Chapter 2 – Weed Control in Soybean

This chapter is intended to provide herbicide information for weed control in soybean. Currently, there are seven different soybean platforms that growers can plant. While these platforms allow for the use of different herbicides the general recommendations for weed control are the same. Below is a listing of recommendations and considerations that should be followed for effective weed management in soybean.

Recommendations and Considerations:

1. Herbicide-resistant weeds.

The presence of herbicide-resistant weeds can provide challenges for weed control in soybeans. To effectively control herbicide-resistant weeds it is important to know the specific herbicide site of action (SOA) group(s) that a weed is resistant to. For example, FirstRate, a Group 2 herbicide, will not control Group 2-resistant common ragweed, even though FirstRate is an excellent herbicide for ragweed control (**Table 2B**). Therefore, it would be important to choose an effective alternative herbicide with a different SOA group.

2. Weed control before or at planting.

Effective weed control in soybean requires that all weeds be controlled prior to soybean emergence. Weed control can be accomplished with tillage or burndown herbicides. In no-till soybean, burndown herbicides include options without and with residual activity. Herbicides without residual activity will only control existing vegetation and will not control weeds that have not emerged. In general, these herbicides (i.e., glyphosate, Gramoxone, Liberty) have a broader spectrum of weed control. Certain herbicides with residual activity will also have some burndown activity. These herbicides generally are not as broad spectrum and are always tank-mixed with glyphosate, Gramoxone, Liberty, or with various combinations of these herbicides with 2,4-D, Sharpen, or dicamba. **Table 2A** provides the length of summer annual weed control, the maximum weed height for burndown control of summer weeds, and the effectiveness of herbicides on winter annual and perennial weeds, and cover crops. Burndown herbicides can be applied with soil-applied herbicides and **Table 2B** gives the effectiveness ratings for residual control of these herbicides.

3. Soil-applied herbicides.

The use of soil-applied residual herbicides prior to or at soybean planting is the foundation to an overall season-long weed control program. Soil-applied herbicides can be included in burndown herbicide programs. **Table 2B** provides the effectiveness of soil-applied herbicides, **Table 2D** outlines the components of herbicide premixtures, and **Table 2F** provides important information on each soil-applied herbicide.

4. Postemergence herbicides.

One postemergence herbicide application will not consistently provide season-long weed control. Therefore, it is important that postemergence herbicide applications follow a good soil-applied herbicide program. In some cases, a grower may decide to make two postemergence applications instead. However, all postemergence applications need to be made prior to weeds reaching 4-inches tall. **Table 2C** provides the effectiveness of postemergence herbicides, **Table 2D** outlines premixture components, **Table 2E** lists the maximum weed sizes for postemergence weed control, and **Table 2F** provides important information on each postemergence herbicide. For extended or late-season weed control, several soil-applied residual herbicides may be tank-mixed with a postemergence herbicide application consult **Table 2F** for the various products.

5. Rotation restrictions.

Prior to herbicide use it is always important to determine if the herbicide application that you make this year may affect your crop rotation plan for the following years. **Table 12** provides a complete listing of crop rotation restrictions for all soybean herbicides.

6. Herbicide-resistant soybean traits.

The use of new herbicide-resistant soybean traits allows for the use of herbicides that once could not be used in soybean. **Table 2F** lists the different herbicide traits that each herbicide can be used with. In addition, **Tables 2G** and **2H** provide additional information on the use of 2,4-D and dicamba in Enlist E3 and Roundup Ready 2 Xtend/XtendFlex soybean, respectively.

Abbreviations for this chapter:

Herbicide Formulations: Table 14
Herbicide Sites of Action: Pages 14-15

Application Timings:

EPP = early preplant
PP = preplant
PPI = preplant incorporated
PRE = preemergence
POST = postemergence

Units of Measure:

fl oz = fluid ounces
lb = pounds
oz = ounces
pt = pints
qt = quarts
% v/v = % volume/volume

Additives:

AMS = ammonium sulfate
COC = crop oil concentrate
MSO = methylated seed oil
NIS = non-ionic surfactant

Soybean Traits:

N = no specific trait required
RR = Roundup Ready
LL = LibertyLink
LLGT27 = LibertyLink GT27
RR2X = RR 2 Xtend
E3 = Enlist E3
XF = XtendFlex

