

# TABLE 2A – Weed Response to Soil-Applied Herbicides in Soybean\*

Soil Applied	SITE OF ACTION	SOYBEAN TOLERANCE**	ANNUAL BROADLEAVES										ANNUAL GRASSES							PERENNIALS							
			COCKLEBUR	JIMSONWEED	LAMBSQUARTERS	NIGHTSHADE (E. BLACK)	PIGWEEED	RAGWEED (COMMON)	RAGWEED (GIANT)	SMARTWEED	VELVETLEAF	WILD MUSTARD	HORSEWEED (MARESTAIL)	BARNYARDGRASS	CRABGRASS	GIANT FOXTAIL	GREEN FOXTAIL	YELLOW FOXTAIL	FALL PANICUM	WITCHGRASS	SANDBUR	BINDWEED (FIELD)	BINDWEED (HEDGE)	CANADA THISTLE	QUACKGRASS	YELLOW NUTSEDGE	
COMMAND 3ME	13	1	F	F	G	P	P	G	P	G	E	P	-	G	F	F	F	G	G	G	F	N	N	N	N	N	
DUAL MAGNUM/ PARALLEL	15	1	N	N	P	F	G	P	N	P	N	P	P	F	F	F	F	F	G	G	P	N	N	N	N	F	
FIRSTRATE	2	2	G	G	G	P	E	E	G	E	G	E	G	F	F	F	F	F	P	P	N	N	N	N	P		
INTRRO/MICROTECH	15	1	N	N	P	G	G	P	N	P	N	P	P	F	F	F	F	F	G	G	P	N	N	N	N	F	
LOROX/LINEX	7	2	P	P	G	F	G	G	F	G	F	G	P	F	F	F	F	F	F	P	N	N	N	N	N		
OUTLOOK	15	1	N	N	P	G	G	P	N	P	N	P	N	F	F	F	F	F	G	G	P	N	N	N	N	F	
PROWL H <sub>2</sub> O/PROWL	3	2	N	N	G	P	F	P	N	P	F	P	P	G	G	G	G	G	G	G	N	N	N	N	N		
PURSUIT	2	1	F	F	G	E	E	F	F	G	G	E	P	F	F	G	G	G	P	P	P	P	N	N	N	F	
PYTHON	2	1	F	F	E	G	E	F	F	G	G	E	G	P	P	F	P	P	P	P	N	N	N	N	N		
SCEPTER	2	2	F	G	G	G	E	F	G	G	G	G	P	F	P	G	G	G	P	P	N	N	N	N	F		
SENCOR	5	2	F	F	G	N	E	G	F	E	G	E	G	P	F	G	G	G	F	F	N	N	N	N	N		
SONALAN (PPI ONLY)	3	1	N	N	G	F	G	P	N	P	N	P	-	F	F	F	F	F	F	F	N	N	N	N	N		
SPARTAN	14	2	P	P	E	E	E	F	P	F	F	P	F	N	N	P	P	P	N	N	N	N	N	N	P		
TRIFLURALIN (PPI ONLY)	3	1	N	N	G	F	G	P	N	P	N	P	-	F	F	F	F	F	F	F	N	N	N	N	N		
VALOR	14	2	P	F	G	G	G	G	F	F	F	G	G	N	N	P	P	P	N	N	N	N	N	N	P		
WARRANT	15	1	P	N	F	G	G	F	N	P	P	P	P	F	F	F	F	F	F	F	N	N	N	N	F		
<b>Premixes</b>																											
AUTHORITY ASSIST	2/14	2	F	F	E	E	E	F	F	G	G	E	F	F	F	F	F	F	P	P	P	P	N	N	N	F	
AUTHORITY FIRST/SONIC	2/14	2	G	G	G	G	E	E	G	G	G	E	G	F	F	F	F	F	P	P	N	N	N	N	P		
AUTHORITY MTZ	5/14	2	F	F	E	E	E	G	F	E	G	E	G	P	F	F	P	P	F	P	N	N	N	N	P		
AUTHORITY XL	2/14	2	F	F	E	G	E	G	F	G	G	E	G	F	F	F	F	F	P	P	P	P	N	N	P		
BOUNDARY	5/15	2	F	F	G	F	E	G	F	E	G	E	G	F	F	F	F	F	G	G	N	N	N	N	F		
CANOPY	2/5	2	G	G	E	N	E	G	G	E	G	E	G	F	F	F	F	F	F	P	P	N	N	N	P		
CANOPY EX (7 days EPP or more) <sup>a</sup>	2/2	1	G	G	G	N	G	G	F	G	G	E	G	P	P	F	F	F	P	P	P	N	N	N	P		
ENVIVE	2/2/14	2	G	G	E	G	E	E	F	E	G	E	G	F	F	F	F	F	F	P	P	N	N	N	F		
FLEXSTAR GT 3.5	9/14	2	P	P	G	E	E	G	F	G	P	E	F	N	N	N	N	N	N	N	N	N	N	N	N		
GANGSTER	2/14	2	G	G	G	G	E	E	G	E	G	E	G	F	F	F	F	F	P	P	N	N	N	N	P		
OPTILL	2/14	1	F	F	G	E	E	F	F	G	G	E	F	F	F	G	G	G	P	P	P	N	N	N	F		
OPTILL PRO	2/14/15	1	F	F	G	E	E	F	F	G	G	E	F	F	F	G	G	G	F	F	N	P	P	N	N	F	
PREFIX	14/15	2	P	P	G	E	E	G	F	G	P	E	F	F	F	F	F	F	G	G	P	N	N	N	P		
PURSUIT PLUS	2/3	2	F	F	G	E	E	F	F	G	G	G	P	F	F	G	E	G	G	G	N	N	N	N	F		
SPARTAN CHARGE	14/14	2	P	P	E	E	E	F	P	F	F	P	F	N	N	P	P	P	N	N	N	N	N	N	P		
SYNCHRONY XP	2/2	2	G	G	E	N	E	G	F	E	G	E	G	F	F	F	F	F	F	P	P	N	N	N	F		
VALOR XLT	2/14	2	G	G	E	G	E	G	F	E	G	E	G	F	F	F	F	F	F	P	P	N	N	N	F		
VERDICT	14/15	1	P	P	P	P	P	P	P	P	P	P	F	P	P	P	P	P	P	P	N	N	N	N	N		

Herbicide Site of Action: The site of action key is located on pages 16-17.

Herbicide Effectiveness: P = Poor; F = Fair; **G** = Good; **E** = Excellent; N = None; - = Not enough information to rank

\* The above ratings are a relative comparison of herbicide effectiveness. Weather conditions greatly influence the herbicide's effectiveness, and weed control may be better under favorable conditions or poorer under unfavorable conditions.

\*\* Crop Tolerance: 1=Minimal risk of crop injury; 2=Crop injury can occur under certain conditions (cold, wet); 3=Severe crop injury can occur. Follow precautions under Remarks and Limitations and on the label; 4=Risk of severe crop injury is high.

<sup>a</sup> Canopy EX can only be applied 7 days or more prior to planting soybean. See Remarks and Limitations section.

# TABLE 2B – Weed Response to Postemergence Herbicides in Soybean\*

Postemergence	SITE OF ACTION	SOYBEAN TOLERANCE**	ANNUAL BROADLEAVES											ANNUAL GRASSES							PERENNIALS								
			COCKLEBUR	JIMSONWEED	LAMBSQUARTERS	NIGHTSHADE (E. BLACK)	PIGWEEED	RAGWEED (COMMON)	RAGWEED (GIANT)	SMARTWEED	VELVETLEAF	WILD MUSTARD	HORSEWEED (MARESTAIL)	BARNYARDGRASS	CRABGRASS	GIANT FOXTAIL	GREEN FOXTAIL	YELLOW FOXTAIL	FALL PANICUM	WITCHGRASS	SANDBUR	BINDWEED (FIELD)	BINDWEED (HEDGE)	CANADA THISTLE	QUACKGRASS	YELLOW NUTSEDGE			
ASSURE II/TARGA	1	1	N	N	N	N	N	N	N	N	N	N	N	N	<b>G</b>	<b>G</b>	<b>E</b>	<b>E</b>	<b>G</b>	<b>E</b>	<b>E</b>	<b>E</b>	N	N	N	<b>E</b>	N		
BASAGRAN	6	2	<b>E</b>	<b>G</b>	<b>G</b>	P	P	F	F	<b>E</b>	<b>G</b>	<b>E</b>	F	N	N	N	N	N	N	N	N	N	N	N	N	<b>G</b>	N	F	
CADET	14	2	P	F	F	F	<b>G</b>	P	P	P	<b>E</b>	P	P	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	
CLASSIC	2	2	<b>E</b>	<b>G</b>	N	N	<b>E</b>	<b>G</b>	<b>G</b>	<b>E</b>	<b>G</b>	<b>E</b>	<b>G</b>	N	N	P	P	P	N	N	N	N	N	N	N	F	N	<b>E</b>	
COBRA	14	3	<b>G</b>	<b>G</b>	P	<b>G</b>	<b>E</b>	<b>E</b>	<b>E</b>	P	F	<b>E</b>	P	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	
FIRSTRATE	2	1	<b>E</b>	<b>E</b>	N	N	P	<b>E</b>	<b>E</b>	<b>E</b>	<b>G</b>	<b>G</b>	<b>G</b>	N	N	N	N	N	N	N	N	N	P	P	F	N	F		
FLEXSTAR	14	2	F	<b>G</b>	F	<b>G</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>G</b>	F	<b>E</b>	P	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	
FUSILADE DX	1	1	N	N	N	N	N	N	N	N	N	N	N	<b>E</b>	<b>G</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>E</b>	N	N	N	<b>G</b>	N		
FUSION	1	1	N	N	N	N	N	N	N	N	N	N	N	<b>G</b>	<b>G</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>G</b>	<b>G</b>	<b>E</b>	N	N	N	<b>G</b>	N	N		
HARMONY SG	2	3	F	F	<b>G</b>	N	<b>E</b>	P	P	<b>E</b>	<b>G</b>	<b>E</b>	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	
PHOENIX	14	2	<b>G</b>	<b>G</b>	P	<b>G</b>	<b>E</b>	<b>E</b>	<b>E</b>	P	F	<b>E</b>	P	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	
POAST/POAST PLUS	1	1	N	N	N	N	N	N	N	N	N	N	N	<b>E</b>	<b>G</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>E</b>	N	N	N	F	N		
PURSUIT	2	2	<b>E</b>	F	P	<b>E</b>	<b>E</b>	F	<b>G</b>	<b>G</b>	<b>G</b>	<b>G</b>	P	F	F	<b>G</b>	<b>G</b>	<b>G</b>	F	F	P	P	P	P	N	F	F		
RAPTOR	2	2	<b>G</b>	<b>G</b>	<b>G</b>	<b>E</b>	<b>E</b>	F	<b>G</b>	<b>G</b>	<b>G</b>	<b>E</b>	-	F	F	<b>E</b>	<b>G</b>	<b>G</b>	F	F	N	P	P	F	N	P	P		
REFLEX	14	1	P	F	P	<b>G</b>	<b>E</b>	<b>G</b>	<b>G</b>	P	P	<b>E</b>	P	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	
RESOURCE	14	2	P	P	F	P	P	P	P	P	<b>E</b>	P	P	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	
SCEPTER	2	2	<b>E</b>	P	N	P	<b>E</b>	P	P	P	P	P	P	N	N	F	F	F	N	N	N	N	N	N	N	N	N	N	
SELECT MAX/ ARROW/SELECT	1	1	N	N	N	N	N	N	N	N	N	N	N	<b>E</b>	<b>G</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>E</b>	N	N	N	<b>G</b>	N		
SYNCHRONY XP	2/2	2	<b>E</b>	<b>G</b>	<b>G</b>	N	<b>E</b>	<b>G</b>	<b>G</b>	<b>E</b>	<b>G</b>	<b>E</b>	<b>G</b>	N	N	N	N	N	N	N	N	N	N	N	F	N	<b>G</b>		
ULTRA BLAZER	14	2	F	<b>G</b>	P	<b>G</b>	<b>E</b>	<b>E</b>	F	<b>G</b>	P	<b>E</b>	P	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	
<b>GLYPHOSATE-RESISTANT SOYBEAN</b>																													
GLYPHOSATE	9	1	<b>E</b>	<b>E</b>	<b>G</b>	<b>G</b>	<b>E</b>	<b>G</b>	<b>G</b>	<b>G</b>	<b>G</b>	<b>G</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>G</b>	<b>G</b>	<b>G</b>	<b>E</b>	F
EXTREME	2/9	2	<b>E</b>	<b>E</b>	<b>G</b>	<b>E</b>	<b>E</b>	<b>G</b>	<b>G</b>	<b>G</b>	<b>G</b>	<b>G</b>	<b>G</b>	<b>G</b>	<b>G</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>G</b>	<b>G</b>	<b>G</b>	<b>G</b>	<b>G</b>	<b>G</b>	<b>G</b>	<b>G</b>	<b>E</b>	F
FLEXSTAR GT 3.5	9/14	2	<b>E</b>	<b>E</b>	<b>G</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>G</b>	<b>G</b>	<b>G</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>G</b>	<b>G</b>	<b>G</b>	<b>E</b>	F
SEQUENCE	9/15	2	<b>E</b>	<b>E</b>	<b>G</b>	<b>G</b>	<b>E</b>	<b>G</b>	<b>G</b>	<b>G</b>	<b>G</b>	<b>G</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>G</b>	<b>G</b>	<b>G</b>	<b>E</b>	F
WARRANT + GLYPHOSATE	9/15	2	<b>E</b>	<b>E</b>	<b>G</b>	<b>G</b>	<b>E</b>	<b>G</b>	<b>G</b>	<b>G</b>	<b>G</b>	<b>G</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>G</b>	<b>G</b>	<b>G</b>	<b>E</b>	F
<b>LIBERTYLINK SOYBEAN</b>																													
LIBERTY	10	1	<b>E</b>	<b>E</b>	<b>G</b>	<b>G</b>	<b>G</b>	<b>E</b>	<b>G</b>	<b>G</b>	<b>G</b>	<b>E</b>	<b>G</b>	F	<b>G</b>	<b>G</b>	<b>G</b>	F	<b>G</b>	F	F	P	P	P	P	P	P	P	

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## TABLE 2C – Herbicide Premixes in Soybean

TRADE NAME	COMPANY	FORMULATION	TYPICAL USE RATE <sup>a</sup>	=	EQUIVALENT RATES
Authority Assist	FMC	4L	5 oz/A	=	4.16 oz Spartan + 1.67 oz Pursuit
Authority First/Sonic	FMC/Dow	70DF	3.2 oz/A	=	4 oz Spartan + 0.3 oz FirstRate
Authority MTZ	FMC	45DF	10 oz/A	=	3.6 oz Spartan + 3.6 oz Sencor
Authority XL	FMC	70WG	3.2 oz/A	=	4 oz Spartan + 1 oz Classic
Autumn Super	Bayer	51WG	0.5 oz	=	0.3 oz Autumn + 0.014 lb ai thiencazabone-methyl
Boundary 6.5EC	Syngenta	6.5EC	1.5 pt/A	=	1 pt of Dual Magnum + 5 oz of Sencor
Canopy	DuPont	75WG	3 oz/A	=	1.28 oz Classic + 2.57 oz Sencor
Canopy EX	DuPont	29.5WG	2.2 oz/A	=	2 oz Classic + 0.3 oz Express SG
Envive <sup>b</sup>	DuPont	41.3WG	3.5 oz/A	=	2 oz Valor + 1.28 oz Classic + 0.192 oz Harmony SG
Extreme	BASF	2.17L	3 pt/A	=	1.5 pt glyphosate 3L a.e. + 4 oz Pursuit
Flexstar GT 3.5	Syngenta	2.82L	3.5 pt/A	=	1.3 qt glyphosate 3L a.e. + 1 pt Flexstar
Fusion	Syngenta	2.56EC	0.5 pt/A	=	8 fl oz Fusilade DX + 4.8 fl oz Puma
Gangster	Valent	co-pack	3 oz 0.6 oz	of of	Valor (Gangster V) + FirstRate (Gangster FR)
OpTill	BASF	68WG	2 oz/A	=	1 oz Sharpen + 4 oz Pursuit
OpTill PRO	BASF	co-pack	2 oz/A 10 oz/A	of of	OpTill Outlook
Prefix	Syngenta	5.29L	2 pt/A	=	1 pt Dual Magnum + 1 pt Reflex
Pursuit Plus	BASF	2.9EC	2.5 pt/A	=	2.1 pt Prowl 3.3EC + 4 oz Pursuit
Sequence	Syngenta	5.25L	2.5 pt/A	=	0.98 pt Dual Magnum + 22 oz Touchdown Total
Spartan Charge	FMC	3.5SC	6 oz/A	=	1 oz Aim + 4.7 oz Spartan
Synchrony XP	DuPont	28.4WG	0.75 oz/A	=	0.64 oz Classic + 0.105 oz Harmony SG
Valor XLT	Valent	40.3WG	3 oz/A	=	1.76 oz Valor + 1.24 oz Classic
Verdict	BASF	5.57L	5 oz/A	=	1 oz Sharpen + 4.2 oz Outlook

<sup>a</sup> The typical use rates listed in this section are intended for use in planned preemergence followed by postemergence programs in glyphosate-resistant and LibertyLink soybean. Ratings only reflect early-season weed control, not full-season control. Higher use rates are recommended for many of these herbicides when growing conventional (non-GMO) soybean. See the Remarks and Limitations section for each herbicide.

<sup>b</sup> DO NOT apply more than 2.5 oz/A of Envive if you are located north of I-96 or have a composite pH between 7.1 and 7.6.

