

**Table 2.2-7. Characteristics of “burndown” herbicides for no-till corn.**

See Table 2.2-6 for relative effectiveness of these treatments. May need to combine with residual treatment or postemergence program (Tables 2.2-10 and 2.2-13) for complete no-till weed-control program.

<i>Herbicide<sup>1</sup></i>	<i>Rate/A</i>	<i>lb ai/A</i>	<i>Comments</i>
2,4-D LVE 4E	1 pt	0.5	Apply 7–14 days before planting or 3–5 days after planting for greater crop safety. Plant corn at least 1.5 inches deep. Add Clarity to increase effectiveness on legume sods. This product is poor on chickweed, henbit, red dead nettle; ineffective on all grasses.
2,4-D LVE 4E + Clarity 4S/Banvel 4S (dicamba)	0.5–1 pt + 0.5–1 pt	0.25–0.5 + 0.25–0.5	Apply 7–14 days before planting or 3–5 days after planting for greater crop safety. Plant corn at least 1.5 inches deep. A combination of 2,4-D + Clarity/Banvel controls most annual broadleaf weeds and alfalfa. Emerged perennial broadleaves are partially controlled. This combination is fair on chickweed, henbit, and red dead nettle; ineffective on all grasses.
Atrazine 90DF	1.8–2.2 lb	1.6–2	Apply 1.6–2 qt atrazine 4L prior to planting. Controls small emerged annual broadleaves and some grasses. Can be applied in liquid nitrogen as the carrier to improve burndown characteristics. See atrazine use restrictions at the end of this table. ( <i>Restricted-use pesticide and water quality advisory</i> )
Atrazine 4L + 2,4-D LVE	1.8–2.2 lb + 1 pt	1.6–2 + 0.5	Adding 2,4-D improves control of broadleaf weeds. See the atrazine and 2,4-D comments. See atrazine use restrictions at the end of this table. ( <i>Restricted-use pesticide and environmental hazard warning</i> )
Autumn 10WDG (iodosulfuron)	0.3 oz	0.03 oz	Autumn may be applied after fall harvest and up to 30 days prior to corn planting. Do not apply to frozen ground. Apply to actively growing weeds. Autumn will provide short-term residual control of small seeded broadleaves but will not provide season-long pre control of annual grasses and broadleaf weeds. Apply Autumn at 0.3 oz/A plus necessary adjuvants. For enhanced burndown activity, tank-mix with 2,4-D, glyphosate, paraquat, simazine, or Sencor. Be cautious of crop rotation restrictions.
Expert 4.88L (s-metolachlor atrazine + glyphosate)	2.5–3.75 qt	3.05–4.58	Expert is a premix of metolachlor (Dual II Magnum), atrazine, and glyphosate. The 3 qt. rate contains 1.3 lb s-metolachlor, 1.6 lb atrazine and 0.75 lb ae glyphosate. Expert can be used as a burndown/pre program in corn or as an early post application in Roundup Ready hybrids. See Expert label for additional information. ( <i>Restricted-use pesticide and water quality advisory</i> )
Field Master 4.25SE (glyphosate/acetochlor/ atrazine)	3.5–5 qt	3.7–5.3	Field Master is a pre-mix combination of glyphosate (Roundup), acetochlor (Harness), and atrazine. The 4 qt rate contains 0.75 lb glyphosate, 2.0 lb acetochlor, and 1.5 lb atrazine. Apply in 10–20 gal water/A or 10–50 gal liquid nitrogen/A. Use lower rates on coarse soils and higher rates on fine soils. Use 4 qt/A for emerged weeds up to 6 inches tall and 5 qt/A on annuals 6–12 inches tall. The higher rate is recommended for difficult-to-control annual weeds up to 3 inches tall, including fall panicum, barnyardgrass, crabgrass, and smartweed. Mixtures with 2,4-D or Banvel can be used to improve burndown of some broadleaf weeds. Field Master can be applied early post in Roundup Ready hybrids. ( <i>Restricted-use pesticide and water quality advisory</i> )
Gramoxone Inteon 2S (paraquat)	2–4 pt	0.5–1.0	Apply in 20–60 gal/A for control of emerged annual weeds. Add 16–32 oz nonionic surfactant/100 gal of spray. Phosphate-containing liquid fertilizer solutions diminish paraquat activity if used as a carrier. Use appropriate precautions when handling paraquat to minimize exposure to the herbicide. Do not use flood jet tips larger than size 20 or spacing greater than 40 inches. ( <i>Gramoxone is a restricted-use pesticide.</i> )
Gramoxone Inteon 2S (paraquat) + 2,4-D LVE or Clarity 4S/Banvel 4S (dicamba)	2–4 pt + 1 pt or 0.5 pt	0.5–1.0 + 0.5 or 0.25	See comments under Gramoxone. Adding 2,4-D or Clarity/Banvel improves control of large annual broadleaf weeds and alfalfa. Alfalfa control is improved by applying 2,4-D or Clarity/Banvel separately at least one day ahead of paraquat. ( <i>Gramoxone is a restricted-use pesticide.</i> )
Gramoxone Inteon 2S (paraquat) + Atrazine 90DF	2–4 pt + 1.1–2.2 lb	0.5–1 + 1–2	Adding atrazine to paraquat can improve control of fescue and certain other perennial sods. See atrazine use restrictions at the end of this table. ( <i>Restricted-use pesticide and water quality advisory</i> )
Harmony Extra SG 50DF (thifensulfuron + tribenuron)	0.45–0.9 oz	0.014–0.028	Adding Harmony Extra to glyphosate or 2,4-D can improve control of certain winter annual broadleaves and perennials. Must be applied in fall or early spring at least 14 days ahead of planting.
Hornet 78.5WDG (flumetsulam + clopypalid)		0.13–0.21	See Table 2.2-10 for comments about Hornet.