Table 2A — Weed Management in No-Till Soybean

		Annual Broadleaves/Grasses												Winter Annuals/Perennials									Cover Crops			
	Length of Control[a]	Cocklebur	Jimsonweed	Lambsquarters	Nightshade (E. black)	Pigweed	Ragweed (Common)	Ragweed (Giant)	Smartweed	Velvetleaf	Wild mustard	Barnyardgrass	Foxtails	Chickweed (Common)	Deadnettle	Henbit	Horseweed (marestail)[d]	Pennycress	Shepherd's-purse	Yellow rocket	Dandelion[e]	Quackgrass	Rye	Wheat	Clover	Hairy vetch
Herbicide		**Maximum Height (inches)[b]**												**Herbicide Effectiveness[c]**												
Glyphosate (0.75 lb ae)	0	24	12	12	6	18	12	12	6	6	18	6	12	**E**	F	**G**	N	**E**	**E**	**E**	**G**	**G**	**G**	**G**	F	F
Glyphosate (1.13 lb ae)	0	36	18	20	12	25	18	18	9	12	18	9	12	**E**	**G**	**G**	N	**E**	**E**	**E**	**G**	**G**	**E**	**E**	F	F
Gramoxone SL 3.0 (1.3 pt)	0	3	3	3	3	3	3	3	–	3	3	3	3	**E**	P	**G**	P	**G**	**G**	**G**	P	P	F	F	P	P
Gramoxone SL 3.0 (2 pt)	0	6	6	6	6	6	6	6	–	6	6	6	6	**E**	F	**G**	F	**E**	**E**	**E**	P	P	**G**	**G**	F	F
Liberty	0	14	10	6	8	4	10	12	14	4	6	5	12	**E**	F	F	**G**	**G**	**G**	**G**	F	N	P	F	P	**G**
2,4-D ester (1 pt)[f]	0	3	–	3	3	3	3	3	–	2	3	–	–	P	P	P	**E**	**G**	**G**	**G**	P	N	N	N	F	F
2,4-D ester (1 qt)[g]	1	6	3	6	6	6	6	6	3	5	6	–	–	P	F	F	**E**	**E**	**E**	**E**	F	N	N	N	**G**	**G**
Elevore	0	–	–	4	–	4	4	–	–	–	–	–	–	–	**G**	**G**	**G**	F	P	P	N	N	N	N	N	**G**
Express	0	–	–	3	–	–	–	–	–	–	3	–	–	**E**	**G**	**G**	P	**G**	F	P	F	N	N	N	N	N
Panoflex	0	–	–	3	–	–	–	–	–	3	3	–	–	**E**	**G**	**G**	P	**G**	**G**	**G**	**G**	N	N	N	N	P
Aim + glyphosate	0	4	4	4	4	4	4	4	4	4	4	4	4	**G**	F	**G**	P	**E**	**E**	**E**	F	**G**	**E**	**E**	F	F
Reviton + glyphosate	0	6	6	6	6	6	6	6	6	6	6	6	6	**E**	**G**	**G**	P	**E**	**E**	**E**	**G**	**G**	**E**	**E**	F	F
Sharpen	0	6	–	6	6	6	6	6	6	6	6	–	–	F	P	P	**E**	**G**	**G**	**G**	P	N	N	N	F	N
Sharpen + glyphosate	0	6	6	6	6	6	6	6	6	6	6	6	6	**G**	F	**G**	**E**	**E**	**E**	**E**	F	**G**	**E**	**E**	F	F