# TABLE 2D – Soybean Herbicides – Remarks and Limitations

## Soybean – Preplant Incorporated Only

Weed Controlled	Herbicide	Rate lb/A a.i.	Formulation/A	Remarks and Limitations
Annual grasses	trifluralin (many)	0.75	1.5 pt 4EC	<ul style="list-style-type: none"> <li>Refer to Table 2A for weed control and crop tolerance ratings.</li> <li>Incorporate in top 2 or 3 inches of soil within 24 hr. after application.</li> <li>On sandy and sandy loam soils low in organic matter, use 0.5 lb a.i./A (1 pt/A).</li> <li>Most effective control if application is made 10 days to 2 weeks ahead of planting and field is reworked just prior to planting.</li> <li>Sugar beets may be planted 12 months after application. Moldboard plowing to a depth of 12 inches is recommended to reduce the risk of crop injury.</li> <li>Refer to label and Table 12 for crop rotation restrictions.</li> </ul>
	ethalfuralin (Sonalan HFP)	0.9	2.5 pt 3EC	<ul style="list-style-type: none"> <li>Refer to Table 2A for weed control and crop tolerance ratings.</li> <li>Incorporate in top 2 or 3 inches of soil within 2 days of application.</li> <li>Sugar beets may be planted 8 months after application only if the <i>Sonalan</i> is applied at 3 pt/A or less and the treated soil is moldboard-plowed to a depth of 12 inches.</li> <li>Refer to label and Table 12 for crop rotation restrictions.</li> </ul>

## Soybean – Soil Applied – All Tillage Systems

Weed Controlled	Herbicide	Rate lb/A a.i.	Formulation/A	Remarks and Limitations
Annual grasses	s-metolachlor (Dual Magnum) OR (Dual II Magnum, Cinch)	1.27	1.33 pt 7.62EC OR 1.33 pt 7.64EC	<ul style="list-style-type: none"> <li><b>May be applied preplant, preplant incorporated or preemergence.</b></li> <li>Refer to Table 2A for weed control and crop tolerance ratings.</li> <li><i>Dual Magnum</i>, <i>Dual II Magnum</i> or <i>Cinch</i> rate should be increased to 1.66 pt/A for effective nutsedge control.</li> <li>Nutsedge control is improved when s-metolachlor is incorporated.</li> <li>May be applied early postemergence on soybeans from emergence through the third trifoliolate stage, but this application will not control emerged weeds. If applied postemergence, there is a 90 day preharvest interval and soybean should not be used for forage or hay.</li> <li>Refer to label and Table 12 for crop rotation restrictions.</li> </ul>
	alachlor (IntRRo) OR (Micro-Tech)	2	2 qt 4EC OR 2 qt 4ME	<ul style="list-style-type: none"> <li><b>May be applied preplant, preplant incorporated or preemergence.</b></li> <li>Refer to Table 2A for weed control and crop tolerance ratings.</li> <li>Alachlor rate should be increased to 2.5 qt/A for effective nutsedge control and 3 qt/A for effective nightshade control.</li> <li>Nutsedge control is improved when alachlor is incorporated.</li> <li>Refer to label and Table 12 for crop rotation restrictions.</li> </ul>

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## Soybean – Soil Applied – All Tillage Systems (continued)

Weed Controlled	Herbicide	Rate lb/A a.i.	Formulation/A	Remarks and Limitations
<i>(continued)</i>				
<b>Annual grasses</b>	dimethenamid-P <i>(Outlook)</i>	0.84	18 oz 6EC	<ul style="list-style-type: none"> <li>• <b>May be applied preplant, preplant incorporated or preemergence.</b></li> <li>• Refer to Table 2A for weed control and crop tolerance ratings.</li> <li>• <i>Outlook</i> rate should be increased to 21 oz/A for effective nutsedge control.</li> <li>• Nutsedge control is improved when <i>Outlook</i> is incorporated.</li> <li>• <i>Outlook</i> rates vary with soil texture and organic matter.</li> <li>• <i>Outlook</i> may be applied early postemergence on soybeans from the first to fifth trifoliolate, but this application will not control emerged weeds.</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>
	metolachlor <i>(Parallel)</i>	1.3	1.33 pt 7.8L	<ul style="list-style-type: none"> <li>• <b>May be applied preplant, preplant incorporated or preemergence.</b></li> <li>• <i>Parallel/Parallel PCS</i> is a mix of the R and S-isomers of metolachlor. Limited research has shown that 1.33 pt/A of these products provide similar activity to s-metolachlor products at 1.33 pt/A. However, <i>Parallel/Parallel PCS</i> may not provide the consistency, length of control or performance on more difficult to control weeds. Rates would need to be increased to 2.0 pt/A to provide the same amount of s-metolachlor (the more active isomer) in the 1.33 pt/A rate of <i>Dual Magnum/Dual II Magnum/Cinch</i> (s-metolachlor).</li> <li>• Refer to Table 2A for weed control and crop tolerance ratings.</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>
	OR <i>(Parallel PCS)</i>		OR 1.33 pt 8.0L	
pendimethalin <i>(Prowl)</i>	1	2.4 pt 3.3EC		
	OR <i>(Prowl H<sub>2</sub>O)</i>	0.95	OR 2.0 pt 3.8SC	<ul style="list-style-type: none"> <li>• <b>May be applied preplant, preplant incorporated or preemergence.</b></li> <li>• Refer to Table 2A for weed control and crop tolerance ratings.</li> <li>• Preemergence applications may be made up to 2 days after planting.</li> <li>• DO NOT apply after soybean cracking or emergence.</li> <li>• Applications close to or after planting may result in soybean injury, including stem swelling and brittleness. Early preplant or preplant incorporated applications reduce the risk of injury.</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>

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## Soybean – Soil Applied – All Tillage Systems (continued)

Weed Controlled	Herbicide	Rate lb/A a.i.	Formulation/A	Remarks and Limitations
<i>(continued)</i>				
<b>Annual grasses</b>	saflufenacil + dimethenamid-P <i>(Verdict)</i>	0.22	5 oz 5.57L	<ul style="list-style-type: none"> <li>• <b>May be applied preplant or preemergence.</b></li> <li>• Refer to Table 2A for weed control and crop tolerance ratings.</li> <li>• See Table 2C for individual product rate equivalents for the premix.</li> <li>• The 5 oz/A application rate of <i>Verdict</i> labeled for use in soybean will not provide much residual weed control. This product is best used as part of a burndown program in no-till soybean (see Table 2N).</li> <li>• For additional residual control and enhanced burndown activity, higher rates of <i>Verdict</i> can be applied. However, longer intervals are required between <i>Verdict</i> application and soybean planting; a minimum of 14 days for 7.5 oz/A and 30 days for 10 oz/A of <i>Verdict</i>.</li> <li>• DO NOT apply after soybean emergence or severe crop injury will occur.</li> <li>• DO NOT apply within 30 days of planting if an at-plant organophosphate or carbamate insecticide is planned or severe injury will occur.</li> <li>• DO NOT apply to coarse textured soils with less than 2% organic matter, unless soybean is planted 30 days after application.</li> <li>• DO NOT tank-mix or apply <i>Verdict</i> within 30 days of soil-applied applications of flumioxazin (<i>Valor</i>), sulfentrazone (<i>Authority</i> or <i>Spartan</i>), or fomesafen (<i>Reflex</i>, <i>Flexstar</i>) containing products. However, fomesafen (<i>Flexstar</i>, <i>Reflex</i>) and other POST PPO-inhibiting herbicides can be used 14 days after soybean emergence.</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>
	acetochlor <i>(Warrant)</i>	1.125	3 pt 3CS	<ul style="list-style-type: none"> <li>• <b>May be applied preplant or preemergence.</b></li> <li>• Refer to Table 2A for weed control and crop tolerance ratings.</li> <li>• Crop injury may result when soil conditions are cold and wet, or waterlogged.</li> <li>• <i>Warrant</i> can be applied postemergence up to R2 soybean; this application will not control emerged weeds.</li> <li>• DO NOT apply more than 4 qt/A of <i>Warrant</i> per season.</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>
<b>Annual broadleaves</b>	sulfentrazone + imazethapyr <i>(Authority Assist)</i>	0.156	5 oz 4L	<ul style="list-style-type: none"> <li>• <b>May be applied preplant, preplant incorporated or preemergence.</b></li> <li>• Refer to Table 2A for weed control and crop tolerance ratings.</li> <li>• See Table 2C for individual product rate equivalents for the premix.</li> <li>• Apply <i>Authority Assist</i> at 5 oz/A as part of a two-pass program or at 12 oz/A as a PRE only program.</li> <li>• DO NOT apply more than 3 days after planting — soybean injury may occur.</li> <li>• DO NOT apply to sands with less than 1% organic matter.</li> <li>• DO NOT apply to soils with pH of 7.5 or higher.</li> <li>• Soybean stunting may occur if excessive rainfall occurs after application but before soybean emergence, especially at higher rates.</li> <li>• Soybean varieties vary in their tolerance to sulfentrazone. Consult your local seed dealer for more information.</li> <li>• Tank mixtures or sequential herbicide programs are needed to increase the spectrum of weed control.</li> <li>• Forty months and a successful bioassay are required prior to planting sugar beets, cucumbers and tomatoes.</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>

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## Soybean – Soil Applied – All Tillage Systems (continued)

Weed Controlled	Herbicide	Rate lb/A a.i.	Formulation/A	Remarks and Limitations
<i>(continued)</i>				
<b>Annual broadleaves</b>	sulfentrazone + cloransulam-methyl <i>(Authority First/Sonic)</i>	0.13	3.2 oz 70DF	<ul style="list-style-type: none"> <li>• <b>May be applied preplant, preplant incorporated or preemergence.</b></li> <li>• Refer to Table 2A for weed control and crop tolerance ratings.</li> <li>• See Table 2C for individual product rate equivalents for the premix.</li> <li>• Apply <i>Authority First/Sonic</i> at 3.2 oz/A as part of a planned 2-pass program or at 6.4 oz/A as a PRE only program.</li> <li>• DO NOT apply after soybean emergence or death or severe injury may occur.</li> <li>• DO NOT apply to sands with less than 1% organic matter.</li> <li>• Soybean stunting may occur if excessive rainfall occurs after application but before soybean emergence.</li> <li>• Soybean varieties vary in their tolerance to sulfentrazone. Consult your local seed dealer for more information.</li> <li>• Tank mixtures or sequential herbicide programs can be used to improve the weed control spectrum.</li> <li>• Rotation to sugar beets, cucumbers, and tomatoes requires 30 months and a successful bioassay.</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>
	sulfentrazone + metribuzin <i>(Authority MTZ)</i>	0.34	12 oz 45DF	<ul style="list-style-type: none"> <li>• <b>May be applied preplant, preplant incorporated or preemergence.</b></li> <li>• Refer to Table 2A for weed control and crop tolerance ratings.</li> <li>• See Table 2C for individual product rate equivalents for the premix.</li> <li>• Apply <i>Authority MTZ</i> at 8 to 12 oz/A as part of a planned 2-pass program in glyphosate-resistant soybean or at 12 to 20 oz/A in conventional soybean.</li> <li>• DO NOT apply <i>Authority MTZ</i> at rates greater than 12 oz/A if the soil pH is greater than 7.5.</li> <li>• DO NOT apply after soybean emergence or death or severe injury may occur.</li> <li>• DO NOT apply to sands with less than 1% organic matter.</li> <li>• Soybean varieties vary in their tolerance to sulfentrazone and metribuzin. Consult your local seed dealer for more information.</li> <li>• Tank mixtures or sequential herbicide programs are needed to increase the spectrum of weed control.</li> <li>• Corn may be replanted 4 months after <i>Authority MTZ</i> if the application rate is less than 14 oz/A.</li> <li>• The rotation interval to sugarbeets is 24 months if a successful bioassay is completed.</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>

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## Soybean – Soil Applied – All Tillage Systems (continued)

Weed Controlled	Herbicide	Rate lb/A a.i.	Formulation/A	Remarks and Limitations
<i>(continued)</i>				
<b>Annual broadleaves</b>	sulfentrazone + chlorimuron-ethyl <i>(Authority XL)</i>	0.14	3.2 oz 70WG	<ul style="list-style-type: none"> <li>• <b>May be applied preplant, preplant incorporated or preemergence.</b></li> <li>• Refer to Table 2A for weed control and crop tolerance ratings.</li> <li>• See Table 2C for individual product rate equivalents for the premix.</li> <li>• Apply <i>Authority XL</i> at 3 to 5 oz/A as part of a 2-pass program.</li> <li>• DO NOT apply more than 3 days after planting as soybean injury may occur.</li> <li>• DO NOT apply to soils with pH greater than 7.6.</li> <li>• Soybean stunting may occur if excessive rainfall occurs after application but before soybean emergence, especially at higher rates.</li> <li>• Soybean varieties vary in their tolerance to sulfentrazone. Consult your local seed dealer for more information.</li> <li>• DO NOT tank-mix or apply within 14 days of an organophosphate insecticide.</li> <li>• Tank mixtures or sequential herbicide programs are needed to increase the spectrum of weed control.</li> <li>• Soil pH strongly affects crop rotation restrictions. If the <i>Authority XL</i> rate is 3.2 oz/A or less, corn may be planted 10 months after application on soils with a soil pH of 7.6 or less. Refer to label and Table 12 for additional crop rotation restrictions.</li> </ul>
	chlorimuron-ethyl + metribuzin <i>(Canopy)</i>	0.14	3 oz 75WG	<ul style="list-style-type: none"> <li>• <b>May be applied preplant, preplant incorporated or preemergence.</b></li> <li>• Refer to Table 2A for weed control and crop tolerance ratings.</li> <li>• See Table 2C for individual product rate equivalents for the premix.</li> <li>• <i>Canopy</i> use rates range between 2.25 and 4 oz/A.</li> <li>• DO NOT apply <i>Canopy</i> at rates greater than 2.25 oz/A to soils with a composite pH greater than 7.0; use of higher rates may result in unacceptable injury to this year's crop and the following crop.</li> <li>• DO NOT apply <i>Canopy</i> to soils with a composite pH exceeding 7.6.</li> <li>• Tank mixtures or sequential herbicide programs are needed to increase the spectrum of weed control.</li> <li>• Tomatoes may be transplanted 10 months after <i>Canopy</i> application.</li> <li>• Rotation intervals are dependent on soil pH and rate. Refer to label and Table 12 for crop rotation restrictions.</li> </ul>
	chlorimuron-ethyl + tribenuron methyl <i>(Canopy EX)</i>	0.04	2.2 oz 29.5WG	<ul style="list-style-type: none"> <li>• <b>Apply only 7 to 14 days prior to planting.</b></li> <li>• Refer to Table 2A for weed control and crop tolerance ratings.</li> <li>• See Table 2C for individual product rate equivalents for the premix.</li> <li>• <i>Canopy EX</i> applied between 1.1 to 2.2 oz/A at a minimum of 7 days prior to planting; use a minimum of 1.5 oz/A for residual control or suppression of labeled weeds.</li> <li>• DO NOT apply <i>Canopy EX</i> at rates greater than 1.1 oz/A to soils with a composite pH between 7.1 and 7.6.</li> <li>• DO NOT apply to soils with a composite pH exceeding 7.6.</li> <li>• Tank mixtures or sequential herbicide programs are needed to increase the spectrum of weed control.</li> <li>• <i>Canopy EX</i> will not control ALS-resistant weed species.</li> <li>• Tomatoes may be transplanted 10 months after <i>Canopy EX</i> application.</li> <li>• Rotation intervals are dependent on soil pH and rate. Refer to label and Table 12 for crop rotation restrictions.</li> </ul>

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## Soybean – Soil Applied – All Tillage Systems (continued)

Weed Controlled	Herbicide	Rate lb/A a.i.	Formulation/A	Remarks and Limitations
<i>(continued)</i>				
Annual broadleaves	flumioxazin + chlorimuron-ethyl + thifensulfuron methyl <i>(Envive)</i>	0.09	3.5 oz 41.3WG	<ul style="list-style-type: none"> <li>• <b>DO NOT apply preplant incorporated.</b></li> <li>• Refer to Table 2A for weed control and crop tolerance ratings.</li> <li>• See Table 2C for individual product rate equivalents for the premix.</li> <li>• <i>Envive</i> use rates range between 2.5 and 5.3 oz/A for portions of Michigan south of highway I-96. The maximum use rate of <i>Envive</i> for portions of the Michigan north of I-96 is 2.5 oz/A.</li> <li>• DO NOT apply <i>Envive</i> at rates greater than 2.5 oz/A to soils with a composite pH between 7.1 and 7.6.</li> <li>• DO NOT apply to soils with a composite pH exceeding 7.6.</li> <li>• DO NOT apply after soybean emergence or death or severe injury may occur.</li> <li>• DO NOT tank mix or apply <i>Envive</i> preemergence with metolachlor (<i>Dual</i>), alachlor (<i>IntRRo</i>) or dimethenamid (<i>Outlook</i>) products — crop injury will occur.</li> <li>• <i>Envive</i> can be tank mixed with pendimethalin (<i>Prowl</i>) for annual grass control.</li> <li>• Tomatoes may be transplanted 12 months after <i>Envive</i> application.</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>
	cloransulam-methyl <i>(FirstRate)</i>	0.031	0.6 oz 84WG	<ul style="list-style-type: none"> <li>• <b>May be applied preplant, preplant incorporated or preemergence.</b></li> <li>• Refer to Table 2A for weed control and crop tolerance ratings.</li> <li>• Excellent common and giant ragweed control.</li> <li>• Product rate depends on soil organic matter. If soil organic matter is greater than 3.0%, <i>FirstRate</i> can be applied at 0.75 oz/A.</li> <li>• The cumulative application rate may not exceed 1.05 oz/A per season.</li> <li>• Tank mixtures or prepackaged herbicide mixes are needed for eastern black nightshade and annual grass control.</li> <li>• <i>FirstRate</i> will not control ALS-resistant weed species.</li> <li>• Thirty months and a successful bioassay are required prior to planting sugar beets, cucumbers, and tomatoes.</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>
	flumioxazin + cloransulam-methyl <i>(Gangster)</i>	0.095 0.031	3.0 oz 51WG 0.6 oz 84WG	<ul style="list-style-type: none"> <li>• <b>DO NOT apply preplant incorporated.</b></li> <li>• Refer to Table 2A for weed control and crop tolerance ratings.</li> <li>• Co-pack of <i>Gangster V (Valor)</i> + <i>Gangster FR (FirstRate)</i> (Table 2C).</li> <li>• Apply within 3 days of planting. DO NOT apply after soybean cracking or emergence — severe injury or stand reduction may occur.</li> <li>• Crop injury may occur when <i>Gangster</i> is applied to poorly drained soils and/or under cool, wet conditions.</li> <li>• DO NOT tank mix or apply with metolachlor (<i>Dual</i>), alachlor (<i>IntRRo</i>), or dimethenamid (<i>Outlook</i>) products — crop injury will occur.</li> <li>• <i>Gangster</i> can be tank mixed with pendimethalin (<i>Prowl</i>) for annual grass control.</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>

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## Soybean – Soil Applied – All Tillage Systems (continued)

Weed Controlled	Herbicide	Rate lb/A a.i.	Formulation/A	Remarks and Limitations
<i>(continued)</i>				
<b>Annual broadleaves</b>	linuron (Lorox DF) OR (Linex)	0.75	1.5 lb 50DF OR 1.5 pt 4L	<ul style="list-style-type: none"> <li>• <b>DO NOT apply preplant incorporated.</b></li> <li>• Refer to Table 2A for weed control and crop tolerance ratings</li> <li>• If heavy rainfall occurs soon after application, injury to the crop may result.</li> <li>• DO NOT use on coarse-textured sandy or sandy loam soils or on soils with less than 1% organic matter.</li> <li>• Plant soybeans at least 1.75 inches deep.</li> <li>• Tank mixtures or sequential herbicide programs are needed to increase the spectrum of weed control.</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>
	safinufenacil + imazethapyr (OpTill)	0.085	2 oz 68WG	<ul style="list-style-type: none"> <li>• May be applied preplant or preemergence.</li> <li>• Refer to Table 2A for weed control and crop tolerance ratings.</li> <li>• See Table 2C for individual product rate equivalents for the premix.</li> <li>• DO NOT apply after soybean emergence or severe crop injury will occur.</li> <li>• Tank mixtures with organophosphate or carbamate insecticides can cause temporary injury.</li> <li>• DO NOT apply to coarse-textured soils with less than 2% organic matter unless soybean is planted 1 month after application.</li> <li>• DO NOT tank mix or apply OpTill within 30 days of products containing flumioxazin (Valor), sulfentrazone (Authority or Spartan) or fomesafen (Reflex).</li> <li>• DO NOT tank mix with products containing clomazone (Command).</li> <li>• Tank mixtures or sequential herbicide programs are needed to increase the spectrum of weed control.</li> <li>• Applying a full rate of products containing chlorimuron, chlorsulfuron, flumetsulam, imazaquin or imazethapyr the same year as OpTill may increase the risk of injury to sensitive follow crops.</li> <li>• Forty months and a successful bioassay are required before planting sugar beets, cucumbers and tomatoes.</li> <li>• Refer to label and Table 12 for additional crop rotation restrictions.</li> </ul>
	imazethapyr (Pursuit)	0.063	4 oz 2L	<ul style="list-style-type: none"> <li>• <b>May be applied preplant, preplant incorporated or preemergence.</b></li> <li>• Refer to Table 2A for weed control and crop tolerance ratings.</li> <li>• Common ragweed may only be suppressed; tank mixtures or a sequential herbicide program is needed to improve ragweed control.</li> <li>• Pursuit will not control ALS-resistant weed species.</li> <li>• Pursuit is very persistent and can limit rotational crops.</li> <li>• Forty months and a successful bioassay are required prior to planting sugar beets, cucumbers, and tomatoes.</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>
flumetsulam (Python)	0.057	1.14 oz 80WG	<ul style="list-style-type: none"> <li>• <b>May be applied preplant, preplant incorporated or preemergence.</b></li> <li>• Refer to Table 2A for weed control and crop tolerance ratings.</li> <li>• Adjust application rate according to soil type and organic matter.</li> <li>• DO NOT apply to areas where soil pH is greater than 7.8 or to soils with greater than 5% organic matter and pH less than 5.9.</li> <li>• Tank mixtures or sequential herbicide programs are needed to improve control of ragweed, cocklebur and jimsonweed.</li> <li>• Python will not control ALS-resistant weed species.</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>	

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## Soybean – Soil Applied – All Tillage Systems (continued)