(continued)

**Table 2.2-7. Characteristics of “burndown” herbicides for no-till corn (continued).**

Herbicide <sup>1</sup>	Rate/A	lb ai/A	Comments
Glyphosate <sup>2</sup>	See Table 2.2-1a		Fall applications of glyphosate are better than spring applications for control of orchardgrass sods and quackgrass. If controlling orchardgrass sod in spring it is best to spray when sod is 6 to 10 inches tall. Use at least 1.13 lbs ae glyphosate or higher, especially if tank-mixing with preresidual herbicide and nitrogen carriers. Spring applications may be used for control of annual weeds. Using low-volume sprays may allow for a reduced rate. For control of small annual weeds or volunteer small grains, glyphosate may be used at reduced rates. Glyphosate may be applied in clear liquid nitrogen fertilizers and clear liquid complete-analysis fertilizers, but may be less effective on certain annual grasses and perennials. Do not use glyphosate with suspension-type liquid fertilizers.
Glyphosate +	See Table 2.2-1a +	 +	Adding 2,4-D or Clarity/Banvel improves control of large, annual broadleaf weeds, dandelion, and alfalfa. See previous glyphosate, 2,4-D, or Banvel comments.
2,4-D LVE or	1 pt or	0.5 or	
Clarity 4S/Banvel 4S (dicamba)	0.5 pt	0.25	
Glyphosate +	See Table 2.2-1a +	 +	When tank-mixing glyphosate with residual herbicides, apply in 10–20 gal water/A or 10–60 gal liquid fertilizer nitrogen/A. Glyphosate may be applied in clear liquid nitrogen fertilizers and clear liquid complete-analysis fertilizers. Do not use glyphosate with suspension-type liquid fertilizers. Roundup activity may be reduced when tank-mixing with residual herbicides that have contact activity on emerged weeds. See atrazine use restrictions at the end of this table. ( <i>Restricted-use pesticide and water quality advisory</i> )
Atrazine 90DF	1.1–2.2 lb	1–2	
Sencor 75DF/4L (metribuzin)	2–5.3 oz DF	0.094–0.25	Include Sencor as part of an herbicide program for burndown of existing vegetation prior to crop emergence. Sencor may be tank-mixed with 2,4-D LVE, Gramoxone, or glyphosate. Use a maximum of 4 oz DF if applying less than 10 days before planting or on soils with less than 2% organic matter. Do not use on coarse soils with less than 1.5% organic matter or on soils having pH 7.0 or greater. Plant corn at least 1.5 inches deep to avoid injury. ( <i>Water quality advisory</i> )
Valor 51WDG (flumioxazin)	1–2 oz	0.51–1.02 oz	Valor may be included in a typical burndown herbicide program to enhance the speed of burndown and increase weed spectrum.

1. See Table 2.2-1 for additional formulations or trade names containing some of these same active ingredients.

2. Refer to current product label for active ingredient concentration and application rate (e.g., 1 qt/A glyphosate 4S = 22 fl oz/A Roundup WeatherMax).

#### ATRAZINE USE RESTRICTIONS

##### Preplant or Preemergence

On highly erodible soils (as defined by the U.S. Natural Resources Conservation Service):

- Fields where more than 30 percent of the soil surface is covered with plant residue at planting, apply a maximum of 2.0 lb of active ingredient per acre as a broadcast spray.
- Fields where less than 30 percent of the soil surface is covered with plant residue at planting, apply a maximum of 1.6 lb of active ingredient per acre as a broadcast spray.
- Apply a maximum of 2.0 lb of active ingredient per acre as a broadcast spray.

##### Postemergence

- If no atrazine was applied prior to crop emergence, use a maximum rate of 2.0 lb of active ingredient per acre.
- If a soil-applied application was made in the same calendar year, the combined preplant or preemergence and postemergence applications may not exceed 2.5 lb of active ingredient per acre.

##### Safety Precautions for Using Atrazine

- Do not mix, load, or apply within 50 feet of drinking water wells, livestock wells, agricultural drainage wells, irrigation wells, abandoned wells, or sinkholes.
- Do not mix or load within 50 feet of intermittent streams, perennial streams, rivers, lakes, or reservoirs.
- Do not apply within 200 feet of lakes or reservoirs.
- Do not apply within 66 feet of the points where surface water runoff enters intermittent streams, perennial streams, or rivers. The 66-foot buffers should be planted to a crop or seeded with grass on highly erodible land.