Verdict + glyphosate	0	6	6	6	6	6	6	6	6	6	6	6	6	**G**	F	**G**	**E**	**E**	**E**	**E**	F	**G**	**E**	**E**	F	F
Afforia	2	–	–	3	–	3	–	–	3	–	–	–	–	**E**	**G**	**G**	P	**G**	**E**	**G**	F	N	N	N	P	P
Authority Assist	2	8	3	6	6	6	6	6	6	6	6	3	3–6	F	P	P	N	**G**	**G**	**G**	P	N	N	P	F	N
Authority First/Sonic	2	10	4	–	–	–	8	10	6	6	2	–	–	P	P	P	N	**G**	F	F	P	N	N	N	P	P
Authority XL	3	–	–	3	3	3	3	3	3	–	3	1	1	F	F	**G**	N	**G**	**G**	**G**	**G**	N	P	P	P	P
Autumn Super	2	–	–	–	–	3	–	–	–	–	3	–	–	**G**	**G**	**G**	N	**G**	**G**	**G**	**G**	N	N	N	**G**	**G**
Dimetric Charged	2	3	3	3	–	3	–	–	3	3	3	–	–	**G**	**G**	**G**	F	**G**	**E**	**G**	F	N	N	N	P	P
Envive	3	–	–	–	–	3	3	3	3	3	3	–	–	P	**G**	**G**	F	**E**	**E**	**E**	**G**	N	P	P	P	P
Extreme	2	18	6	8	12	18	9	9	6	5	18	6	18	**E**	F	**G**	N	**G**	**E**	**G**	F	**G**	**G**	**G**	P	P
Fierce EZ	2	–	–	–	–	–	–	–	–	–	–	–	–	P	F	F	P	**G**	**E**	**G**	F	N	N	N	P	P
Fierce MTZ	3	–	–	–	–	–	–	–	–	–	–	–	–	**G**	**G**	**G**	F	**G**	**E**	**G**	F	N	N	N	P	P
Fierce XLT	3	–	–	–	–	–	–	–	–	–	–	–	–	P	**G**	**G**	F	**E**	**E**	**E**	**G**	N	P	P	P	P
FirstRate	2	10	4	–	–	–	8	10	6	6	2	–	–	P	P	P	N	**G**	F	F	P	N	N	N	P	P
Flexstar GT 3.5	1	4	4	4	4	4	4	4	4	4	6	6	18	**E**	**G**	**G**	N	**E**	**E**	**E**	F	**G**	**E**	**E**	F	F
Metribuzin	1	1	–	1	–	1	1	–	–	–	–	–	–	**G**	**G**	**G**	F	**G**	**G**	**G**	P	N	N	N	P	P
OpTill	2	8	3	6	6	6	6	6	6	6	6	3	3–6	F	P	P	**E**	**G**	**G**	**G**	P	N	N	P	F	N
Sequence	2	12	12	6	6	12	12	12	6	6	18	6	18	**E**	F	**G**	N	**E**	**E**	**E**	F	**G**	**E**	**E**	F	F
Spartan Charge	2	–	3	3	3	3	–	–	3	3	3	–	–	F	N	F	N	**G**	**G**	**G**	P	N	N	N	F	N
Surveil	2	10	4	–	–	–	8	10	6	6	2	–	–	P	F	F	N	**G**	**E**	**G**	F	N	N	N	P	P
Synchrony XP	3	–	–	3	–	3	3	3	3	3	3	–	–	P	**G**	**G**	N	**E**	**E**	**E**	**G**	N	P	P	P	P
Trivence	3	–	–	–	–	3	3	3	3	3	3	–	–	**G**	**G**	**G**	F	**E**	**E**	**E**	**G**	N	P	P	P	P