Weed Controlled	Herbicide	Rate lb/A a.i.	Formulation/A	Remarks and Limitations
<i>(continued)</i>				
<b>Annual broadleaves</b>	imazaquin <i>(Scepter)</i>	0.125	2.8 oz 70WG	<ul style="list-style-type: none"> <li>• <b>May be applied preplant, preplant incorporated or preemergence.</b></li> <li>• Refer to Table 2A for weed control and crop tolerance ratings.</li> <li>• DO NOT plant corn following <i>Scepter</i> application except in the southern two tiers of counties in Michigan and if 15 inches of rainfall occurs.</li> <li>• Rainfall is critical for rotational crops (see label); the recropping count should start at soybean planting. Refer to label and Table 12 for crop rotation restrictions.</li> <li>• Soybean stunting (shortening of internodes) may occur on sandy soils.</li> <li>• Common ragweed control is best when <i>Scepter</i> is applied preemergence. However, eastern black nightshade and velvetleaf control are better when <i>Scepter</i> is preplant incorporated.</li> <li>• <i>Scepter</i> will not control ALS-resistant weed species.</li> <li>• Tank mixtures or sequential herbicide programs can be used to improve the weed control spectrum.</li> </ul>
	metribuzin <i>(Sencor)</i>	0.375	5.33 oz 75DF	<ul style="list-style-type: none"> <li>• <b>May be applied preplant, preplant incorporated or preemergence.</b></li> <li>• Refer to Table 2A for weed control and crop tolerance ratings.</li> <li>• Product rates depend on soil texture, organic matter and pH.</li> <li>• Increasing the rate of <i>Sencor</i> to 8 oz/A will improve control of certain species such as lambsquarters.</li> <li>• DO NOT use if soil pH is greater than 7.5, or if soil organic matter is less than 0.5%, or on coarse-textured soils with less than 2.0% organic matter.</li> <li>• Some soybean varieties have low tolerance to metribuzin and should not be planted. Consult product labels, MSUE or agribusiness for a listing of varieties.</li> <li>• Tank mixtures or prepackaged herbicide mixes are needed for eastern black nightshade and annual grass control.</li> <li>• <i>Sencor</i> will not control triazine-resistant weed species.</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>
	sulfentrazone <i>(Spartan)</i>	0.188	6 oz 4L	<ul style="list-style-type: none"> <li>• <b>May be applied preplant, preplant incorporated or preemergence.</b></li> <li>• Refer to Table 2A for weed control and crop tolerance ratings.</li> <li>• Apply within 3 days of planting. DO NOT apply after soybean cracking or emergence — severe injury or death may occur.</li> <li>• Soybean stunting may occur if excessive rainfall occurs after application but before soybeans emerge.</li> <li>• Some soybean varieties are sensitive to sulfentrazone. Consult your local seed dealer for information.</li> <li>• Reduce <i>Spartan</i> rate to 4.5 oz/A if a glyphosate postemergence application is planned in glyphosate-resistant soybeans.</li> <li>• Tank mixtures or sequential herbicide programs can be used to improve the weed control spectrum.</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>

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## Soybean – Soil Applied – All Tillage Systems (continued)

Weed Controlled	Herbicide	Rate lb/A a.i.	Formulation/A	Remarks and Limitations
<i>(continued)</i>				
<b>Annual broadleaves</b>	carfentrazone + sulfentrazone <i>(Spartan Charge)</i>	0.164	6 oz 3.5SC	<ul style="list-style-type: none"> <li>• <b>May be applied preplant, preplant incorporated or preemergence.</b></li> <li>• Refer to Table 2A for weed control and crop tolerance ratings.</li> <li>• See Table 2C for individual product rate equivalents for the premix.</li> <li>• Apply <i>Spartan Charge</i> at 6 oz/A as part of a two-pass program in glyphosate-resistant soybean or at 8 oz/A in conventional soybean.</li> <li>• This product is best used as part of burndown program in no-till soybean (see Table 2N).</li> <li>• DO NOT apply after soybean cracking or emergence – severe injury or death may occur.</li> <li>• DO NOT apply to soils with pH of 7.5 or greater or on sands with less than 1% organic matter.</li> <li>• Soybean stunting may occur if excessive rainfall occurs after application but before soybean emergence.</li> <li>• Some soybean varieties are sensitive to sulfentrazone. Consult your local seed dealer for information.</li> <li>• Tank mixtures or sequential herbicide programs can be used to improve the weed control spectrum.</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>
	chlorimuron-ethyl + thifensulfuron methyl <i>(Synchrony XP)</i>	0.027	1.5 oz 28.4WG	<ul style="list-style-type: none"> <li>• <b>May be applied preplant, preplant incorporated or preemergence.</b></li> <li>• Refer to Table 2A for weed control and crop tolerance ratings.</li> <li>• See Table 2C for individual product rate equivalents for the premix.</li> <li>• <i>Synchrony XP</i> use rates range between 1 and 3 oz/A; use a minimum of 1.25 oz/A for residual control or suppression of labeled weeds.</li> <li>• DO NOT apply <i>Synchrony XP</i> at rates greater than 1 oz/A to soils with a composite pH between 7.1 and 7.6; use of higher rates may result in unacceptable injury to the following crop.</li> <li>• DO NOT apply to soils with a composite pH exceeding 7.6.</li> <li>• Tank mixtures or sequential herbicide programs are needed to increase the spectrum of weed control.</li> <li>• <i>Synchrony XP</i> will not control ALS-resistant weed species.</li> <li>• Rotation intervals are dependent on soil pH and rate. Refer to label and Table 12 for crop rotation restrictions.</li> </ul>

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## Soybean – Soil Applied – All Tillage Systems (continued)

Weed Controlled	Herbicide	Rate lb/A a.i.	Formulation/A	Remarks and Limitations
<i>(continued)</i>				
<b>Annual broadleaves</b>	flumioxazin <i>(Valor)</i>	0.06	2 oz 51WG	<ul style="list-style-type: none"> <li>• <b>DO NOT apply preplant incorporated.</b></li> <li>• Refer to Table 2A for weed control and crop tolerance ratings.</li> <li>• Apply <i>Valor</i> at 2 oz/A as part of a planned 2-pass program in glyphosate-resistant soybean or at 2.5 to 3.0 oz/A in conventional soybean.</li> <li>• Apply within 3 days of planting. DO NOT apply after soybean cracking or emergence — severe injury or death may occur.</li> <li>• Crop injury may occur when <i>Valor</i> is applied to poorly drained soils and/or under cool, wet conditions.</li> <li>• Soils with high organic matter and/or high clay content may require 3 oz/A.</li> <li>• DO NOT tank mix or apply with metolachlor (<i>Dual</i>), alachlor (<i>IntRRo</i>) or dimethenamid (<i>Outlook</i>) products — crop injury will occur.</li> <li>• <i>Valor</i> can be tank mixed with pendimethalin (<i>Prowl</i>) for annual grass control.</li> <li>• Crop rotation restrictions are dependent on rainfall, <i>Valor</i> use rate and tillage.</li> <li>• Rotation restrictions for 2 oz or less of <i>Valor</i> are 1 month with 1 inch of rain for corn and winter wheat. Dry bean and barley may be planted after 3 months, and alfalfa, oats and sugar beets may be planted after 4 months if the ground is tilled prior to planting or 8 months if no tillage is performed.</li> <li>• Rotation restrictions for the higher use rates (3 oz or less) can be found in Table 12.</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>
	flumioxazin + chlorimuron-ethyl <i>(Valor XLT)</i>	0.075	3 oz 40.3WG	<ul style="list-style-type: none"> <li>• <b>DO NOT apply preplant incorporated.</b></li> <li>• Refer to Table 2A for weed control and crop tolerance ratings.</li> <li>• See Table 2C for individual product rate equivalents for the premix.</li> <li>• <i>Valor XLT</i> use rates range between 3.0 and 5.0 oz/A.</li> <li>• DO NOT apply <i>Valor XLT</i> at rates greater than 2.5 oz/A to soils with a composite pH greater than 6.8. Weeds will only be suppressed at this rate.</li> <li>• DO NOT apply to soils with a composite pH exceeding 7.6.</li> <li>• DO NOT apply after soybean emergence or death or severe injury may occur.</li> <li>• DO NOT tank mix or apply with metolachlor (<i>Dual</i>), alachlor (<i>IntRRo</i>) or dimethenamid (<i>Outlook</i>) products — crop injury will occur.</li> <li>• <i>Valor XLT</i> can be tank mixed with pendimethalin (<i>Prowl</i>) for annual grass control.</li> <li>• Tomatoes may be transplanted 12 months after <i>Valor XLT</i> application.</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>

## Soybean – Soil Applied – All Tillage Systems (continued)

Weed Controlled	Herbicide	Rate lb/A a.i.	Formulation/A	Remarks and Limitations
<b>Annual grasses</b> <b>Annual broadleaves</b>	s-metolachlor + metribuzin <i>(Boundary 6.5EC)</i>	1.22	1.5 pt 6.5EC	<ul style="list-style-type: none"> <li>• <b>May be applied preplant, preplant incorporated or preemergence.</b></li> <li>• Refer to Table 2A for weed control and crop tolerance ratings.</li> <li>• See Table 2C for individual product rate equivalents for the premix.</li> <li>• <i>Boundary 6.5EC</i> may be applied at broadcast use rates of 1.25-2.4 pt/A.</li> <li>• Product rates depend on soil texture, organic matter, pH, and desired length of control.</li> <li>• Some soybean varieties have low tolerance to metribuzin and should not be planted. Consult product labels, MSUE, or agribusiness for a listing of varieties.</li> <li>• DO NOT use on sands or soils with less than 0.5% organic matter. DO NOT use on loamy sand soils with less than 2% organic matter.</li> <li>• On soils with pH above 7.0, use the 1.5 pt/A rate only of <i>Boundary 6.5EC</i>.</li> <li>• <i>Boundary</i> will provide 3-6 weeks of weed control. Increase application rate, use tank mixtures or use in a sequential herbicide program to increase the length of control.</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>
	clomazone <i>(Command 3ME)</i>	0.75	2 pt 3ME	<ul style="list-style-type: none"> <li>• <b>DO NOT apply preplant incorporated.</b></li> <li>• Refer to Table 2A for weed control and crop tolerance ratings.</li> <li>• Poor weed control will result if <i>Command 3ME</i> is incorporated.</li> <li>• Several ornamental, horticultural and agronomic crops are sensitive to <i>Command</i> spray drift and volatilization.</li> <li>• Precautions should be taken to avoid spray drift.</li> <li>• DO NOT apply <i>Command</i> within 1,200 ft. of housing developments, commercial fruit and vegetable production, and greenhouses.</li> <li>• DO NOT apply in winds above 10 mph or at pressures above 30 PSI.</li> <li>• <b>Special precaution:</b> A special sprayer clean-out procedure is required for <i>Command 3ME</i>. See label for specific instructions.</li> <li>• Tomatoes may be transplanted 9 months after <i>Command</i> application, but the rotation restriction for tomatoes grown from seed is 12 months.</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>

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## Soybean – Soil Applied – All Tillage Systems (continued)

Weed Controlled	Herbicide	Rate lb/A a.i.	Formulation/A	Remarks and Limitations
(continued)				
<b>Annual grasses</b> <b>Annual broadleaves</b>	saflufenacil + imazethapyr + dimethenamid-P <i>(OpTill PRO)</i>	0.085 + 0.47	2 oz 68WG + 10 oz 6EC	<ul style="list-style-type: none"> <li>• <b>May be applied preplant or preemergence.</b></li> <li>• Refer to Table 2A for weed control and crop tolerance ratings.</li> <li>• See Table 2C for individual product rate equivalents for the premix.</li> <li>• DO NOT apply after soybean emergence or severe crop injury will occur.</li> <li>• The lower use rate of <i>Outlook</i> (dimethenamid-P) in <i>OpTill PRO</i> will likely only provide early-season annual grass control.</li> <li>• Tank-mixtures with organophosphate or carbamate insecticides can cause temporary injury.</li> <li>• DO NOT apply to coarse textured soils with less than 2% organic matter, unless soybean is planted 1 month after application.</li> <li>• DO NOT apply more than 21 oz/A of the liquid component (dimethenamid-P) of <i>OpTill PRO</i> per season.</li> <li>• DO NOT tank-mix or apply <i>OpTill PRO</i> within 30 days of flumioxazin (<i>Valor</i>), sulfentrazone (<i>Authority</i> or <i>Spartan</i>), or fomesafen (<i>Reflex</i>) containing products.</li> <li>• DO NOT tank-mix with clomazone (<i>Command</i>) containing products.</li> <li>• Tank mixtures or sequential herbicide programs are needed to increase the spectrum of weed control.</li> <li>• One month is required before planting soybean if <i>OpTill PRO</i> is applied to coarse textured soils with less than 2% organic matter.</li> <li>• Applying a full rate of products containing chlorimuron, chlorsulam, flumetsulam, imazaquin, or imazethapyr the same year as <i>OpTill PRO</i> may increase the risk of injury to sensitive follow crops.</li> <li>• Forty months and a successful bioassay are required prior to planting sugar beets, cucumbers, and tomatoes.</li> <li>• Refer to label and Table 12 for additional crop rotation restrictions.</li> </ul>
	s-metolachlor + fomesafen <i>(Prefix)</i>	1.32	2 pt 5.29L	<ul style="list-style-type: none"> <li>• <b>May be applied preplant, preplant incorporated or preemergence.</b></li> <li>• Refer to Table 2A for weed control and crop tolerance ratings.</li> <li>• See Table 2C for individual product rate equivalents for the premix.</li> <li>• <i>Prefix</i> will provide 4-5 weeks of control and/or suppression of both broadleaf and grass weeds.</li> <li>• Sequential herbicide programs are needed to increase the spectrum of weed control and for season-long control.</li> <li>• <i>Prefix</i> may be applied early postemergence on soybeans from cracking through the third trifoliolate.</li> <li>• Include a non-ionic surfactant at 0.25% v/v for postemergence applications.</li> <li>• Postemergence applications may cause temporary leaf bronzing and crinkling.</li> <li>• Refer to <i>Reflex</i> ratings in Table 2B for weeds controlled by postemergence applications of <i>Prefix</i>.</li> <li>• Refer to Table 12 for crop rotation restrictions.</li> </ul>

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## Soybean – Soil Applied – All Tillage Systems (continued)

Weed Controlled	Herbicide	Rate lb/A a.i.	Formulation/A	Remarks and Limitations
(continued)				
<b>Annual grasses</b> <b>Annual broadleaves</b>	imazethapyr + pendimethalin <i>(Pursuit Plus)</i>	0.9	2.5 pt 2.9EC	<ul style="list-style-type: none"> <li>• <b>May be applied preplant, preplant incorporated or preemergence.</b></li> <li>• Refer to Table 2A for weed control and crop tolerance ratings.</li> <li>• See Table 2C for individual product rate equivalents for the premix.</li> <li>• Common ragweed may only be suppressed.</li> <li>• Preemergence applications may be made up to 2 days after planting.</li> <li>• DO NOT apply after soybean cracking or emergence.</li> <li>• Applications close to or after planting may result in soybean injury, including stem swelling and brittleness. Early preplant or preplant incorporated applications reduce the risk of injury.</li> <li>• Forty months and a successful bioassay are required prior to planting sugar beets, cucumbers, and tomatoes.</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>



## Soybean – Postemergence Grass and Volunteer Corn Control

Weed Controlled	Herbicide	Rate lb/A a.i.	Formulation/A	Remarks and Limitations
<b>Grasses</b> <b>Volunteer corn</b>	quizalofop-P-ethyl ( <i>Assure II/Targa</i> )	0.044	7 oz 0.88L	<ul style="list-style-type: none"> <li>• Refer to Table 2B for weed control and crop tolerance ratings.</li> <li>• Refer to Table 2K for application rates and maximum weed sizes.</li> <li>• Apply with crop oil concentrate (1% v/v) for best results.</li> <li>• A non-ionic surfactant (0.25% v/v) may be used to replace crop oil concentrate with certain tank mixes.</li> <li>• Allow 80 days between application and soybean harvest.</li> <li>• For perennial grass control, higher rates and sequential applications may be needed (Table 2K).</li> <li>• Tank mix 5 oz/A of <i>Assure II/Targa</i> with glyphosate products (Table 10) to control glyphosate-resistant corn in glyphosate-resistant soybean. Include ammonium sulfate (17 lb/100 gal) and a minimum of 0.125% v/v of non-ionic surfactant with glyphosate products with built-in adjuvant systems.</li> <li>• Refer to Table 2L and the label for rates and additives for tank mixes with various postemergence broadleaf herbicides.</li> <li>• Tank mixes with <i>Pursuit</i> and <i>Raptor</i> are not recommended — grass antagonism will occur.</li> <li>• Grass antagonism can occur with tank mixes of postemergence broadleaf herbicides. Increasing the rate by 2 oz/A will improve grass control in certain tank mixes. Sequential applications are more effective. Apply the postemergence grass herbicide 1 day prior to the broadleaf herbicide(s) — if the broadleaf herbicide is applied first, wait 7 days or until the grasses are actively growing before applying the grass herbicide.</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>
	+		+	
	crop oil concentrate		1%	
	fluazifop-P-butyl ( <i>Fusilade DX</i> )	0.188	12 oz 2L	<ul style="list-style-type: none"> <li>• Refer to Table 2B for weed control and crop tolerance ratings.</li> <li>• Refer to Table 2K for application rates and maximum weed sizes.</li> <li>• Tank mix 4-6 oz/A of <i>Fusilade DX</i> with glyphosate products (Table 10) to control glyphosate-resistant corn in glyphosate-resistant soybean. Include ammonium sulfate (17 lb/100 gal). DO NOT add crop oil concentrate.</li> <li>• Apply before soybeans bloom.</li> <li>• Two applications 7-14 days apart are usually needed for control of perennial grasses.</li> <li>• Refer to Table 2L and the label for rates and additives for tank mixes with various postemergence broadleaf herbicides.</li> <li>• Tank mixes with <i>Pursuit</i> and <i>Raptor</i> are not recommended — grass antagonism will occur.</li> <li>• Grass antagonism can occur with tank mixes with postemergence broadleaf herbicides. Sequential applications are more effective. Apply the postemergence grass herbicide 3 days prior to the broadleaf herbicide(s) — if the broadleaf herbicide is applied first, wait 7 days or until the grasses are actively growing before applying the grass herbicide.</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>
	+		+	
	crop oil concentrate		0.5-1%	

(Continued on next page)

## Soybean – Postemergence Grass and Volunteer Corn Control (continued)

Weed Controlled	Herbicide	Rate lb/A a.i.	Formulation/A	Remarks and Limitations
<i>(continued)</i>				
<b>Grasses</b> <b>Volunteer corn</b>	fluazifop-P-butyl + fenoxaprop <i>(Fusion)</i> + crop oil concentrate	0.166	8 oz 2.56EC  + 0.5–1%	<ul style="list-style-type: none"> <li>• Refer to Table 2B for weed control and crop tolerance ratings.</li> <li>• See Table 2C for individual product rate equivalents for the premix.</li> <li>• Refer to Table 2K for application rates and maximum weed sizes.</li> <li>• A non-ionic surfactant (0.25-0.5% v/v) may be used to replace crop oil concentrate with certain tank mixes; 28% liquid nitrogen or ammonium sulfate may also be added to improve control.</li> <li>• Apply before soybeans bloom.</li> <li>• For perennial grass control, two applications 14-21 days apart may be needed, depending on target weed (Table 2K).</li> <li>• Tank mix 4-6 oz/A of <i>Fusion</i> with glyphosate products (Table 10) to control glyphosate-resistant corn in glyphosate-resistant soybean. Include ammonium sulfate (17 lb/100 gal). DO NOT add crop oil concentrate.</li> <li>• Refer to Table 2L and the label for rates and additives for tank mixes with various postemergence broadleaf herbicides.</li> <li>• Tank mixes with <i>Pursuit</i> and <i>Raptor</i> are not recommended — grass antagonism will occur.</li> <li>• Grass antagonism can occur with tank mixes of postemergence broadleaf herbicides. Sequential applications are more effective. Apply the postemergence grass herbicide 1 day prior to the broadleaf herbicide(s) — if the broadleaf herbicide is applied first, wait 7 days or until the grasses are actively growing before applying the grass herbicide.</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>
	sethoxydim <i>(Poast)</i> OR <i>(Poast Plus)</i> + crop oil concentrate + ammonium sulfate	0.19	16 oz 1.5SC OR 24 oz 1SC + 1 qt + 2.5 lb	<ul style="list-style-type: none"> <li>• Refer to Table 2B for weed control and crop tolerance ratings.</li> <li>• Refer to Table 2K for application rates and maximum weed sizes.</li> <li>• Allow 75 days between application and soybean harvest.</li> <li>• <i>Poast</i> and <i>Poast Plus</i> are not as effective for control of volunteer corn or perennial grasses as the other post-emergence grass herbicides.</li> <li>• Two applications 7-14 days apart are usually needed for control of perennial grasses.</li> <li>• Refer to Table 2L and the label for rates and additives for tank mixes with various postemergence broadleaf herbicides.</li> <li>• Tank mixes with <i>Pursuit</i> and <i>Raptor</i> are not recommended — grass antagonism will occur.</li> <li>• Grass antagonism can occur with tank mixes with post-emergence broadleaf herbicides. Sequential applications are more effective. Apply the postemergence grass herbicide 1 day prior to the broadleaf herbicide(s) — if the broadleaf herbicide is applied first, wait 7 days or until the grasses are actively growing before applying the grass herbicide.</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>

