applications must be activated by at least 1/2 inch rainfall.

Rotation Restrictions: Field corn, popcorn, and grain sorghum may be replanted immediately after crop failure. Fall-seeded small grains may be planted 4 months or more following treatment; soybean may be planted 2 months after application on medium and fine textured soil or course soil with >2% OM. Other rotational crop may be planted the following spring.

Harvest & Forage Restrictions: Corn may be harvested, fed, or grazed 80 or more days after application.

Tank Mixtures: VERDICT may be tank mixed or applied sequentially with Atrazine, Clarity, Glyphosate (eg. Roundup), Guardsman Max, Sharpen, Status.