Table 2A — Weed Management in No-Till Soybean

		Annual Broadleaves/Grasses												Winter Annuals/Perennials									Cover Crops			
	Length of Control[a]	Cocklebur	Jimsonweed	Lambsquarters	Nightshade (E. black)	Pigweed	Ragweed (Common)	Ragweed (Giant)	Smartweed	Velvetleaf	Wild mustard	Barnyardgrass	Foxtails	Chickweed (Common)	Deadnettle	Henbit	Horseweed (marestail)[d]	Pennycress	Shepherd's-purse	Yellow rocket	Dandelion[e]	Quackgrass	Rye	Wheat	Clover	Hairy vetch
Herbicide		**Maximum Height (inches)[b]**												**Herbicide Effectiveness[c]**												
Valor/Valor EZ	2	–	–	–	–	–	–	–	–	–	–	–	–	P	F	F	P	**G**	**E**	**G**	F	N	N	N	P	P
Valor XLT	3	–	–	–	–	–	–	–	–	–	–	–	–	P	**G**	**G**	P	**E**	**E**	**E**	**G**	N	P	P	P	P
Zidua PRO	2	8	3	6	6	6	6	6	6	6	6	–	–	F	P	P	**E**	**G**	**G**	**G**	P	N	N	P	F	N
Zone Defense	2	–	–	–	–	–	–	–	–	–	–	–	–	P	F	F	P	**G**	**E**	**G**	F	N	N	N	P	P
Enlist E3 Soybean																										
Enlist Duo	1	6	6	6	6	6	6	6	6	6	6	6	6	**E**	**G**	**G**	**E**	**E**	**E**	**E**	**G**	**G**	**E**	**E**	**G**	**G**
Enlist One	1	6	3	6	6	6	6	6	6	6	6	–	–	P	F	F	**E**	**E**	**E**	**E**	F	N	N	N	**G**	**G**
Xtend and XtendFlex Soybean																										
Engenia	1	4	4	4	4	4	4	4	4	4	4	–	–	F	F	F	**E**	**E**	**G**	**E**	**G**	N	N	N	**E**	**G**
XtendiMax	1	4	4	4	4	4	4	4	4	4	4	–	–	F	F	F	**E**	**E**	**G**	**E**	**G**	N	N	N	**E**	**G**

Herbicide Effectiveness: P = Poor; F = Fair; **G** = Good; **E** = Excellent; N = None.

[a] Length of summer weed control: 0 = no residual control; 1 = short residual control; 2 = moderate residual control; 3 = long residual control.

[b] The weed sizes 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. (-) = no weed size listed on the label.

[c] 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.

[d] Most horseweed populations in Michigan are resistant to ALS-inhibiting herbicides (Group 2) and glyphosate (Group 9). Herbicides that have these site of action groups will not control these resistant horseweed populations and therefore are rated as no control. Refer to the "Controlling Horseweed" factsheet on page 174-177.

[e] Dandelion control is best from fall applications.

[f] Wait a minimum of 7 days before planting soybean.

[g] Wait a minimum of 30 days before planting soybean.