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## Soybean — Postemergence Grass and Volunteer Corn Control (continued)

Weed Controlled	Herbicide	Rate lb/A a.i.	Formulation/A	Remarks and Limitations
<i>(continued)</i>				
<b>Grasses Volunteer corn</b>	clethodim <i>(Select/Arrow)</i>	0.094	6 oz 2EC	<ul style="list-style-type: none"> <li>• Refer to Table 2B for weed control and crop tolerance ratings.</li> <li>• Refer to Table 2K for application rates and maximum weed sizes.</li> <li>• Use only crop oil concentrate with applications of <i>Select/Arrow</i>.</li> </ul>
	+ crop oil concentrate OR <i>(Select Max)</i>	0.068	+ 1% OR 9 oz 0.97EC	
	+ surfactant		+ 0.25%	<ul style="list-style-type: none"> <li>• Allow 60 days between application and soybean harvest.</li> <li>• For perennial grass control, higher rates and sequential applications may be needed (Table 2K).</li> <li>• Tank mix 4 oz/A of <i>Select/Arrow</i> or 6 oz/A of <i>SelectMax</i> with glyphosate products (Table 10) to control glyphosate-resistant corn in glyphosate-resistant soybean. Include ammonium sulfate (17 lb/100 gal).</li> <li>• Refer to Table 2L and the label for rates and additives for tank mixes with various postemergence broadleaf herbicides.</li> <li>• Tank mixes with <i>Pursuit</i> and <i>Raptor</i> are not recommended — grass antagonism will occur.</li> <li>• Grass antagonism can occur with tank mixes of postemergence broadleaf herbicides. Sequential applications are more effective. Apply the postemergence grass herbicide 1 day prior to the broadleaf herbicide(s) — if the broadleaf herbicide is applied first, wait 7 days or until the grasses are actively growing before applying the grass herbicide</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>
	+ ammonium sulfate		+ 2.5 lb	

## Soybean — Postemergence for Broadleaf Weeds

Weed Controlled	Herbicide	Rate lb/A a.i.	Formulation/A	Remarks and Limitations
<b>Annual broadleaves</b>	bentazon <i>(Basagran)</i>	1	2 pt 4L	<ul style="list-style-type: none"> <li>• Refer to Table 2B for weed control and crop tolerance ratings.</li> <li>• Most effective on small weeds. Rate can be reduced to 1.5 pt/A if weeds are smaller than maximum growth stage (Table 2H).</li> <li>• <i>Basagran</i> at 3 pt/A can suppress cocklebur up to 24 inches and velvetleaf up to 12 inches.</li> <li>• Use a minimum of 20 gal. water/A for adequate coverage.</li> <li>• DO NOT apply if soybeans are under stress from herbicide injury, cold or dry weather, or hail damage.</li> <li>• For improved velvetleaf control, 28% liquid nitrogen (2-4 qt/A) or ammonium sulfate (2.5 lb/A) can be used INSTEAD OF crop oil concentrate. However, if common ragweed and common lambsquarters are present, a crop oil concentrate must also be included (Table 2I).</li> <li>• Split applications of <i>Basagran</i> (1.5 pt + 1.5 pt) plus crop oil concentrate (1 qt + 1 qt) can be used to control yellow nutsedge and Canada thistle. Applications should be made approximately 10 days apart. For improved Canada thistle control, increase <i>Basagran</i> rate to 1 qt for each application.</li> <li>• Allow 30 days between <i>Basagran</i> application and soybean harvest.</li> <li>• <i>Basagran</i> can be tank mixed with many postemergence soybean herbicides for additional broadleaf weed control (Table 2J).</li> <li>• <i>Basagran</i> can be tank mixed for postemergence grass control (Table 2L).</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>
	+ crop oil concentrate		+ 1 qt	
	+OR		+OR	
	ammonium sulfate		2.5 lb	

*(Continued on next page)*

## Soybean – Postemergence for Broadleaf Weeds (continued)

Weed Controlled	Herbicide	Rate lb/A a.i.	Formulation/A	Remarks and Limitations
<i>(continued)</i>				
<b>Annual broadleaves</b>	fluthiacet-methyl <i>(Cadet)</i>	0.0065	0.9 oz 0.91EC	<ul style="list-style-type: none"> <li>• Refer to Table 2B for weed control and crop tolerance ratings.</li> <li>• Refer to Table 2H for maximum weed sizes.</li> <li>• 28% liquid nitrogen (1-2 qt/A) or ammonium sulfate (2-2.5 lb/A) may be added to crop oil concentrate (1% v/v) to enhance weed control (Table 2I).</li> <li>• <i>Cadet</i> can be applied to soybean only between the first trifoliolate and full flowering.</li> <li>• <i>Cadet</i> can be applied at 0.5 oz/A when tank mixed with other herbicides for additional broadleaf weed control.</li> <li>• DO NOT apply more than 1.25 oz/A of <i>Cadet</i> per cropping season.</li> <li>• Allow 60 days between <i>Cadet</i> application and soybean harvest.</li> <li>• <i>Cadet</i> can be tank mixed for postemergence grass control (Table 2L).</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>
	+		+	
	crop oil concentrate		1%	
	chlorimuron-ethyl <i>(Classic)</i>	0.0106	0.67 oz 25WG	<ul style="list-style-type: none"> <li>• Refer to Table 2B for weed control and crop tolerance ratings.</li> <li>• Labeled rates of 0.5-0.75 oz/A are most effective on small weeds (Table 2H).</li> <li>• For optimal rotational flexibility on soils with pH greater than 7.0, apply no more than 1 oz/A of <i>Classic</i> per season. On soils with a pH of 7.0 or less, a maximum of 1.5 oz/A of <i>Classic</i> can be applied during the growing season. When the rate of <i>Classic</i> is 0.33 oz/A or less, shorter rotation restrictions for alfalfa, cucumber, and watermelon are available.</li> <li>• <i>Classic</i> can be applied at 0.25 or 0.33 oz/A when tank mixed with <i>Harmony</i> or glyphosate.</li> <li>• Apply after the first trifoliolate leaf of soybean has fully expanded.</li> <li>• Apply with crop oil concentrate (1% v/v) or non-ionic surfactant (0.125-0.25% v/v) plus 28% liquid nitrogen (2-4 qt/A) or ammonium sulfate (2-4 lb/A).</li> <li>• Crop oil concentrate provides better control under hot conditions. However, increased injury may result (Table 2I).</li> <li>• DO NOT apply to soybeans or weeds under stress from herbicide injury or cold or dry weather — crop injury or poor weed control may result. Delay application until the stress passes.</li> <li>• 0.75 oz/A is required for Jerusalem artichoke control.</li> <li>• Allow 60 days between <i>Classic</i> application and soybean harvest.</li> <li>• <i>Classic</i> will not control ALS-resistant weed species.</li> <li>• <i>Classic</i> can be tank mixed with many postemergence soybean herbicides for additional broadleaf weed control (Table 2J).</li> <li>• <i>Classic</i> can be tank mixed for postemergence grass control (Table 2L).</li> <li>• Soil pH and <i>Classic</i> use rates are critical for rotational crops (see label).</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>
	+		+	
	crop oil concentrate		1%	
	+		+	
	ammonium sulfate		2-4 lb	

*(Continued on next page)*

## Soybean – Postemergence for Broadleaf Weeds (continued)

Weed Controlled	Herbicide	Rate lb/A a.i.	Formulation/A	Remarks and Limitations
<i>(continued)</i>				
<b>Annual broadleaves</b>	lactofen (Cobra)	0.125	8 oz 2EC	<ul style="list-style-type: none"> <li>• Refer to Table 2B for weed control and crop tolerance ratings.</li> <li>• <i>Cobra</i> can be applied at 6-10 oz/A when tank mixed with other herbicides or when applied alone. Refer to Table 2H for maximum weed sizes.</li> <li>• DO NOT apply to soybeans in the cotyledon stage.</li> <li>• DO NOT apply to soybeans or weeds under stress from herbicide injury, cold or dry weather, or hail damage — crop injury or poor weed control may result. Delay application until the stress passes.</li> <li>• <i>Cobra</i> causes more soybean leaf burn than other post-emergence herbicides.</li> <li>• For best results, apply with crop oil concentrate (0.25-1.0% v/v), depending on environmental conditions (see label). Surfactant (0.25% v/v), may be substituted for crop oil concentrate when weeds are actively growing under high temperature, high humidity and high soil moisture conditions (Table 2I).</li> <li>• Apply at a minimum of 20 gal. water/A at 40 psi.</li> <li>• Allow 45 days between <i>Cobra</i> application and soybean harvest.</li> <li>• <i>Cobra</i> can be tank mixed with many postemergence soybean herbicides for additional broadleaf weed control. Follow label directions closely regarding spray additives (Table 2J).</li> <li>• <i>Cobra</i> can be tank mixed for postemergence grass control (Table 2L).</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>
	+ crop oil concentrate		+	
	cloransulam-methyl (FirstRate)	0.016	0.3 oz 84WG	<ul style="list-style-type: none"> <li>• Refer to Table 2B for weed control and crop tolerance ratings.</li> <li>• Refer to Table 2H for maximum weed sizes.</li> <li>• Applications prior to first trifoliolate stage may cause temporary yellowing.</li> <li>• Apply prior to 50% soybean flowering.</li> <li>• Apply with non-ionic surfactant (0.125-0.25% v/v) plus 28% nitrogen liquid (2.5% v/v) or ammonium sulfate (8.5-17 lb/100 gal). Apply with crop oil concentrate (1.2% v/v) when weeds are stressed by hot and dry conditions; soybean injury will be more severe (Table 2I).</li> <li>• 28% liquid nitrogen or ammonium sulfate must be added for velvetleaf control.</li> <li>• <i>FirstRate</i> will not control ALS-resistant weed species.</li> <li>• <i>FirstRate</i> can be tank mixed with many postemergence soybean herbicides for additional broadleaf weed control. Follow label directions closely regarding spray additives (Table 2J).</li> <li>• <i>FirstRate</i> can be tank mixed for postemergence grass control (Table 2L). However, grass antagonism may occur under certain conditions.</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>
	+		+	
	surfactant		0.25%	
	+		+	
	ammonium sulfate		8.5-17 lb/100 gal	

*(Continued on next page)*

## Soybean – Postemergence for Broadleaf Weeds (continued)

Weed Controlled	Herbicide	Rate lb/A a.i.	Formulation/A	Remarks and Limitations
<i>(continued)</i>				
<b>Annual broadleaves</b>	fomesafen ( <i>Flexstar</i> )	0.25	1 pt 1.88L	<ul style="list-style-type: none"> <li>• Refer to Table 2B for weed control and crop tolerance ratings.</li> <li>• <i>Flexstar</i> can be applied only in the lower peninsula of Michigan.</li> <li>• DO NOT apply <i>Flexstar</i> to the same field in CONSECUTIVE years.</li> <li>• <i>Flexstar</i> is <i>Reflex</i> formulated with additional surfactants.</li> <li>• <i>Flexstar</i> is most effective when weeds are small (Table 2H).</li> <li>• <i>Flexstar</i> can be reduced to 0.75 pt/A to control certain smaller weeds (Table 2H).</li> <li>• Apply with crop oil concentrate (0.5-1.0% v/v) or non-ionic surfactant (0.25-0.5% v/v). 28% liquid nitrogen (2.5% v/v) or ammonium sulfate (8.5 lb/100 gal) can be added to either crop oil concentrate or surfactant for improved weed control (Table 2I).</li> <li>• Apply at 10-20 gal. water/A at 30-60 psi.</li> <li>• <i>Flexstar</i> can be tank mixed with many postemergence soybean herbicides for additional broadleaf weed control. Follow label directions closely regarding spray additives (Table 2J).</li> <li>• <i>Flexstar</i> can be tank mixed for postemergence grass control (Table 2L).</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>
	+		+	
	crop oil concentrate		0.5-1.0%	
	+		+	
	ammonium sulfate		8.5 lb/100 gal	
	thifensulfuron-methyl ( <i>Harmony SG</i> )	0.004	0.125 50WG	<ul style="list-style-type: none"> <li>• Refer to Table 2B for weed control and crop tolerance ratings.</li> <li>• <i>Harmony</i> is most effective on small weeds (Table 2H).</li> <li>• Apply after the first trifoliate leaf of soybeans has fully expanded.</li> <li>• Applications of <i>Harmony</i> may cause temporary wilting, leaf yellowing, and stunting.</li> <li>• DO NOT apply to soybeans or weeds under stress from weed control may result. Delay application until the stress passes.</li> <li>• Allow 60 days between <i>Harmony</i> application and soybean harvest.</li> <li>• Apply with non-ionic surfactant (0.125-0.25% v/v) or crop oil concentrate (1% v/v) plus 28% liquid nitrogen (2-4 qt/A) or ammonium sulfate (2-4 lb/A). The addition of a nitrogen source is required for velvetleaf control.</li> <li>• Under dry conditions, <i>Harmony</i> can be applied with crop oil concentrate, but soybean injury is likely to be more severe.</li> <li>• Use a minimum of 10 gal. water/A. For heavy weed pressure, increase volume to 15 gal/A.</li> <li>• <i>Harmony</i> will not control ALS-resistant weed species.</li> <li>• <i>Harmony</i> can be tank mixed with many postemergence soybean herbicides for additional broadleaf weed control. Follow label directions closely regarding spray additives (Table 2J).</li> <li>• <i>Harmony</i> can be tank mixed for postemergence grass control (Table 2L).</li> <li>• <b>Special precaution:</b> A special sprayer clean-out procedure is required (see label).</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>
	+		+	
	surfactant		0.125-0.25%	
	+		+	
	ammonium sulfate		2-4 lb	

*(Continued on next page)*

## Soybeans — Postemergence for Broadleaf Weeds (continued)

Weed Controlled	Herbicide	Rate lb/A a.i.	Formulation/A	Remarks and Limitations
<i>(continued)</i>				
<b>Annual broadleaves</b>	lactofen ( <i>Phoenix</i> ) + surfactant	0.195	12.5 oz 2EC  + 0.125%	<ul style="list-style-type: none"> <li>• Refer to Table 2B for weed control and crop tolerance ratings.</li> <li>• <i>Phoenix</i> can be applied at 8-12.5 oz/A when tank mixed with other herbicides or when applied alone. Refer to Table 2H for maximum weed sizes.</li> <li>• <i>Phoenix</i> is <i>Cobra</i> formulated with additional surfactants.</li> <li>• DO NOT apply to soybeans or weeds under stress from herbicide injury, cold or dry weather, or hail damage — crop injury or poor weed control may result. Delay application until the stress passes.</li> <li>• Apply with non-ionic surfactant (0.125-0.25% v/v). Crop oil concentrate (1 pt/A) is recommended when weeds are stressed by hot and dry conditions, though soybean injury will be more severe (Table 2I).</li> <li>• Apply early when the soybean canopy doesn't interfere with coverage.</li> <li>• Allow 45 days between <i>Phoenix</i> application and soybean harvest.</li> <li>• <i>Phoenix</i> can be tank mixed with many postemergence soybean herbicides for additional broadleaf weed control. Follow label directions closely regarding spray additives (Table 2J).</li> <li>• <i>Phoenix</i> can be tank mixed for postemergence grass control (Table 2L).</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>
	imazethapyr ( <i>Pursuit</i> ) + crop oil concentrate + ammonium sulfate	0.063	4 oz 2L  + 1% + 12-15 lb/100 gal	<ul style="list-style-type: none"> <li>• Refer to Table 2B for weed control and crop tolerance ratings.</li> <li>• Refer to Table 2H for maximum weed sizes.</li> <li>• Apply with crop oil concentrate (1% v/v) or non-ionic surfactant (0.25% v/v) plus 28% liquid nitrogen (2.5% v/v) or ammonium sulfate (12-15 lb/100 gal) (Table 2H).</li> <li>• Will control yellow and green foxtails, barnyardgrass and crabgrass up to 3 inches tall, and giant foxtail up to 6 inches tall.</li> <li>• Apply after the first trifoliate leaf of soybeans has fully expanded.</li> <li>• Allow 85 days between <i>Pursuit</i> application and soybean harvest.</li> <li>• <i>Pursuit</i> will not control ALS-resistant weed species.</li> <li>• <i>Pursuit</i> can be tank mixed with many postemergence soybean herbicides for additional broadleaf weed control. Follow label directions closely regarding spray additives (Table 2J).</li> <li>• <i>Pursuit</i> can be tank mixed with postemergence grass herbicides for volunteer corn control only (Table 2L).</li> <li>• <i>Pursuit</i> is very persistent and can limit rotational crops. Refer to label and Table 12 for crop rotation restrictions.</li> </ul>

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## Soybeans — Postemergence for Broadleaf Weeds (continued)

Weed Controlled	Herbicide	Rate lb/A a.i.	Formulation/A	Remarks and Limitations
<i>(continued)</i>				
<b>Annual broadleaves</b>	imazamox <i>(Raptor)</i>	0.04	5 oz 1L	<ul style="list-style-type: none"> <li>• Refer to Table 2B for weed control and crop tolerance ratings.</li> <li>• Refer to Table 2H for maximum weed sizes.</li> <li>• Apply with crop oil concentrate (1% v/v) or non-ionic surfactant (0.25% v/v) plus 28% liquid nitrogen (2.5% v/v) or ammonium sulfate (12-15 lb/100 gal) (Table 2I).</li> <li>• Apply after the first trifoliolate leaf of soybeans has fully expanded but before soybean bloom.</li> <li>• Will control barnyardgrass, foxtails and panicum but ONLY SUPPRESS crabgrass.</li> <li>• Application rate must be 5 oz/A for annual grass and common lambsquarters control OR apply <i>Prowl</i> preemergence for control of these weeds.</li> <li>• Common ragweed less than 3 inches will be suppressed.</li> <li>• Increase common ragweed control by tank mixing with <i>Cobra</i> (4-6 oz/A), <i>Ultra Blazer</i> (8-16 oz/A), or <i>Flexstar</i> (6-8 oz/A). Higher rates can cause grass antagonism (Table 2I).</li> <li>• <i>Raptor</i> will not control ALS-resistant weed species.</li> <li>• DO NOT tank mix with postemergence grass herbicides unless for volunteer corn — antagonism will occur and grass control will equal that of <i>Raptor</i> alone.</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>
	+		+	
	crop oil concentrate		1%	
+		+		
	ammonium sulfate		12-15 lb/100 gal	
<hr/>				
	fomesafen <i>(Reflex)</i>	0.25	1 pt 2L	<ul style="list-style-type: none"> <li>• Refer to Table 2B for weed control and crop tolerance ratings</li> <li>• <i>Reflex</i> can be applied only in the lower peninsula of Michigan.</li> <li>• DO NOT apply <i>Reflex</i> to the same field in CONSECUTIVE years.</li> <li>• <i>Reflex</i> is most effective when weed are small (Table 2H).</li> <li>• <i>Reflex</i> can be reduced to 0.75 pt/A to control certain smaller weeds (Table 2H).</li> <li>• Apply with crop oil concentrate (0.5-1.0% v/v) or non-ionic surfactant (0.25-0.5% v/v). 28% liquid nitrogen (2.5% v/v) or ammonium sulfate (10 lb/100 gal) can be added to either crop oil concentrate or surfactant for improved weed control (Table 2I).</li> <li>• Apply at 10-20 gal. water/A at 30-60 psi.</li> <li>• <i>Reflex</i> can be tank mixed with many postemergence soybean herbicides for additional broadleaf weed control. Follow label directions closely regarding spray additives (Table 2J).</li> <li>• <i>Reflex</i> can be tank mixed for postemergence grass control (Table 2L).</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>
	+		+	
	crop oil concentrate		1%	
+		+		
	ammonium sulfate		10 lb/100 gal	
<hr/>				
	flumiclorac <i>(Resource)</i>	0.041	6 oz 0.86L	<ul style="list-style-type: none"> <li>• Refer to Table 2B for weed control and crop tolerance ratings.</li> <li>• Refer to Table 2H for maximum weed sizes.</li> <li>• 28% liquid nitrogen (1-2 qt/A) or ammonium sulfate (2-2.5 lb/A) may be added to crop oil concentrate (1 qt/A) to enhance weed control.</li> <li>• <i>Resource</i> can be applied at 2-4 oz/A when tank mixed with other herbicides for additional broadleaf weed control (Table 2J).</li> <li>• Allow 60 days between <i>Resource</i> application and soybean harvest.</li> <li>• <i>Resource</i> can be tank mixed for postemergence grass control (Table 2L).</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>
	+		+	
	crop oil concentrate		1 qt	

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## Soybean – Postemergence for Broadleaf Weeds (continued)

Weed Controlled	Herbicide	Rate lb/A a.i.	Formulation/A	Remarks and Limitations
<i>(continued)</i>				
<b>Annual broadleaves</b>	imazaquin ( <i>Scepter</i> ) + surfactant	0.063	1.4 oz 70WG  + 0.25%	<ul style="list-style-type: none"> <li>• Refer to Table 2B for weed control and crop tolerance ratings.</li> <li>• Refer to Table 2H for maximum weed sizes.</li> <li>• Apply with non-ionic surfactant (0.25% v/v) or with crop oil concentrate (1% v/v).</li> <li>• Allow 90 days between <i>Scepter</i> application and soybean harvest.</li> <li>• <i>Scepter</i> will not control ALS-resistant weed species.</li> <li>• <i>Scepter</i> can be tank mixed with many postemergence soybean herbicides for additional broadleaf weed control. Follow label directions closely regarding spray additives (Table 2J).</li> <li>• <i>Scepter</i> can be with tank mixed with <i>Fusion Fusilade DX</i> for postemergence grass control, unless the grass population is predominantly yellow foxtail and barnyardgrass (sequential applications recommended) (Table 2L).</li> <li>• DO NOT plant corn following <i>Scepter</i> application, except in the southern two tiers of counties in Michigan and if 15 inches of rainfall occurs.</li> <li>• Rainfall is critical for rotational crops (see label); the recropping count should start at soybean planting.</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>
	chlorimuron-ethyl + thifensulfuron methyl ( <i>Synchrony XP</i> ) + crop oil concentrate + ammonium sulfate	0.013	0.75 oz 28.4WG  + 1% + 2 lb	<ul style="list-style-type: none"> <li>• Refer to Table 2B for weed control and crop tolerance ratings.</li> <li>• Refer to Table 2H for maximum weed sizes.</li> <li>• ONLY apply 0.75 oz/A of <i>Synchrony XP</i> to STS SOYBEANS.</li> <li>• <i>Synchrony XP</i> at 0.375 oz/A can be applied to NON-STs soybeans. DO NOT use crop oil concentrate. Instead, use a non-ionic surfactant at 0.25% v/v.</li> <li>• See Table 2C for individual product rate equivalents for the premix.</li> <li>• Apply after the first trifoliate leaf of soybeans has fully expanded.</li> <li>• For eastern black nightshade control, add <i>Cobra</i> (4-6 oz/A) or <i>Reflex</i> or <i>Flexstar</i> (1 pt/A) or <i>Ultra Blazer</i> (1 pt/A) or <i>Pursuit</i> (2 oz/A). Reduce the rate of crop oil concentrate to 0.5% if tank mixed with <i>Cobra</i>. DO NOT use crop oil concentrate if <i>Pursuit</i> or <i>Ultra Blazer</i> is tank mixed for nightshade control (Table 2I).</li> <li>• Allow 60 days between <i>Synchrony XP</i> application and soybean harvest.</li> <li>• <i>Synchrony XP</i> will not control ALS-resistant weed species.</li> <li>• <i>Synchrony XP</i> will suppress pokeweed, perennial sowthistle, and dandelion.</li> <li>• <i>Synchrony XP</i> can be tank mixed for control of some grasses (Table 2L).</li> <li>• Soil pH and <i>Synchrony XP</i> use rates are critical for rotational crops (see label).</li> <li>• Rotation intervals are dependent on soil pH and rate. Refer to label and Table 12 for crop rotation restrictions.</li> </ul>

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## Soybean – Postemergence for Broadleaf Weeds (continued)

Weed Controlled	Herbicide	Rate lb/A a.i.	Formulation/A	Remarks and Limitations
<i>(continued)</i>				
<b>Annual broadleaves</b>	acifluorfen <i>(Ultra Blazer)</i> + surfactant OR ammonium sulfate	0.38	1.5 pt 2SC  + 0.25% OR 2.5 lb	<ul style="list-style-type: none"> <li>• Refer to Table 2B for weed control and crop tolerance ratings.</li> <li>• Most effective on small weeds (Table 2H).</li> <li>• Use a minimum of 20 gal. water/A for adequate coverage.</li> <li>• DO NOT apply if soybeans are under stress from herbicide injury, cold or dry weather, or hail damage.</li> <li>• 28% liquid nitrogen (2-4 qt/A) or ammonium sulfate (2.5 lb/A) may be added INSTEAD OF surfactant for improved weed control.</li> <li>• Allow 50 days between <i>Ultra Blazer</i> application and soybean harvest.</li> <li>• <i>Ultra Blazer</i> can be tank mixed with most postemergence soybean herbicides for additional broadleaf weed control (Table 2J).</li> <li>• <i>Ultra Blazer</i> can be tank mixed for postemergence grass control (Table 2L).</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>

## TABLE 2E – Weed Control in Glyphosate-Resistant Soybean

**RECOMMENDATIONS:** One application of glyphosate alone will not consistently provide season-long weed control. One of the three following strategies is recommended:

- 1) Soil-applied residual herbicide applied preemergence followed by glyphosate postemergence.
  - a) Preemergence herbicide options can be found in Table 2A.
  - b) Glyphosate should be applied when weeds are 4 inches tall.
- 2) Postemergence tank-mixtures with glyphosate when weeds are 2-4 inches tall.
  - a) Several soil-applied residual herbicides can be tank-mixed with glyphosate and applied postemergence. Tank-mixtures with some residual herbicides may cause temporary burn or discoloration.
  - b) There are many postemergence products that can be tank-mixed with glyphosate for additional weed control. Refer to Table 2B for options.
  - c) There are several premixtures containing glyphosate that can be applied postemergence to glyphosate-resistant soybean. Refer to Table 2B and the following section for options.
- 3) Two timely applications of glyphosate. However, this strategy is not highly recommended since it increases the selection pressure for the development of glyphosate-resistant weeds.
  - a) The first application of glyphosate needs to be applied before annual weeds are 4 inches tall in narrow row soybean and 6 inches tall in 30 inch row soybean.
  - b) The second glyphosate application should be made when weeds are less than 4 inches tall.

Weed Controlled	Herbicide	Rate lb/A	Formulation/A	Remarks and Limitations
Annual grasses Annual broadleaves Suppression of perennials	glyphosate (See Table 10) + ammonium sulfate	0.75 a.e.	See Table 10  + 17 lb/100 gal	<ul style="list-style-type: none"> <li>• <b>APPLY TO GLYPHOSATE-RESISTANT SOYBEANS ONLY.</b></li> <li>• <b>See above recommendations for appropriate use of glyphosate in glyphosate-resistant soybean.</b></li> <li>• Refer to Table 2B for weed control and crop tolerance ratings.</li> <li>• Many glyphosate products are registered for application to glyphosate-resistant soybeans. Read the label and see Table 10 to determine application rates and additives needed for different products.</li> <li>• Glyphosate should be applied at a minimum rate of 0.75 lb a.e./A.</li> <li>• Addition of ammonium sulfate (17 lb/100 gal) will minimize antagonism from hard water and improve weed control if weeds are under stress or large.</li> <li>• Glyphosate application rate can be increased to <b>1.13 lb a.e./A</b> to control larger weeds or weeds that are under stress.</li> <li>• Use extreme caution to avoid spray drift to sensitive crops.</li> <li>• Apply from soybean cracking through full flower (R2 soybean).</li> <li>• DO NOT apply more than 2.25 lb a.e./A in-crop per season.</li> <li>• For VOLUNTEER GLYPHOSATE-RESISTANT CORN control, tank mix glyphosate (Table 10) with <i>Assure II/Targa</i>, <i>Fusilade DX</i>, <i>Fusion</i>, <i>Select/Arrow</i> or <i>Select Max</i> (Table 2L). Consult product remarks and limitations in E-434 and labels for additive choices and rates.</li> <li>• Control of PERENNIAL BROADLEAVES will be improved with a second application of glyphosate prior to soybean full flower.</li> <li>• For QUACKGRASS control, treat when quackgrass is 6-8 inches tall.</li> <li>• For YELLOW NUTSEDGE suppression, apply glyphosate when nutsedge is 3-4 inches tall. Adding <i>Classic</i> at 0.75 oz/A OR making a second glyphosate application 2-3 weeks later will improve suppression.</li> <li>• The addition of micronutrient fertilizers (e.g., manganese) can antagonize glyphosate, resulting in a reduction in weed control. Avoid antagonisms by making separate herbicide and fertilizer applications or using a full-chelated form of the fertilizer and including ammonium sulfate to minimize the antagonism.</li> </ul>

*(continued on next page)*

## Weed Control in Glyphosate-Resistant Soybean (continued)

Weed Controlled	Herbicide	Rate lb/A	Formulation/A	Remarks and Limitations
<i>(continued)</i>				
Annual grasses Annual broadleaves Suppression of perennials	glyphosate + imazethapyr ( <i>Extreme</i> ) + surfactant + ammonium sulfate	0.81	3 pt 2.17L  + 0.25% + 17 lb/100 gal	<ul style="list-style-type: none"> <li>• <b>APPLY TO GLYPHOSATE-RESISTANT SOYBEANS ONLY.</b></li> <li>• Refer to Table 2B for weed control and crop tolerance ratings.</li> <li>• <i>Extreme</i> is a premix of <i>Pursuit</i> + glyphosate. See Table 2C for individual product rate equivalents for the premix.</li> <li>• Apply to weeds up to 4 inches tall.</li> <li>• Apply after the first trifoliolate leaf of soybean has fully expanded up to soybean bloom.</li> <li>• Addition of ammonium sulfate will minimize antagonism from hard water and improve weed control if weeds are under stress or large.</li> <li>• Use extreme caution to avoid spray drift to sensitive crops.</li> <li>• <i>Pursuit</i> is very persistent and can limit rotational crops. Refer to label and Table 12 for crop rotation restrictions.</li> </ul>
	glyphosate + fomesafen ( <i>Flexstar GT 3.5</i> ) + surfactant + ammonium sulfate	1.23	3.5 pt 2.82L  + 0.25% + 17 lb/100 gal	<ul style="list-style-type: none"> <li>• <b>APPLY TO GLYPHOSATE-RESISTANT SOYBEANS ONLY.</b></li> <li>• Refer to Table 2B for weed control and crop tolerance ratings.</li> <li>• <i>Flexstar GT</i> is a premix of <i>Flexstar</i> and glyphosate. See Table 2C for individual product rate equivalents for the premix.</li> <li>• DO NOT apply products containing fomesafen (<i>Flexstar</i>, <i>Flexstar GT 3.5</i>, <i>Prefix</i> or <i>Reflex</i>) to the same field in CONSECUTIVE years.</li> <li>• Some cosmetic bronzing and leaf crinkling can occur after application.</li> <li>• Best if applied when weeds are 4 inches tall or less.</li> <li>• Apply in 15 to 20 gal. water/A.</li> <li>• DO NOT apply within 45 days of soybean harvest.</li> <li>• Refer to label and Table 12 for additional crop rotation</li> </ul>
	glyphosate + s-metolachlor ( <i>Sequence</i> ) + ammonium sulfate	1.64	2.5 pt 5.25L  + 17 lb/100gal	<ul style="list-style-type: none"> <li>• <b>APPLY TO GLYPHOSATE-RESISTANT SOYBEANS ONLY.</b></li> <li>• Refer to Table 2B for weed control and crop tolerance ratings.</li> <li>• <i>Sequence</i> is a premix of <i>Dual Magnum</i> + glyphosate. See Table 2C for individual product rate equivalents for the premix.</li> <li>• Apply from soybean cracking up through the third trifoliolate.</li> <li>• Cosmetic leaf crinkling or necrotic spots may occur under certain conditions.</li> <li>• DO NOT apply more than 3.5 pt/A of <i>Sequence</i> per season.</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>
acetochlor ( <i>Warrant</i> ) + glyphosate + ammonium sulfate	1.125  0.75 a.e.	3 pt 3CS  See Table 10 + 17 lb/100 gal	<ul style="list-style-type: none"> <li>• <b>APPLY TO GLYPHOSATE-RESISTANT SOYBEAN WHEN TANK-MIXED WITH GLYPHOSATE.</b></li> <li>• Refer to Table 2B for weed control and crop tolerance ratings.</li> <li>• Apply from emergence up to R2 soybean.</li> <li>• <i>Warrant</i> applied alone will not control emerged weeds, but will provide residual control of annual grasses and some small seeded weed species, e.g., pigweed and nightshade. Therefore, it is recommended <i>Warrant</i> be applied with post-emergence weed control products (e.g., glyphosate).</li> <li>• Tank-mixtures with glyphosate should be applied when weeds are 2 to 4 inches tall.</li> <li>• Cosmetic soybean leaf crinkling may occur under certain conditions.</li> <li>• DO NOT apply more than 4 qt/A of <i>Warrant</i> per season.</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>	

## TABLE 2F – Weed Control in LibertyLink (Glufosinate-Resistant) Soybean

**RECOMMENDATION:** One application of *Liberty* (glufosinate) alone will not consistently provide season-long weed control. The following strategy is recommended:

- 1) Soil-applied residual herbicide applied preemergence followed by *Liberty* postemergence.
  - a) Preemergence herbicide options can be found in Table 2A.
  - b) *Liberty* should be applied when weeds are 2-3 inches tall.
  - c) Early canopy closure from planting narrow row soybean will help improve season-long weed control.

Weeds Controlled	Herbicide	Rate lb/A	Formulation/A	Remarks and Limitations
Annual grasses Annual broadleaves	glufosinate ( <i>Liberty</i> ) + ammonium sulfate	0.4	22 oz 2.34L  + 8.5 lb/100 gal	<ul style="list-style-type: none"> <li>• <b>APPLY TO LIBERTYLINK (GLUFOSINATE-RESISTANT) SOYBEANS ONLY.</b></li> <li>• See above recommendations for appropriate use of <i>Liberty</i> in LibertyLink soybean.</li> <li>• Refer to Table 2B for weed control and crop tolerance ratings.</li> <li>• The rate of <i>Liberty</i> can be increased to 29 oz/A for more consistent weed control.</li> <li>• Refer to Table 2H for application rates and maximum broadleaf weed sizes.</li> <li>• Always add ammonium sulfate (8.5-17 lb/100 gal). If conditions are hot and humid, the ammonium sulfate rate should be 8.5 lb/100 gal.</li> <li>• Apply from soybean emergence up to but not including the bloom stage.</li> <li>• Reduced weed control can occur if <i>Liberty</i> is applied 2 hours before sunset or later.</li> <li>• Maximum in crop <i>Liberty</i> applications are two applications that do not total more than 65 oz/A.</li> <li>• A single application of <i>Liberty</i> can be made at 36 fl oz/A; followed by one additional application at a maximum of 29 oz/A.</li> <li>• Allow 70 days between <i>Liberty</i> application and soybean harvest.</li> <li>• Use a minimum carrier volume of 15 gallons per acre.</li> <li>• The use of drift control agents that reduce spray coverage will result in reduced weed control from <i>Liberty</i>.</li> <li>• Tank-mixing <i>Liberty</i> with products containing thifensulfuron (<i>Harmony SG</i> or <i>Synchrony XP</i>) can cause significant injury and yield loss.</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>

# TABLE 2G – Soybean – Preharvest Applications

## Soybeans – Preharvest Application

Weed Controlled	Herbicide	Rate lb/A a.i.	Formulation/A	Remarks and Limitations
Annual grasses Annual broadleaves Perennial weeds	glyphosate + ammonium sulfate	0.75–3.6 lb a.e.	See Table 10 + 17 lb/100 gal	<ul style="list-style-type: none"> <li>• See Table 10 for a list of glyphosate products, formulations and rates.</li> <li>• Apply to mature soybeans once pods have lost their color.</li> <li>• DO NOT apply to soybeans grown for seed.</li> <li>• <i>Roundup Ready soybean</i>: The maximum preharvest use rate is 0.75 lb a.e./A of glyphosate with a 14 day preharvest interval.</li> <li>• <i>non-Roundup Ready soybean</i>: The rate range is from 0.75 to 3.6 lb a.e./A (equivalent to 22 fl oz/A up to 3.3 qt/A of <i>Roundup PowerMax</i>) of glyphosate with a 7 day preharvest interval.</li> <li>• Apply in 10-40 gal of water.</li> <li>• Apply 0.75 lb a.e./A for annual weeds.</li> <li>• Consult glyphosate product label for specific rate needed for perennial weeds in non-Roundup Ready crops.</li> </ul>
Annual grasses Annual broadleaves	paraquat ( <i>Gramoxone SL 2.0</i> ) + surfactant	0.25	16 oz 2SL + 0.25%	<ul style="list-style-type: none"> <li>• <i>Gramoxone SL 2.0</i> is a restricted-use pesticide.</li> <li>• Indeterminate varieties: Apply when at least 65% of pods are mature brown (seed moisture less than 30%).</li> <li>• Always add a non-ionic surfactant at 0.25% v/v.</li> <li>• Immature soybeans will be injured.</li> <li>• Do not apply within 15 days of harvest.</li> <li>• Apply <i>Gramoxone SL 2.0</i> in 20 gal. water (ground) or 5 gal. water (air).</li> </ul>
	paraquat ( <i>Parazone</i> ) + surfactant	0.25	10 oz 3SL + 0.25%	<ul style="list-style-type: none"> <li>• <i>Parazone</i> is a restricted-use pesticide.</li> <li>• <i>Parazone</i> contains the same active ingredient as <i>Gramoxone SL 2.0</i> (paraquat), but at a different concentration.</li> <li>• See the Remarks and Limitations section for <i>Gramoxone SL 2.0</i>.</li> </ul>
Annual broadleaves	carfentrazone-ethyl ( <i>Aim</i> ) + methylated seed oil	0.02	1.5 oz 2EC + 1%	<ul style="list-style-type: none"> <li>• Apply to mature soybeans once pods have lost their color.</li> <li>• Do not apply within 3 days of harvest.</li> <li>• <i>Aim</i> is not as effective as glyphosate or <i>Gramoxone</i> on most species.</li> <li>• <i>Aim</i> at 1 oz/A can be applied with glyphosate or <i>Gramoxone</i> to broaden the spectrum of weed control over <i>Aim</i> alone.</li> <li>• Use a minimum of 10 gal of water. Higher spray volumes would provide better coverage.</li> </ul>
	dicamba ( <i>Clarity</i> )	0.25	8 oz 4L	<ul style="list-style-type: none"> <li>• Apply when soybean pods have reached a mature brown color and at least 75% leaf drop has occurred.</li> <li>• <i>Clarity</i> can be used to suppress annual weeds, higher rates up to 32 oz/A can be applied to suppress biennial, or perennial weeds (consult label).</li> <li>• Apply up to 7 days before harvest.</li> <li>• DO NOT apply to soybean grown for seed.</li> <li>• Caution should be taken to avoid vapor and particle spray drift.</li> <li>• <i>Clarity</i> is not recommended as a preharvest interval if you are planning on planting winter wheat.</li> </ul>

**TABLE 2H – Maximum Broadleaf Weed Heights for Postemergence Control in Soybean\***

Herbicide	RATE/A	COCKLEBUR	JIMSONWEED	LAMBSQUARTERS	NIGHTSHADE (E. BLACK)	PIGWEEED	RAGWEED (COMMON)	RAGWEED (GIANT)	SMARTWEED	VELVETLEAF	WILD MUSTARD (DIAMETER OF ROSETTE)	HORSEWEED (MARESTAIL)
Basagran	1.5 pt	6	6	1.5 <sup>c</sup>	-	-	-	-	6	2	4	-
	2 pt	10	10	2 <sup>c</sup>	-	-	3	6	10	6	8	-
Cadet	0.6 oz	-	2	2	2	2	-	-	-	36	-	-
	0.9 oz	-	2	2	2	4	-	-	-	36	-	-
Classic	0.5 oz	6	4	-	-	2	-	-	2	-	4	3
	0.75 oz	12	6	-	-	4	4	6	4	6	6	6
Cobra <sup>b</sup>	6 oz	-	-	-	3L	4L	6L	-	-	-	-	-
	8 oz	4L	4L	-	4L	6L	6L	4L	-	-	4L	-
FirstRate	0.3 oz	10	4	-	-	-	8	10	6	6	4	6
Flexstar <sup>b</sup>	0.75 pt	2L	4L	-	2L	2L	-	-	-	-	4L	-
	1 pt	4L	6L	-	4L	4L	4L	4L	4L	-	6L	-
Harmony SG	0.12 oz	-	-	4	-	12	-	-	6	6	4	-
Phoenix	10 oz	-	2	-	2	4	4	5	-	-	2	-
	12.5 oz	2	4	-	3	4	6	4	-	-	4	-
Pursuit	4 oz	8	3	<1 <sup>c</sup>	2	6	2 <sup>c</sup>	3 <sup>c</sup>	3	2	3	-
Raptor	5 oz	8	6	3	3	6	3	4	4	4	3	-
Reflex <sup>b</sup>	0.75 pt	-	2L	-	2L	2L	2L	-	2L	-	2L	-
	1 pt	-	4L	-	2L	2L	4L	-	4L	-	4L	-
Resource	6 oz	-	-	3L <sup>c</sup>	-	3L <sup>c</sup>	4L <sup>c</sup>	-	-	6L	-	-
Scepter	1.4 oz	8	-	-	-	4	-	-	-	-	-	-
Synchrony XP	0.5 oz	8	5	4	-	8	4	4	8	8	5	5
Ultra Blazer	1 pt	-	4	-	<2	<4	2	<2	4	-	<4	-
	1.5 pt	2	6	2 <sup>c</sup>	2	4	3	3	6	-	4	-
<b>GLYPHOSATE-RESISTANT SOYBEAN</b>												
glyphosate	0.75 lb a.e.	6	6	6	6	6	6	6	6	6	6	6
Extreme	3 pt	18	6	8	12	18	9	9	6	5	18	12
Flexstar GT 3.5	3.5 pt	4	4	4	4	4	4	4	4	4	6	-
Sequence	2.5 pt	12	12	6	6	12	12	12	6	6	18	12
<b>LIBERTYLINK SOYBEAN</b>												
Liberty	22 oz	6	6	4	6	3	6	6	6	3	4	c
	29 oz	14	10	6	8	4	10	12	14	4	6	6-12

<sup>a</sup> (-) No control or weed height not listed on label.