TABLE 2B — Weed Response to Soil-Applied Herbicides in Soybean*

Soil-applied	Site of Action	Soybean Tolerance**	Annual Broadleaves													Annual Grassess								Perennials			
			Cocklebur	Horseweed (marestail)[a]	Jimsonweed	Lambsquarters	Nightshade (E. black)	Palmer amaranth[b]	Pigweed	Ragweed (Common)	Ragweed (Giant)	Smartweed	Velvetleaf	Waterhemp[b]	Wild mustard	Barnyardgrass	Crabgrass	Giant foxtail	Green foxtail	Yellow foxtail	Fall panicum	Witchgrass	Sandbur	Bindweed (Field & Hedge)	Canada thistle	Quackgrass	Yellow nutsedge
Classic	2	2	G	N	F	G	N	N	E	G	P	E	E	N	P	F	F	F	F	F	F	P	P	P	N	N	F
Command 3ME	13	1	F	P	F	G	P	P	P	G	P	G	E	P	P	G	E	E	E	G	G	G	F	N	N	N	N
Dual Magnum, others	15	1	N	P	N	P	F	G	E	P	N	P	N	G	P	E	E	E	E	E	G	G	P	N	N	N	F
FirstRate	2	2	G	N	G	G	P	N	E	E	G	E	G	N	E	F	F	F	F	F	F	P	P	N	N	N	P
Lorox/Linex	5	2	P	P	P	G	F	P	G	G	F	G	F	P	G	F	F	F	F	F	F	F	P	N	N	N	N
Metribuzin	5	2	F	G	F	G	N	F	E	G	F	E	G	F	E	P	F	F	F	F	F	F	P	N	N	N	N
Outlook	15	1	N	N	N	P	G	F	E	P	N	P	N	G	P	E	E	E	E	E	G	G	P	N	N	N	F
Prowl/Prowl H_2O	3	2	N	P	N	G	P	P	F	P	N	P	F	F	P	G	G	G	G	G	G	G	G	N	N	N	N
Pursuit	2	1	F	N	F	G	E	N	E	F	F	G	G	N	E	F	F	G	G	G	P	P	P	P	N	N	F
Python	2	1	F	N	F	E	G	N	E	F	F	G	G	N	E	P	P	F	P	P	P	P	P	N	N	N	N
Sonalan (PPI only)	3	1	N	P	N	G	F	F	G	P	N	P	N	F	P	E	E	E	E	E	E	E	G	N	N	N	N
Spartan	14	2	P	F	P	E	E	G	E	F	P	F	F	G	P	N	N	P	P	P	N	N	N	N	N	N	G
Trifluralin (PPI only)	3	1	N	P	N	G	F	F	G	P	N	P	N	F	P	E	E	E	E	E	E	E	G	N	N	N	N
Valor/Valor EZ	14	2	P	G	F	G	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	P	N	F	G	G	G	F	N	P	P	G	P	E	E	E	E	E	E	E	F	N	N	N	F
Zidua	15	1	P	P	F	F	G	G	E	F	N	F	F	G	F	E	E	E	E	E	E	E	G	N	N	N	F
Premixes																											
Afforia	2/2/14	2	P	G	F	G	G	G	G	G	F	F	F	G	G	N	N	P	P	P	N	N	N	N	N	N	P
Anthem Flex	14/15	1	P	P	F	F	G	G	E	F	N	F	F	G	F	E	E	E	E	E	E	E	G	N	N	N	F
Anthem MAXX	14/15	1	P	P	F	F	G	G	E	F	N	F	F	G	F	E	E	E	E	E	E	E	G	N	N	N	F
Authority Assist	2/14	2	F	F	F	E	E	G	E	F	F	G	G	G	E	F	F	F	F	F	P	P	P	P	N	N	G
Authority Edge	14/15	2	P	F	F	E	E	G	E	F	P	F	F	G	F	E	E	E	E	E	E	E	F	N	N	N	G
Authority First/Sonic	2/14	2	G	F	G	G	G	G	E	E	G	G	G	G	E	F	F	F	F	F	F	P	P	N	N	N	G
Authority Supreme	14/15	2	P	F	F	E	E	G	E	F	P	F	F	G	F	E	E	E	E	E	E	E	G	N	N	N	F
Authority XL	2/14	2	F	F	F	E	G	G	E	G	F	G	E	G	E	F	F	F	F	F	F	P	P	P	N	N	F
Boundary	5/15	2	F	G	F	G	F	G	E	G	F	E	G	G	E	E	E	E	E	E	G	G	P	N	N	N	F
BroadAxe XC	14/15	2	P	F	P	E	E	G	E	F	P	F	F	G	P	E	E	E	E	G	G	G	P	N	N	N	G
Dimetric Charged	5/14	2	F	E	F	G	G	G	E	G	F	E	G	E	G	P	F	G	G	G	F	F	P	N	N	N	P
Envive	2/2/14	2	G	G	G	E	G	G	E	E	F	E	G	G	E	F	F	F	F	F	F	F	P	P	N	N	F
Fierce EZ	14/15	3	P	G	F	G	G	E	G	G	F	F	F	E	G	E	E	E	E	E	E	E	G	N	N	N	F
Fierce MTZ	5/14/15	3	F	E	F	G	G	E	E	G	F	E	G	E	G	E	E	E	E	E	E	E	G	N	N	N	F
Fierce XLT	2/14/15	3	G	G	G	E	G	E	E	G	F	E	E	E	E	E	E	E	E	E	E	E	G	P	N	N	F
Flextstar GT 3.5	9/14	2	P	F	P	G	E	P	E	G	F	G	P	P	E	N	N	N	N	N	N	N	N	N	N	N	N
Optill	2/14	1	F	F	F	G	E	P	E	F	F	G	G	P	E	F	F	G	G	G	P	P	P	P	N	N	F
Prefix	14/15	2	P	F	P	G	E	G	E	G	F	G	P	G	E	E	E	E	E	E	G	G	P	N	N	N	P