<sup>b</sup> Weed stages are based on maximum leaf numbers.

<sup>c</sup> Suppression only.

\* The weed heights listed on this table are estimates of the maximum size where consistent control is expected. The maximum height for effective control in any specific situation is dependent on environmental conditions, including soil moisture, temperature, and relative humidity.

**TABLE 2I – Suggested Additives for Postemergence Herbicide Applications in Soybean<sup>a</sup>**

<b>Herbicide</b>	<b>Crop Oil Concentrate (COC)</b>	<b>OR</b>	<b>Nonionic Surfactant (NIS) AND/OR</b>	<b>28% liquid nitrogen (28%N) or ammonium sulfate (AMS)</b>
Assure II/Targa	1% (2% if drought stress)		0.25%	NO
Basagran <sup>b</sup>	1 qt/A		NO	28% N (2-4 qt) or AMS (2.5 lb/A) optional
Cadet	1 qt/A		0.25%	28% N (2.5%) or AMS (2 to 2.5 lb/A) optional
Classic <sup>b</sup>	1%		0.25%	28% N (2-4 qt) or AMS (2-4 lb/A)
Cobra	0.5%		0.25% if high RH	28% N (2.5%) or AMS (2-4 lb/A)
FirstRate <sup>b</sup>	1.2% if dry only		0.25%	Always add 28% N (2.5%) or AMS (8.5-17 lb/100 gal)
Flexstar	1%		0.25%	28% N (2.5%) or AMS (8.5 lb/100 gal) optional
Fusilade DX	0.5-1%		0.25-0.5%	28%N (2.5%) or AMS (17 lb/100 gal) optional
Fusion	0.5 – 1%		0.25– 0.5%	28% N (2.5%) or AMS (17 lb/100 gal) optional
Harmony <sup>b</sup>	1% if hot, dry only		0.125–0.25%	28% N (2 qt/A) or AMS (2-4 lb/A) optional
Phoenix	1 pt/A if hot, dry		0.125–0.25%	NO
Poast <sup>d</sup> or Poast Plus	1 qt/A		NO	28% N (0.5-1 gal/A) or AMS (2.5 lb/A) optional
Pursuit	1%		0.25%	Always add 28% N (2.5%) or AMS (12-15 lb/100 gal)
Raptor <sup>e</sup>	1%		0.25%	Always add 28% N (2.5%) or AMS (12-15 lb/100 gal)
Reflex	0.5–1%		0.25–0.5%	28% N (2.5%) or AMS (10 lb/100 gal) optional
Resource	1 qt/A		NO	28% N (1 gal/A) or AMS (2.5 lb/A) optional
Scepter	1%		0.25%	NO
Select/Arrow	1%		NO	28% N (1-2 qt/A) or AMS (17 lb/100 gal) optional
Select Max	1%		0.25%	28% N (1 to 2 qt/A) or AMS (2.5 to 4 lb/A) optional
Synchrony XP	1%		0.25% non-STS beans	Always add 28% N (2 qt) or AMS (2 lb/A)
Ultra Blazer	NO		0.25%	28% N (2-4 qt/A) or AMS (2.5 lb/A) optional
<b>GLYPHOSATE-RESISTANT SOYBEAN</b>				
glyphosate <sup>c</sup>	NO		Consult Table 10	AMS (17 lb/100 gal)
Extreme	NO		0.125%	AMS (17 lb/100 gal)
Flexstar GT 3.5	NO		0.25%	AMS (17 lb/100 gal)
Sequence	NO		NO	AMS (17 lb/100 gal)
<b>LIBERTYLINK SOYBEAN</b>				
Liberty	NO		NO	AMS (8.5 to 17 lb/100 gal) <sup>f</sup>

<sup>a</sup> 0.125% = 1 pt in 100 gal of spray solution; 0.25% = 1 qt in 100 gal; 1% = 1 gal in 100 gal; 4% = 4 gal in 100 gal.

<sup>b</sup> 28% N or AMS should be added for velvetleaf control.

<sup>c</sup> Consult Table 10 for glyphosate formulations and NIS requirements.

<sup>d</sup> 28% N or AMS improves control of large crabgrass, quackgrass, and volunteer corn and cereals.

<sup>e</sup> Use methylated seed oil (MSO) for improved common ragweed control.

<sup>f</sup> Use 8.5 lb/100 gal under hot, humid conditions.



## TABLE 2J – Additives for Postemergence Broadleaf Weed Control in Soybean

Additives are listed for each herbicide tank mixture based on the label of the herbicide in the Primary Herbicide column. Sometimes, a tank mixture may occur on only one label. For example, *Basagran + Classic* is listed as a tank mixture on the *Basagran* label but is not listed as a tank mixture on the *Classic* label. To find the correct additives for a tank mixture, find the first herbicide in the Primary Herbicide column and then move across the column to the box that corresponds with the tank mix partner.

PRIMARY HERBICIDE	TANK MIX PARTNER												
	BASAGRAN	CLASSIC	COBRA	FIRSTRATE	FLEXSTAR	HARMONY	PHOENIX	PURSUIT	RAPTOR	REFLEX	RESOURCE	SYNCHRONY XP	ULTRA BLAZER
Basagran	–	A+	B+	A+	B+	A+	NL	B+	B+	B+	B+	B+	B+
Cadet	B+	B+	D-	A+	B+	C+	C-	B+	B+	B+	B+	C+	A
Classic	NL	–	D+	B+	B+	C+	NL	D+	NL	B+	NL	NL	A+
Cobra <sup>1</sup>	D-	D-	–	D+	NL	C-	NL	D+	D+	NL	B-	D-	NL
FirstRate <sup>2</sup>	A+	A+	A+	–	A+	A+	NL	A+	A+	A+	A+	A+	A+
Flexstar <sup>2</sup>	B+	B+	NL	A+	–	C+	NL	B+	B+	NL	B+	B+	NL
Harmony	A+	NL	NL	NL	NL	–	NL	NL	NL	NL	NL	NL	NL
Phoenix	C-	C-	NL	C-	NL	C-	–	A-	A-	NL	C-	C-	NL
Pursuit	B+	NL	D+	A+	B+	A+	NL	–	NL	B+	NL	NL	A+
Raptor	B+	A-	D+	A+	B+	NL	NL	NL	–	B+	NL	NL	B+
Reflex <sup>2</sup>	B+	B+	NL	A+	NL	C+	NL	B+	B+	–	B+	B+	NL
Resource	B+	B+	B-	B+	B+	C+	NL	B+	B+	NL	–	B+	B+
Synchrony XP <sup>3</sup>	NL	NL	D+	B+	B+	NL	NL	NL	NL	B+	NL	–	A+
Ultra Blazer	A-	A-	NL	A+	NL	C+	NL	A+	A+	NL	B-	D+	–

### Adjuvant

A = 0.25% v/v non-ionic surfactant  
 B = 1.0% v/v crop oil concentrate  
 C = 0.125% v/v non-ionic surfactant  
 D = 0.5% v/v crop oil concentrate  
 NL = Not on label

### Nitrogen Source

– = DO NOT add a N fertilizer source  
 + = Add a N fertilizer sources, AMS or 28% UAN

<sup>1</sup> *Cobra* applied at 4 to 12 oz/A.

<sup>2</sup> These tank mixtures are labeled, adjuvant selection should be based on the tank mix partner label.

<sup>3</sup> Adjuvant selection is when *Synchrony XP* is used on STS designated soybeans.

**TABLE 2K – Application Rates of Postemergence Grass Herbicides for Control of Grass Species at Various Heights**

	Assure II/ Targa	Fusilade DX	Fusion <sup>a</sup>	Poast	Poast Plus	Select/Arrow	Select Max
	oz/A						
<b>Barnyardgrass</b>							
1–2"	–	10	–	12	18	4	6
2–3"	8	12	8	12	18	4	6
3–4"	8	–	8	12	18	4	6
4–6"	8	–	–	16	24	6	9
6–8"	–	–	–	16	24	6	9
<b>Crabgrass</b>							
<1"	–	10	–	–	–	–	–
1–2"	8	12	8	16	24	6	6
2–6"	8	–	–	16	24	6	9
<b>Fall Panicum</b>							
1–2"	–	10	–	12	18	4	6
2–4"	7	12	8	12	18	4	6
4–6"	7	12	8	16	24	6	9
6–8"	–	–	–	16	24	6	9
<b>Giant Foxtail</b>							
1–2"	–	10	–	12	18	4	6
2–4"	7	12	8	12	18	4	6
4–6"	7	12	8	16	24	6	9
6–8"	7	–	8	16	24	6	9
8–12"	–	–	–	–	–	6	9
<b>Green Foxtail</b>							
1–2"	–	10	–	12	18	–	6
2–4"	7	12	8	12	18	6	6
4–6"	–	–	–	16	24	6	9
6–8"	–	–	–	16	24	6	9
<b>Quackgrass</b>							
4–6"	–	10	–	–	–	8–16+8	12+12
6–8"	10+7	12+8	12+8	24+16	36+24	8–16+8	12+12
8–10"	10+7	12+8	12+8	–	–	–	12+12
<b>V. Corn</b>							
1–4"	–	–	–	12	18	–	–
4–6"	–	–	–	12	18	4	6
6–12"	5	–	–	12	18	4	6
12–18"	5	6	6	16	24	6	9
18–20"	8	6	6	16	24	6	9
20–24"	8	6	6	–	–	6	9
<b>Witchgrass</b>							
1–2"	–	10	–	16	24	–	–
2–4"	7	12	8	16	24	6	9
4–6"	7	–	8	16	24	6	9
6–8"	–	–	–	16	24	6	9
<b>Yellow Foxtail</b>							
1–2"	–	10	–	16	24	–	6
2–4"	7	12	8	16	24	6	6
4–6"	–	–	–	16	24	6	9
6–8"	–	–	–	16	24	6	9

<sup>a</sup> If grasses are small and not drought stressed, the *Fusion* rate can be reduced to 6 oz/A on barnyardgrass and all foxtails and 4 oz on volunteer corn.

**TABLE 2L – Labeled Tank Mixes With Postemergence Grass Herbicides in Soybean\***

GRASS HERBICIDES							
BROADLEAF HERBICIDES <sup>1</sup>	Assure II/ Targa	Fusilade DX	Fusion	Poast	Poast Plus	Select/ Arrow	Select Max
Basagran	Y <sup>3</sup>	Y	Y	Y <sup>4</sup>	Y <sup>4</sup>	Y <sup>5</sup>	Y <sup>5</sup>
Cadet	Y	Y	Y	Y	Y	Y	Y
Classic	Y <sup>3</sup>	Y <sup>3</sup>	Y <sup>3</sup>	Y	Y	Y <sup>5</sup>	Y <sup>5</sup>
Cobra	Y	Y	-	Y	Y	Y	Y
FirstRate	Y <sup>5</sup>	-	Y <sup>5</sup>	Y <sup>5</sup>	Y <sup>5</sup>	Y <sup>5</sup>	Y <sup>5</sup>
Flexstar	Y	Y	Y	Y	Y	Y	Y
Harmony SG	Y <sup>5</sup>	Y <sup>5</sup>	Y <sup>5</sup>	-	-	-	Y
Phoenix	-	-	-	-	-	Y	Y
Pursuit	-	Y <sup>6</sup>	Y <sup>6</sup>	Y <sup>6</sup>	Y <sup>6</sup>	Y <sup>6</sup>	Y <sup>6</sup>
Raptor	-	-	-	Y <sup>6</sup>	Y <sup>6</sup>	Y <sup>6</sup>	Y <sup>6</sup>
Reflex	Y	Y	Y	Y	Y	Y	Y
Resource	Y	Y	Y	Y	Y	Y	Y
Scepter	-	Y <sup>3</sup>	Y <sup>3</sup>	-	-	-	-
Synchrony XP	Y <sup>3</sup>	Y	Y	Y	Y	Y <sup>5</sup>	Y <sup>5</sup>
Ultra Blazer	Y	Y	Y	Y	Y	Y	Y
<b>GLYPHOSATE-RESISTANT SOYBEAN</b>							
Glyphosate <sup>2</sup>	Y	Y	Y	Y	Y	Y	Y
Extreme	-	-	-	-	-	-	-
Flexstar GT 3.5 <sup>2</sup>	Y	Y	Y	Y	Y	Y	Y
Sequence <sup>2</sup>	Y	Y	Y	Y	Y	Y	Y
<b>LIBERTYLINK SOYBEAN</b>							
Liberty	Y	Y	Y	Y	Y	Y	Y

\* Y = the products may be tank mixed; - = tank mix is not legally labeled or recommended.

<sup>1</sup> Tank mixing saves time and application cost but is only labeled for some herbicides and for a limited number of grasses. Consult remarks and limitations for individual products in this guide and pesticide labels for further information.

<sup>2</sup> Volunteer glyphosate-resistant corn. Consult the POST grass herbicide and glyphosate label for correct additives.

<sup>3</sup> DO NOT tank mix when the target grass is barnyardgrass, crabgrass, quackgrass, or yellow foxtail.

<sup>4</sup> DO NOT tank mix if quackgrass is the target species.

<sup>5</sup> Under certain conditions, grass antagonism may occur.

<sup>6</sup> Volunteer corn and shattercane only. Grass antagonism will occur. NOT RECOMMENDED.

## TABLE 2M – Feed and Forage Restrictions for Soybean Herbicides<sup>a</sup>

Herbicide	Site of Action <sup>b</sup>	For Use in Feed/Forage?	Preharvest Interval
<b>Herbicides Applied PPI or PRE</b>			
Authority Assist	2/14	No	none listed
Authority First/Sonic	2/14	No	65 days
Authority MTZ	5/14	No	120 days
Authority XL	2/14	No	none listed
Boundary	5/15	<b>Yes</b>	none listed
Canopy	2/15	No	none listed
Canopy EX	2/2	No	none listed
Command 3ME	13	No	none listed
Dual II Magnum/Parallel	15	<b>Yes</b>	none listed
Envive	2/2/14	No	none listed
FirstRate	2	<b>Yes</b>	none listed
Gangster	2/14	No	none listed
IntRRo/Microtech	15	<b>Yes</b>	none listed
Lorox/Linex	7	No	none listed
OpTill	2/14	No	85 days
OpTill PRO	2/14/15	No	85 days
Outlook	15	No	none listed
Prefix	14/15	No	none listed
Prowl H <sub>2</sub> O/Prowl	3	<b>Yes</b>	none listed
Pursuit	2	No	none listed
Pursuit Plus	2/3	No	none listed
Python	2	No	none listed
Scepter	2	No	none listed
Sencor	5	<b>Yes</b>	none listed
Sharpen	14	<b>Yes</b>	65 days
Sonalan	3	No	none listed
Spartan	14	No	none listed
Spartan Charge	14/14	No	none listed
Trifluralin	3	<b>Yes</b>	none listed
Valor	14	No	none listed
Valor XLT	2/14	No	none listed
Verdict	14/15	No	none listed
Warrant	15	No	none listed
<b>Herbicides Applied POST</b>			
Assure II/Targa	1	No	80 days
Basagran	6	<b>Yes</b>	30 days
Cadet	14	No	60 days
Classic	2	No	60 days
Cobra/Phoenix	14	No	45 days
Extreme	2/9	No	85 days
FirstRate	2	<b>Yes</b>	14 days
Flexstar GT	9/14	No	45 days
Fusilade DX	1	No	Prebloom
Fusion	1	No	Prebloom
Glyphosate <sup>c</sup>	9	<b>Yes<sup>c</sup></b>	14 days
Harmony	2	No	60 days
Liberty	10	No	70 days
Poast/Poast Plus	1	<b>Yes</b>	75 days
Pursuit	2	No	85 days
Raptor	2	No	85 days
Reflex/Flexstar	14	No	45 days
Resource	14	No	60 days
Scepter	2	No	90 days
Select/Arrow/Select Max	1	No	60 days
Sequence	9/15	No	90 days
Synchrony XP	2/2	No	60 days
Ultra Blazer	14	No	50 days
Warrant	15	No	none listed

<sup>a</sup> Restrictions based on herbicide labels. Always read and follow herbicide labels. <sup>b</sup>Herbicide Site of Action: The site of action key is located on pages 16-17. <sup>c</sup>Consult specific glyphosate labels for feed and forage restrictions.

## TABLE 2N – Weed Management in No-Till Soybean

Effective weed control in no-till soybeans requires control of **all weeds and cover crops** prior to soybean emergence. This can be accomplished by:

1. Late fall applications prior to planting soybeans the following spring (**FALL**).
2. Early spring applications — up to 30 days prior to soybean planting (**EPP**).
3. Applications at or very close to the time of planting (**PRE**).

Regardless of the time of herbicide application, burndown herbicide(s) must be applied to control **all** of the existing vegetation. If some plant species are not controlled prior to soybean emergence, they will be competitive with the soybean crop, ultimately leading to soybean yield loss.

Burndown herbicide options include herbicides without residual activity: glyphosate (Table 10), *Gramoxone* (paraquat), *Liberty*, 2,4-D ester, *Aim*, *Express*, *Vida*, *Sharpen*, and *Verdict*. These herbicides control only existing vegetation and **DO NOT** have residual activity to control weeds that have not yet emerged. The following table lists the effectiveness of these herbicides in burndown applications to control existing vegetation. Selection of these herbicides should be made on the basis of weed type, weed height and the speed of control. In general, *Gramoxone* and *Liberty* will provide faster control than glyphosate or 2,4-D ester, but glyphosate will provide better control of dense weeds or cover crops. Glyphosate is preferred for control of perennial weeds or grasses prior to the completion of tillering.

2,4-D ester provides effective control of several annual, biennial and perennial broadleaf weeds but does not control grasses. Each of these herbicides has one or more weed species that it does not control (e.g., 2,4-D ester does not control chickweed). Therefore, these herbicides are often tank-mixed for broad-spectrum burndown applications. Sometimes application rates of burndown herbicides need to be increased to control large weeds or dense weed infestations. Please consult the herbicide labels for information. None of these burndown herbicides have soil activity to stop new weeds from emerging. Herbicides that persist in the soil to stop new weeds from emerging may be included in the burndown application.

Certain residual herbicides have burndown activity on some weed species. **Table 2N** gives the maximum weed height for **burndown** control of summer annual broadleaves and grasses. These herbicides are not as broad-spectrum as glyphosate, *Gramoxone*, *Liberty* or 2,4-D ester for burndown of existing vegetation. Therefore, the residual herbicides are always tank mixed with glyphosate, 2,4-D ester, *Gramoxone*, *Liberty* or combinations of glyphosate + 2,4-D ester. These residual herbicides will control germinating summer annual grasses and broadleaf weeds. The **effectiveness** of these residual herbicides on summer annual grass and broadleaf weed control is not the same. **Table 2A** gives the effectiveness ratings of these residual herbicides on annual weeds. The **length of weed control** from these residual herbicides is not the same. Some herbicides persist longer in the soil and are, therefore, more effective than other her-

bicides when applied in the fall. There are fewer noticeable differences in the length of summer annual weed control when these herbicides are applied in the spring (EPP) or at planting (PRE). **Table 2N** gives the **length of summer weed control** (0 = no residual weed control; 1 = short residual control; 2 = moderate residual control; 3 = long residual control). When applying residual herbicides in the FALL for summer annual weed control, choose a herbicide with a “3” rating. When applying residual herbicides in the spring, EPP, choose a herbicide with a “3” or “2” rating. When applying residual herbicides at or very close to the time of planting (PRE), choose a herbicide with a “3”, “2” or “1” rating.

A few important comments for each herbicide in **Table 2N** are listed below.

### Burndown Herbicides without Residual Activity

**Glyphosate:** Glyphosate can be applied in the **Fall**, **EPP** or **PRE** to control existing vegetation. Application rates range from 0.75 to 1.13 lb a.e./A, depending on weed size. Lower rates may be used to control smaller weeds at lower spray volumes — consult label. Consult **Table 2N** for maximum weed heights and effectiveness ratings. There are many formulations of glyphosate. Consult **Table 10** for a list of glyphosate products, use rates and the need for additional surfactant. Ammonium sulfate (AMS) at 17 lb/100 gal should be added to glyphosate, regardless of formulation. The addition of 2,4-D ester greatly improves control of horseweed (marestail), giant ragweed, mustards and some other key no-till weeds (see the following comments about 2,4-D ester). Herbicides with residual activity can also be tank mixed with glyphosate or glyphosate + 2,4-D ester.

**Gramoxone SL 2.0 (2 SL):** *Gramoxone SL 2.0* can be applied **EPP** or **PRE** to control existing vegetation. Apply *Gramoxone SL 2.0* at 2 pt/A for weeds less than 3 inches tall and 3.0 pt/A for weeds less from 3 to 6 inches tall. Consult **Table 2N** for maximum weed heights and effectiveness ratings. Always add surfactant at 0.25% v/v or a crop oil concentrate at 1% v/v. Regrowth of rye or wheat may occur if plants are not fully tillered when treated. Burndown effectiveness is highly dependent on the environment, with better burndown in warm, sunny conditions. For improved burndown control, *Gramoxone* can be tank mixed with 2,4-D ester or with a herbicide with residual activity.

**Parazone (3 SL):** *Parazone* contains the same active ingredient as *Gramoxone SL 2.0* (paraquat). However, *Parazone* is at a different concentration — 2 pints of *Parazone* is equal to 3 pints of *Gramoxone SL 2.0*. Refer to the *Gramoxone SL 2.0* section for further remarks on *Parazone*.

**Liberty (2.34 L):** *Liberty* can be applied **preplant** or **PRE** to control existing vegetation. Apply *Liberty* at 29 to 36 oz/A with ammonium sulfate at 17 lb/100 gal. If *Liberty* is used as a burndown herbicide, in-season applications of *Liberty* are prohibited. Consult **Table 2N** for maximum weed heights and effectiveness ratings for burndown applications. Burndown effectiveness is highly dependent on the environment, with better burndown activity in warm, sunny condi-

**Table 2N – Weed Management in No-Till Soybean (continued)**

tions. Spray coverage is extremely important. *Liberty* requires a minimum of 15 gal/A of spray solution. Consult label and Table 12 for crop rotation restrictions. *Liberty* can be tank-mixed with 2,4-D ester or with a herbicide with residual activity to broaden the spectrum of weed control.

**2,4-D ester:** 2,4-D-ester can be applied in the **Fall** or **EPP** to control existing annual, biennial and perennial broadleaf weeds. One qt/A of 2,4-D ester can be applied in the fall and up to 30 days prior to soybean planting; 1 pt/A of 2,4-D ester can be applied up to 7 days prior to soybean planting. Consult **Table 2N** for maximum weed heights and effectiveness ratings. 2,4-D ester does not control common chickweed. 2,4-D can be tank mixed with a number of herbicides for improved weed control.

**Express (50 SG):** *Express* can be applied in the **fall** and in the **spring 14 days or more** prior to soybean planting. Apply *Express* at 0.25 to 0.5 oz/A — use the higher rate for denser weed populations or weeds that are only partially controlled. Consult **Table 2N** for maximum weed heights and effectiveness ratings. Always add crop oil concentrate at 1% v/v. *Express* is very effective on common chickweed. For best burndown results, the addition of 2,4-D ester is recommended. *Express* can also be tank mixed with herbicides that have residual activity.

**Aim (2 EC):** *Aim* (carfentrazone) is labeled for preplant (EPP) through PRE burndown applications. Apply *Aim* at 0.5 to 2 oz/A; use the higher rate to control larger weeds (4 inches tall). *Aim* is a contact herbicide without residual activity and is effective only on broadleaf weeds. Always add surfactant (0.25% v/v) or crop oil concentrate (1% v/v). Visual injury symptoms appear soon after *Aim* application. *Aim* can be tank mixed with glyphosate, 2,4-D ester and/or herbicides with residual activity. Consult **Table 2N** for maximum weed heights and effectiveness ratings.

**Vida (0.2 L):** *Vida* (pyraflufen) is labeled for preplant (**EPP**) burndown applications. Apply *Vida* at 0.5 to 2 oz/A; use the higher rate to control larger weeds (4 inches tall). *Vida* is a contact herbicide without residual activity and is effective only on broadleaf weeds. Always add surfactant (0.25% v/v) or crop oil concentrate (1% v/v). Visual injury symptoms appear soon after *Vida* application. *Vida* can be tank mixed with glyphosate, 2,4-D ester and/or herbicides with residual activity. The pH of the spray solution needs to be less than 7.5 or hydrolysis will occur. Consult **Table 2N** for maximum weed heights and effectiveness ratings.

**Sharpen (2.85 L):** *Sharpen* can be applied **preplant** or **PRE** to control existing broadleaf vegetation. Apply *Sharpen* at 1 oz/A prior to soybean emergence. For enhanced burndown activity, higher rates of *Sharpen* can be applied. However, longer intervals are required between *Sharpen* application and soybean planting; a minimum of 14 days for 1.5 oz/A and 30 days for 2 oz/A of *Sharpen*. Always add a methylated seed oil (1% v/v) and ammonium sulfate (AMS) at 17 lb/100 gal. DO NOT apply *Sharpen* after soybean emergence or severe crop injury will occur. DO NOT apply to coarse-textured soils with 2% less organic matter unless soybean is planted 1 month after application; *Sharpen* at 2 oz/A requires 44 days. DO NOT tank mix or apply *Sharpen* within 30 days of products containing flumioxazin (*Valor*), sulfentrazone (*Authority* or *Spartan*) or fomesafen (*Reflex*).

Consult **Table 2N** for maximum weed heights and effectiveness ratings for burndown applications. Consult label and Table 12 for crop rotation restrictions. Rotation restrictions are longer for application rates greater than 1 oz/A. *Sharpen* is a very effective herbicide on horseweed (marestail) and may provide 2 to 4 weeks of residual control against this weed. *Sharpen* should be tank mixed with glyphosate or glyphosate + 2,4-D ester to broaden the spectrum of burndown weed control.

**Verdict (5.57 L):** *Verdict* can be applied in the **Fall, preplant** or **PRE** to control existing broadleaf vegetation. *Verdict* contains *Sharpen* (saflufenacil) and *Outlook* (dimethenamid-P) (see **Table 2C**). The labeled rate of *Verdict* for use in soybean is 5 to 10 oz/A. The soybean rate of 5 oz/A of *Verdict* will not provide residual weed control. For additional residual control and enhanced burndown activity, higher rates of *Verdict* can be applied. However, longer intervals are required between *Verdict* application and soybean planting; a minimum of 14 days for 7.5 oz/A and 30 days for 10 oz/A of *Verdict*. Always add a methylated seed oil (1% v/v) and ammonium sulfate (AMS) at 17 lb/100 gal. DO NOT apply *Verdict* after soybean emergence or severe crop injury will occur. DO NOT apply to coarse textured soils with less than 2% organic matter, unless soybean is planted 30 days after application. DO NOT tank-mix or apply *Verdict* within 30 days of soil-applied applications of flumioxazin (*Valor*), sulfentrazone (*Authority* or *Spartan*), or fomesafen (*Reflex*, *Flexstar*) containing products. However, fomesafen (*Flexstar*, *Reflex*) and other POST PPO-inhibiting herbicides can be used 14 days after soybean emergence. Consult **Table 2N** for maximum weed heights and effectiveness ratings for burndown applications. Consult label and Table 12 for crop rotation restrictions. Rotation restrictions are longer for *Verdict* applications rates greater than 5 oz/A. *Verdict* is a very effective herbicide on horseweed (marestail) and may provide 2 to 4 weeks of residual control against this weed. *Verdict* should be tank-mixed with glyphosate to broaden the spectrum of burndown weed control.

### Burndown Herbicides with Residual Activity

**Authority Assist (4 L):** *Authority Assist* can be applied in the **Fall, EPP** (up to 45 days) or **PRE** to control existing vegetation and to provide residual control. *Authority Assist* contains *Spartan* (sulfentrazone) and *Pursuit* (see Table 2C). Apply *Authority Assist* at 4 to 8 oz/A as part of a planned two-pass program in glyphosate-resistant soybean or at 6 to 12 oz/A in conventional soybean. DO NOT apply *Authority Assist* to soils with pH of 7.5 or higher. Always add a crop oil concentrate or a methylated seed oil (1% v/v). Soybean varieties vary in their sensitivity to sulfentrazone, a component in *Authority Assist*; consult your local seed dealer for information. Consult **Table 2N** for maximum weed heights and effectiveness ratings for burndown applications and **Table 2A** for residual weed control. Consult label and Table 12 for crop rotation restrictions. *Authority Assist* should be tank-mixed with 2,4-D ester, glyphosate, glyphosate + 2,4-D ester or *Gramoxone* to broaden the spectrum of burndown weed control.

**Authority First/Sonic (70 DF):** *Authority First/Sonic* can be applied **EPP** (up to 14 days) or **PRE** to control existing vegetation and to provide residual weed control. *Authority First/Sonic* contains

## Table 2N – Weed Management in No-Till Soybean (continued)

*Spartan* (sulfentrazone) and *FirstRate* (see Table 2C). Apply *Authority First/Sonic* at 3.2 oz/A prior to planned 2-pass programs in glyphosate-resistant soybean and 6.4 oz/A in conventional soybean. Always add surfactant at 0.25% v/v + 28% N or ammonium sulfate (AMS) or crop oil concentrate + 28% N or AMS. Soybean varieties vary in their sensitivity to sulfentrazone, a component in *Authority First/Sonic*. Consult your local seed dealer for information. Consult **Table 2N** for maximum weed heights and effectiveness ratings for burndown applications and **Table 2A** for residual weed control. Consult label and Table 12 for crop rotation restrictions. *Authority First/Sonic* should be tank mixed with 2,4-D ester, glyphosate, glyphosate + 2,4-D ester, or *Gramoxone* to broaden the spectrum of burndown weed control.

**Authority MTZ (45 DF):** *Authority MTZ* can be applied in the **Fall, EPP** (up to 45 days) or **PRE** to control existing vegetation and to provide residual weed control. *Authority MTZ* contains *Spartan* (sulfentrazone) and *Sencor* (see Table 2C). Apply *Authority MTZ* at 8 to 12 oz/A as part of a planned 2-pass program in glyphosate-resistant soybean or at 12 to 20 oz/A in conventional soybean. DO NOT apply *Authority MTZ* at rates greater than 12 oz/A if the soil pH is greater than 7.5. Always add crop oil concentrate (1% v/v). Soybean varieties vary in their sensitivity to sulfentrazone and metribuzin components in *Authority MTZ*; consult your local seed dealer for information. Consult **Table 2N** for maximum weed heights and effectiveness ratings for burndown applications and **Table 2A** for residual weed control. Consult label and Table 12 for crop rotation restrictions. *Authority MTZ* should be tank mixed with 2,4-D ester, glyphosate, glyphosate + 2,4-D ester, or *Gramoxone* to broaden the spectrum of burndown weed control.

**Authority XL (70 WG):** *Authority XL* can be applied in the **Fall, preplant** or **PRE** to control existing broadleaf vegetation. *Authority XL* contains *Spartan* (sulfentrazone) and *Classic* (chlorimuron-ethyl) (see Table 2C). Apply *Authority XL* at 3 to 5 oz/A as part of a planned 2-pass program. DO NOT apply *Authority XL* to soils with pH greater than 7.6. Always add a crop oil concentrate or a methylated seed oil at 1% v/v or a non-ionic surfactant at 0.25% v/v. The addition of ammonium sulfate (AMS) at 17 lb/100 gal may aid in control when tank-mixed with glyphosate. Soybean varieties vary in their sensitivity to sulfentrazone a component in *Authority XL*; consult your local seed dealer for information. Consult **Table 2N** for maximum weed heights and effectiveness ratings for burndown applications and **Table 2A** for residual weed control. Consult label and Table 12 for crop rotation restrictions. *Authority XL* should be tank-mixed with 2,4-D ester, glyphosate, *Gramoxone*, *Express*, or *Express* + 2,4-D ester to broaden the spectrum of burndown weed control.

**Autumn (10 WG):** *Autumn* (iodosulfuron) at 0.3 oz/A may be applied in the **Fall only** to control existing vegetation of certain weeds and provide some residual weed control. Always add crop oil concentrate (1% v/v) and ammonium sulfate (2.5 lb/A). *Autumn* will not control ALS-resistant weeds. Consult **Table 2N** for maximum weed heights and effectiveness ratings. For improved burndown control, tank mixes with 2,4-D ester or glyphosate are recommended. Consult label and Table 12 for crop rotation restrictions.

**Autumn Super 51 WDG (51 WG):** *Autumn Super 51 WDG* at 0.5 oz/A may be applied in the **Fall only** to control existing vegetation of certain weeds and provide some residual weed control. *Autumn Super 51 WDG* contains *Autumn* (iodosulfuron) and thiencazobenzene-methyl (see Table 2C). Always add a crop oil concentrate or a methylated seed oil (1% v/v) and ammonium sulfate (2.5 lb/A). *Autumn Super 51 WDG* will not control ALS-resistant weeds. Consult **Table 2N** for maximum weed heights and effectiveness ratings. For improved burndown control, tank mixes with 2,4-D ester or glyphosate are recommended. Consult label and Table 12 for crop rotation restrictions.

**Canopy (75 WG):** *Canopy* can be applied in the **Fall, EPP** (up to 45 days) or **PRE** to control existing vegetation and to provide residual weed control. *Canopy* contains *Classic* (chlorimuron) and *Sencor* (see Table 2F). *Canopy* use rates range between 2.25 and 4 oz/A. DO NOT apply *Canopy* at rates greater than 2.25 oz/A to soils with a composite pH greater than 7.0; use of higher rates may result in unacceptable injury to this year's crop and the following crop. DO NOT apply *Canopy* to soils with a composite pH exceeding 7.6. Always add a crop oil concentrate at 1% v/v or surfactant at 0.25% v/v. Consult **Table 2N** for maximum weed heights and effectiveness ratings for burndown applications and **Table 2A** for residual weed control. Fall applications of *Canopy* provide early-season residual control of certain weeds including common lambsquarters. However, effectiveness from the residual components of *Canopy* is greater the closer it is applied to planting. Consult label and Table 12 for crop rotation restrictions. For fall applications, adjust the rotational crop intervals by basing the interval on the date of soybean planting, not herbicide application. The addition of 2,4-D ester in fall or EPP applications is recommended and is required for control of certain weeds. *Canopy* can be tank mixed with *Express* (fall) or glyphosate to improve common chickweed control.

**Canopy EX (29.5 WG):** *Canopy EX* can be applied in the **Fall** and in the spring 7 days or more prior to soybean planting. *Canopy EX* contains *Classic* (chlorimuron) and *Express* (see Table 2F). *Canopy EX* use rates range from 1.1 to 2.2 oz/A, depending on soil pH. DO NOT apply *Canopy EX* at rates greater than 1.1 oz/A to soils with a composite pH greater than 7.0. DO NOT apply *Canopy EX* to soils with a composite pH exceeding 7.6. Always add a crop oil concentrate at 1% v/v or surfactant at 0.25% v/v. Consult **Table 2N** for maximum weed heights and effectiveness ratings for burndown applications and **Table 2A** for residual weed control. Consult label and Table 12 for crop rotation restrictions. For fall applications, adjust the rotational crop intervals by basing the interval on the date of soybean planting, not herbicide application. Fall applications of *Canopy EX* provide early-season residual control of certain weeds including common lambsquarters. However, effectiveness from the residual component of *Canopy EX* is greater the closer it is to planting. *Canopy EX* will not control ALS-resistant weeds. For best burndown results, the addition of 2,4-D ester is recommended.

**Envive (41.3 WG):** *Envive* can be applied in the **Fall, EPP** or **PRE** to control existing vegetation and to provide residual weed control. *Envive* contains *Classic* (chlorimuron), *Harmony*, and *Valor* (see Table 2C). *Envive* use rates range between 2.5 and 5.3 oz/A, for por-

**Table 2N – Weed Management in No-Till Soybean (continued)**

tions of Michigan south of highway I-96. The maximum use rate of *Envive* for portions of the Michigan north of I-96 is 2.5 oz/A. Soil pH also influences the maximum use rate of *Envive*. If the composite soil pH is between 7.1 and 7.6, do not apply more than 2.5 oz/A. DO NOT apply to soils with a composite pH exceeding 7.6. Always add a crop oil concentrate at 1% v/v. Consult **Table 2N** for maximum weed heights and effectiveness ratings for burndown applications and **Table 2A** for residual weed control. Fall applications of *Envive* provide early-season residual control of certain weeds including common lambsquarters. However, effectiveness from the residual components of *Envive* is greater the closer it is applied to planting. Consult label and Table 12 for crop rotation restrictions. For best burndown results, the addition of 2,4-D ester is recommended.

**Extreme (2.17 L):** *Extreme* can be applied in the **Fall, EPP** (up to 45 days) or **PRE** to control existing vegetation and to provide residual weed control. *Extreme* contains glyphosate and *Pursuit* (see Table 2C). Apply *Extreme* at 3 pt/A. Always add surfactant at 0.25% v/v + 17 lb/100 gal of ammonium sulfate (AMS). Consult **Table 2N** for maximum weed heights and effectiveness ratings for burndown applications and **Table 2A** for residual weed control (*Pursuit*). Effectiveness from the residual component of *Extreme* is greater the closer it is applied to planting. Consult label and Table 12 for crop rotation restrictions. For fall applications, adjust the rotational crop intervals by basing the interval on the date of soybean planting, not herbicide application. Apply with 2,4-D ester for improved horseweed (marestail) and perennial weed control.

**FirstRate (84 WG):** *FirstRate* can be applied **EPP** (up to 14 days) or **PRE** for control of existing vegetation and to provide residual weed control. Apply *FirstRate* at 0.3 to 0.6 oz/A, use the 0.6 oz/A rate for improved residual control. Always add crop oil concentrate at 1% v/v and 28% N at 2.5% v/v. Consult **Table 2N** for maximum weed heights and effectiveness ratings for burndown applications and **Table 2A** for residual weed control. *FirstRate* will not control ALS-resistant weeds. To broaden the spectrum of weed control, tank mix with glyphosate, *Gramoxone* or 2,4-D ester. More effective burndown occurs when conditions are warm and sunny.

**Flexstar 3.5 GT (2.82 L):** *Flexstar GT 3.5* can be applied **pre-plant** or **PRE** to control existing vegetation and to provide some residual weed control. *Flexstar GT 3.5* contains glyphosate and *Flexstar* (see Table 2C). Apply *Flexstar GT 3.5* at 3 pt/A. Crop oil concentrate at 1% v/v and ammonium sulfate (AMS) at 17 lb/100 gal. should be added to *Flexstar GT 3.5*. DO NOT apply products containing fomesafen (*Flexstar*, *Flexstar GT 3.5*, *Prefix* or *Reflex*) to the same field in CONSECUTIVE years. Consult **Table 2N** for maximum weed heights and effectiveness ratings for burndown applications. Consult label and Table 12 for crop rotation restrictions. The addition of 2,4-D ester may enhance horseweed (marestail) and perennial weed control.

**Linex/Lorox (4 L):** *Linex/Lorox* can be applied **EPP** (up to 30 days) or **PRE** for control of existing vegetation and to provide residual weed control. Apply *Linex/Lorox* at 1 pt/A. Always add crop oil concentrate at 1% v/v (preferred) or 0.25% v/v surfactant. Consult **Table 2N** for maximum weed heights and effectiveness ratings for burndown applications and **Table 2A** for residual weed control.

Effectiveness from *Linex/Lorox* is greater the closer it is applied to planting. To broaden the spectrum of weed control, tankmix with glyphosate or 2,4-D ester.

**OpTill (68 WG):** *OpTill* can be applied **preplant** or **PRE** to control existing vegetation and to provide residual control. *OpTill* contains *Sharpen* (saflufenacil) and *Pursuit* (see Table 2C). Apply *OpTill* at 2 oz/A. Always add a methylated seed oil (1% v/v) and ammonium sulfate (AMS) at 17 lb/100 gal. DO NOT apply *OpTill* after soybean emergence or severe crop injury will occur. DO NOT apply to coarse-textured soils with less than 2% organic matter unless soybean is planted 1 month after application. DO NOT tank mix or apply *OpTill* within 30 days of products containing flumioxazin (*Valor*), sulfentrazone (*Authority* or *Spartan*), fomesafen (*Reflex*) or clomazone (*Command*). Consult **Table 2N** for maximum weed heights and effectiveness ratings for burndown applications and **Table 2A** for residual weed control. Consult label and Table 12 for crop rotation restrictions. *OpTill* should be tank mixed with glyphosate or glyphosate + 2,4-D ester to broaden the spectrum of burndown weed control.

**OpTill PRO (co-pack):** *OpTill PRO* can be applied in the **Fall, preplant** or **PRE** to control existing vegetation and to provide residual control. *OpTill PRO* is a co-pack of *OpTill* (*Sharpen* + *Pursuit*) and *Outlook* (see **Table 2C**). Apply *OpTill PRO* at 2 oz/A (dry) and 10 oz/A (liquid). Always add a methylated seed oil (1% v/v) and ammonium sulfate (AMS) at 17 lb/100 gal. DO NOT apply *OpTill PRO* after soybean emergence or severe crop injury will occur. DO NOT apply to coarse textured soils with less than 2% organic matter, unless soybean is planted 1 month after application. DO NOT tank-mix or apply *OpTill PRO* within 30 days of preemergence applications of flumioxazin (*Valor*), sulfentrazone (*Authority* or *Spartan*), fomesafen (*Reflex*), or clomazone (*Command*) containing products. Consult **Table 2N** for maximum weed heights and effectiveness ratings for burndown applications and **Table 2A** for residual weed control. Consult label and Table 12 for crop rotation restrictions. *OpTill PRO* should be tank-mixed with glyphosate, or glyphosate + 2,4-D ester to broaden the spectrum of burndown weed control.

**Python WDG (80 WG):** *Python* can be applied **EPP** (up to 30 days) or **PRE** for control of existing vegetation and to provide residual weed control. Apply *Python* at 1.14 oz/A. Always add crop oil concentrate at 1% v/v. *Python* can also be applied in the **Fall** for burndown activity of winter annual weeds, but it is not likely to provide extended residual control in the spring. Consult **Table 2N** for maximum weed heights and effectiveness ratings for burndown applications and **Table 2A** for residual weed control. Effectiveness from *Python* is greater the closer it is applied to planting. *Python* will not control ALS-resistant weeds. To broaden the spectrum of weed control, tank-mix with glyphosate, *Gramoxone* or 2,4-D ester. More effective burndown occurs when conditions are warm and sunny.

**Sencor (75 DF):** *Sencor* can be applied **EPP** (up to 30 days) or **PRE** for control of existing vegetation and to provide residual weed control. Apply *Sencor* at 5.33 oz/A. Always add crop oil concentrate at 1% v/v. *Sencor* can also be applied in the fall for burndown activity of winter annual weeds, but it is not likely to provide extended residual control in the spring. Consult **Table 2N** for maximum weed



## Table 2N – Weed Management in No-Till Soybean (continued)

heights and effectiveness ratings for burndown applications and **Table 2A** for residual weed control. Effectiveness from *Sencor* is greater the closer it is applied to planting. *Sencor* will not control triazine-resistant weeds. To broaden the spectrum of weed control, tank mix with glyphosate, *Gramoxone* or 2,4-D ester.

**Sequence (5.25 L):** *Sequence* can be applied **EPP** (up to 30 days) or **PRE** to control existing vegetation and to provide residual weed control. *Sequence* contains glyphosate and *Dual Magnum* (see Table 2C). Apply *Sequence* at 2.5 pt/A. Ammonium sulfate (AMS) at 17 lb/100 gal should be added. Consult **Table 2N** for maximum weed heights and effectiveness ratings for burndown applications and **Table 2A** for residual weed control (*Dual Magnum*). The addition of 2,4-D ester may enhance horseweed (marestalk) and perennial weed control.

**Spartan Charge (3.5 SC):** *Spartan Charge* can be applied in the **Fall**, **EPP** or **PRE** to control existing vegetation and to provide residual control. *Spartan Charge* contains *Spartan* (sulfentrazone) and *Aim* (see Table 2C). Apply *Spartan Charge* at 6 oz/A as part of a planned two-pass program in glyphosate resistant soybean or at 8 oz/A in conventional soybean. Use the lower end of the rate range when the pH is greater than 7.0. DO NOT apply *Spartan Charge* to soils with pH of 7.5 or higher or on sands with less than 1% organic matter. Always add a 0.5% v/v of a non-ionic surfactant and 17 lb/100 gal of ammonium sulfate. Soybean varieties vary in their sensitivity to sulfentrazone, a component in *Spartan Charge*; consult your local seed dealer for information. Consult **Table 2N** for maximum weed heights and effectiveness ratings for burndown applications and **Table 2A** for residual weed control. Consult label and Table 12 for crop rotation restrictions. For improved burndown control, tank mixes with 2,4-D ester or glyphosate are recommended.

**Synchrony XP (28.4 WG):** *Synchrony XP* can be applied **EPP** (up to 45 days) or **PRE** to control existing vegetation and to provide residual weed control. *Synchrony XP* contains *Classic* (chlorimuron) and *Harmony* (see Table 2C). *Synchrony XP* use rates range between 1 and 3 oz/A, depending on soil pH. If the composite soil pH is between 7.1 and 7.6, do not apply more than 1 oz/A. DO NOT apply to soils with a composite pH exceeding 7.6. Use a minimum of 1 oz/A of *Synchrony XP* for burndown activity and a minimum of 1.25 oz/A for residual control of labeled weeds. Always add a crop oil concentrate at 1% v/v. Consult **Table 2N** for maximum weed heights

and effectiveness ratings for burndown applications and **Table 2A** for residual weed control. Fall applications of *Synchrony XP* provide early-season residual control of certain weeds including common lambsquarters. However, effectiveness from the residual components of *Synchrony XP* is greater the closer it is applied to planting. Consult label and Table 12 for crop rotation restrictions. *Synchrony XP* will not control ALS-resistant weeds. For best burndown results, the addition of 2,4-D ester is recommended.

**Valor (51 WG):** *Valor* can be applied **EPP** (up to 14 days) or **PRE** for control of existing vegetation and to provide residual weed control. Apply *Valor* at 2 to 3 oz/A, 2.5 oz/A is the typical use rate. Always add crop oil concentrate at 1% v/v; for burndown activity. *Valor* can also be applied in the **Fall** for burndown activity of winter annual weeds, but it is not likely to provide extended residual control in the spring. Consult **Table 2N** for maximum weed heights and effectiveness ratings for burndown applications and **Table 2A** for residual weed control. Effectiveness from *Valor* is greater the closer it is applied to planting. More effective burndown occurs when conditions are warm and sunny. *Valor* has poor postemergence activity on horseweed (marestalk), but it had good preemergence activity. *Valor* should be tank-mixed with 2,4-D ester, glyphosate, glyphosate + 2,4-D ester, or *Gramoxone* to broaden the spectrum of burndown weed control.

**Valor XLT (40.3 WG):** *Valor XLT* can be applied in the **Fall**, **EPP** or **PRE** to control existing vegetation and to provide residual weed control. *Valor XLT* contains *Classic* (chlorimuron) and *Valor* (see Table 2C). *Valor XLT* use rates range between 3 and 5 oz/A, depending on soil pH. If the composite soil pH is greater than 6.8, do not apply more than 2.5 oz/A. Weeds will only be suppressed at this rate. DO NOT apply to soils with a composite pH exceeding 7.6. Always add a crop oil concentrate at 1% v/v; ammonium sulfate is also recommended. Consult **Table 2N** for maximum weed heights and effectiveness ratings for burndown applications and **Table 2A** for residual weed control. Fall applications of *Valor XLT* provide early-season residual control of certain weeds including common lambsquarters. However, effectiveness from the residual components of *Valor XLT* is greater the closer it is applied to planting. Consult label and Table 12 for crop rotation restrictions. For best burndown results, the addition of 2,4-D ester, glyphosate, or glyphosate + 2,4-D ester is recommended.

## Effectiveness of Herbicides for No-Till Soybean

		ANNUAL BROADLEAVES / GRASSES											WINTER ANNUALS / PERENNIALS								COVER CROPS						
		LENGTH OF CONTROL <sup>d</sup>	Cocklebur	Jimsonweed	Lambsquarters	Nightshade (E. Black)	Pigweed	Ragweed (Common)	Ragweed (Giant)	Smartweed	Velvetleaf	Wild mustard	Barnyardgrass	Foxtails	Chickweed (Common)	Deadnettle	Henbit	Horseweed (Marestail)	Pennycress	Shepherd's-purse	Yellow rocket	Dandelion	Quackgrass	Rye	Wheat	Clover	Hairy Vetch
			Maximum Weed Height (inches)											Herbicide Effectiveness													
Glyphosate (0.75 lb ae/A) <sup>a</sup>	0	6	6	6	6	6	6	6	6	6	6	6	6	<b>F</b>	F	<b>G</b>	<b>F</b>	<b>F</b>	<b>F</b>	<b>F</b>	<b>G</b> <sup>e</sup>	<b>G</b>	<b>F</b>	<b>F</b>	F	F	
Glyphosate (1.13 lb ae/A) <sup>a</sup>	0	12	12	12	12	12	12	12	12	12	12	12	12	<b>F</b>	<b>G</b>	<b>G</b>	<b>F</b>	<b>F</b>	<b>F</b>	<b>F</b>	<b>G</b> <sup>e</sup>	<b>G</b>	<b>F</b>	<b>F</b>	F	F	
Gramoxone SL 2.0 (2 pt/A)	0	3	3	3	3	3	3	-	3	3	3	3	3	<b>F</b>	P	<b>G</b>	P	<b>G</b>	<b>G</b>	<b>G</b>	P	P	F	F	P	P	
Gramoxone SL 2.0 (3 pt/A)	0	6	6	6	6	6	6	-	6	6	6	6	6	<b>F</b>	F	<b>G</b>	P	<b>F</b>	<b>F</b>	<b>F</b>	P	P	<b>G</b>	<b>G</b>	F	F	
Liberty (29 oz/A)	0	14	10	6	8	4	10	12	14	4	6	5	12	<b>F</b>	F	F	<b>G</b>	<b>G</b>	<b>G</b>	<b>G</b>	F	N	P	F	P	<b>G</b>	
2,4-D ester <sup>b</sup> (1 pt/A)	0	3	-	3	3	3	3	-	2	3	-	-	-	P	P	P	<b>F</b>	<b>G</b>	<b>G</b>	<b>G</b>	P	N	N	N	F	F	
2,4-D ester <sup>c</sup> (1 qt/A)	1	6	3	6	6	6	6	3	5	6	-	-	-	P	F	F	<b>F</b>	<b>F</b>	<b>F</b>	<b>F</b>	F	N	N	N	<b>G</b>	<b>G</b>	
Express (0.25 oz/A)	0	-	-	3	-	-	-	-	-	3	-	-	-	<b>F</b>	<b>G</b>	<b>G</b>	P	<b>G</b>	F	P	F	N	N	N	N	N	
Aim + glyphosate (1 oz + 0.75 lb ae/A)	0	4	4	4	4	4	4	4	4	4	4	4	4	<b>G</b>	F	<b>G</b>	<b>G</b>	<b>F</b>	<b>F</b>	<b>F</b>	F	<b>G</b>	<b>F</b>	<b>F</b>	F	F	
Sharpen (1 oz/A)	0	6	-	6	6	6	6	6	6	6	-	-	-	F	P	P	<b>F</b>	<b>G</b>	<b>G</b>	<b>G</b>	P	N	N	N	F	N	
Sharpen + glyphosate (1 oz + 0.75 lb ae/A)	0	6	6	6	6	6	6	6	6	6	6	6	6	<b>G</b>	F	<b>G</b>	<b>F</b>	<b>F</b>	<b>F</b>	<b>F</b>	F	<b>G</b>	<b>F</b>	<b>F</b>	F	F	
Verdict + glyphosate (5 oz + 0.75 lb ae/A)	0	6	6	6	6	6	6	6	6	6	6	6	6	<b>G</b>	F	<b>G</b>	<b>F</b>	<b>F</b>	<b>F</b>	<b>F</b>	F	<b>G</b>	<b>F</b>	<b>F</b>	F	F	
Vida + glyphosate (1 oz + 0.75 lb ae/A)	0	4	-	4	4	4	4	4	4	-	-	-	-	<b>F</b>	F	<b>G</b>	<b>F</b>	<b>F</b>	<b>F</b>	<b>F</b>	F	<b>G</b>	<b>F</b>	<b>F</b>	F	F	
Authority Assist (5 oz/A)	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	N	N	N	N	N	N	
Authority First/ Sonic (3.2 oz/A)	2	10	4	-	-	-	8	10	6	6	2	-	-	P	P	P	<b>F</b>	<b>G</b>	F	F	P	N	N	N	P	P	
Authority MTZ (10 oz/A)	2	-	-	-	-	-	-	-	-	-	-	-	-	F	P	P	F	F	F	F	P	N	N	N	P	P	
Authority XL (3.2 oz/A)	3	-	-	3	3	3	3	3	-	3	1	1	-	F	F	<b>G</b>	<b>G</b>	<b>G</b>	<b>G</b>	<b>G</b>	<b>G</b> <sup>e</sup>	N	P	P	P	P	
Autumn (0.3 oz/A)	2	-	-	-	-	3	-	-	-	3	-	-	-	F	F	<b>G</b>	-	<b>G</b>	<b>G</b>	<b>G</b>	F	N	-	-	-	-	

*(continued on next page)*

## Effectiveness of Herbicides for No-Till Soybean (continued)

Fall or Spring Burndown	LENGTH OF CONTROL <sup>d</sup>	ANNUAL BROADLEAVES / GRASSES												WINTER ANNUALS / PERENNIALS								COVER CROPS				
		Cocklebur	Jimsonweed	Lambsquarters	Nightshade (E. Black)	Pigweed	Ragweed (Common)	Ragweed (Giant)	Smartweed	Velvetleaf	Wild mustard	Barnyardgrass	Foxtails	Chickweed (Common)	Deadnettle	Henbit	Horseweed (Marestail)	Pennycress	Shepherd's-purse	Yellow rocket	Dandelion	Quackgrass	Rye	Wheat	Clover	Hairy Vetch
		Maximum Weed Height (inches)												Herbicide Effectiveness												
Autumn Super (0.5 oz/A)	2	-	-	-	-	3	-	-	-	-	3	-	-	<b>G</b>	<b>G</b>	<b>G</b>	<b>G</b>	<b>G</b>	<b>G</b>	<b>G</b>	<b>G</b>	N	-	-	<b>G</b>	<b>G</b>
Canopy (3 oz/A)	3	-	-	3	-	3	3	3	-	3	2	2	<b>G</b>	<b>G</b>	<b>G</b>	F	<b>E</b>	<b>E</b>	<b>E</b>	<b>G</b> <sup>e</sup>	N	P	P	P	P	
Canopy EX (1.65 oz/A)	3	-	-	-	-	3	3	3	3	3	-	-	<b>E</b>	<b>G</b>	<b>G</b>	<b>G</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>G</b> <sup>e</sup>	N	P	P	P	P	
Envive (3.5 oz/A)	3	-	-	-	-	3	3	3	3	3	-	-	P	<b>G</b>	<b>G</b>	F	<b>E</b>	<b>E</b>	<b>E</b>	<b>G</b> <sup>e</sup>	N	P	P	P	P	
Extreme (3 pt/A)	2	18	6	8	12	18	9	9	6	5	18	6	18	<b>E</b>	F	<b>G</b>	<b>G</b>	<b>G</b>	<b>E</b>	<b>G</b>	F	<b>G</b>	<b>G</b>	<b>G</b>	P	P
FirstRate (0.3 - 0.6 oz/A)	2	10	4	-	-	-	8	10	6	6	2	-	-	P	P	P	<b>E</b>	<b>G</b>	F	F	P	N	N	N	P	P
Flexstar GT 3.5 (3.5 pt/A)	1	4	4	4	4	4	4	4	4	4	6	6	18	<b>E</b>	<b>G</b>	<b>G</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>E</b>	F	<b>G</b>	<b>E</b>	<b>E</b>	F	F
Linex/Lorox (1 pt/A)	2	6	-	6	-	-	6	-	6	6	6	2	2	<b>G</b>	P	P	P	P	P	P	P	P	P	P	P	P
OpTill (2 oz/A)	2	8	3	6	6	6	6	6	6	6	6	3	3-6	F	P	P	<b>E</b>	<b>G</b>	<b>G</b>	<b>G</b>	P	N	N	P	F	N
OpTill PRO (2 + 10 oz/A)	2	8	3	6	6	6	6	6	6	6	6	3	3-6	F	P	P	<b>E</b>	<b>G</b>	<b>G</b>	<b>G</b>	P	N	N	P	F	N
Python WDG (1.14 oz/A)	2	-	-	-	-	-	-	-	-	-	-	-	-	<b>G</b>	P	P	<b>G</b>	<b>G</b>	F	<b>G</b>	P	N	N	N	P	P
Sencor (5.33 oz/A)	1	1	-	1	-	1	-	-	-	-	-	-	-	<b>G</b>	<b>G</b>	<b>G</b>	F	<b>G</b>	<b>G</b>	<b>G</b>	P	N	N	N	P	P
Sequence (2.5 pt/A)	2	12	12	6	6	12	12	12	6	6	18	6	18	<b>E</b>	F	<b>G</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>E</b>	F	<b>G</b>	<b>E</b>	<b>E</b>	F	F
Spartan Charge (6 oz/A)	2	-	3	3	3	3	-	-	3	3	3	-	-	-	-	-	-	<b>G</b>	<b>G</b>	<b>G</b>	P	N	-	-	-	-
Synchrony XP (1.5 oz/A)	3	-	-	3	-	3	3	3	3	3	3	-	-	P	<b>G</b>	<b>G</b>	F	<b>E</b>	<b>E</b>	<b>E</b>	<b>G</b> <sup>e</sup>	N	P	P	P	P
Valor (2.5 oz/A)	2	-	-	-	-	-	-	-	-	-	-	-	-	P	F	F	P	<b>G</b>	<b>E</b>	<b>G</b>	F	N	N	N	P	P
Valor XLT (3 oz/A)	3	-	-	-	-	-	-	-	-	-	-	-	-	P	<b>G</b>	<b>G</b>	F	<b>E</b>	<b>E</b>	<b>E</b>	<b>G</b> <sup>e</sup>	N	P	P	P	P

P = Poor; F = Fair; **G** = Good; **E** = Excellent; N = None; - = Not labeled or recommended.

<sup>a</sup> See Table 10 for glyphosate products, formulations and rates. Lower glyphosate rates may be used for smaller weeds at lower spray volumes. Consult label.

<sup>b</sup> Wait a minimum of 7 days before planting soybean.

<sup>c</sup> Wait a minimum of 30 days before planting soybean.

<sup>d</sup> Length of summer weed control: 0 = no residual control; 1 = short residual control; 2 = moderate residual control; 3 = long residual control.

<sup>e</sup> Dandelion control from fall applications.