TABLE 2B — Weed Response to Soil-Applied Herbicides in Soybean*

Premixes (continued)	Site of Action	Soybean Tolerance**	Annual Broadleaves													Annual Grassess								Perennials			
			Cocklebur	Horseweed (marestail)[a]	Jimsonweed	Lambsquarters	Nightshade (E. black)	Palmer amaranth[b]	Pigweed	Ragweed (Common)	Ragweed (Giant)	Smartweed	Velvetleaf	Waterhemp[b]	Wild mustard	Barnyardgrass	Crabgrass	Giant foxtail	Green foxtail	Yellow foxtail	Fall panicum	Witchgrass	Sandbur	Bindweed (Field & Hedge)	Canada thistle	Quackgrass	Yellow nutsedge
Spartan Charge	14/14	2	P	F	P	**E**	**E**	**G**	**E**	F	P	F	F	**G**	P	N	N	P	P	P	N	N	N	N	N	N	F
Surveil	2/14	2	**G**	**G**	**G**	**G**	**G**	**G**	**E**	**E**	**G**	**E**	**G**	**G**	**E**	F	F	F	F	F	F	P	P	N	N	N	P
Synchrony XP	2/2	2	**G**	N	**G**	**E**	N	N	**E**	**G**	F	**E**	**E**	N	**E**	F	F	F	F	F	F	F	P	P	N	N	F
Tendovo	2/5/15	2	**G**	**G**	**G**	**G**	F	**G**	**E**	**E**	**G**	**E**	**G**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**G**	**G**	P	N	N	N	F
Tripzin ZC	3/5	2	F	**G**	F	**G**	P	F	**E**	**G**	F	**E**	**G**	F	**E**	**G**	**G**	**G**	**G**	**G**	**G**	**G**	**G**	N	N	N	N
Trivence	2/5/14	2	**G**	**G**	**G**	**E**	**G**	**G**	**E**	**G**	**G**	**E**	**G**	**G**	**E**	F	F	F	F	F	F	F	P	P	N	N	P
Valor XLT	2/14	2	**G**	**G**	**G**	**E**	**G**	**G**	**E**	**G**	F	**E**	**E**	**G**	**E**	F	F	F	F	F	F	F	P	P	N	N	F
Verdict	14/15	1	P	F	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	N	N	N	N	N
Warrant Ultra	14/15	2	P	F	P	**G**	**E**	**G**	**E**	**G**	F	**G**	P	**G**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	F	N	N	N	F
Zidua PRO	2/14/15	2	F	F	F	**G**	**E**	**G**	**E**	F	F	**G**	**G**	**G**	**G**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**G**	P	N	N	F
Zone Defense	14/14	2	P	**G**	F	**E**	**E**	**G**	**E**	**G**	F	F	F	**G**	**G**	N	N	P	P	P	N	N	N	N	N	N	F

Herbicide Site of Action: The site of action key is located on pages 14-15. 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 weedcontrol 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.

a Most horseweed populations in Michigan are resistant to ALS-inhibiting herbicides (Group 2) and glyphosate (Group 9). Herbicides that have these site of action groups will not control these resistant horseweed populations and therefore are rated as no control. Refer to the "Controlling Horseweed" factsheet on page 174-177.

b Most Palmer amaranth and waterhemp populations in Michigan are resistant to ALS-inhibiting herbicides (Group 2) and glyphosate (Group 9). Herbicides that have these site of action groups will not control the resistant populations and therefore are rated as no control. Refer to the "Keys to Managing Multiple-Resistant Palmer amaranth and waterhemp" on pages 169-173.

TABLE 2C — Weed Response to Postemergence Herbicides in Soybean*

			Annual Broadleaves													Annual Grassess								Perennials			
Postemergence	**Site of Action**	Soybean Tolerance**	Cocklebur	Horseweed (marestail)[a]	Jimsonweed	Lambsquarters	Nightshade (E. black)	Palmer amaranth[b]	Pigweed	Ragweed (Common)	Ragweed (Giant)	Smartweed	Velvetleaf	Waterhemp[b]	Wild mustard	Barnyardgrass	Crabgrass	Giant foxtail	Green foxtail	Yellow foxtail	Fall panicum	Witchgrass	Sandbur	Bindweed (Field & Hedge)	Canada thistle	Quackgrass	Yellow nutsedge
Anthem MAXX	14/15	2	P	P	**G**	F	**G**	P	**G**	P	P	P	**E**	P	P	N	N	N	N	N	N	N	N	N	N	N	N
Assure II	1	1	N	N	N	N	N	N	N	N	N	N	N	N	N	**G**	**G**	**E**	**E**	F	**E**	**E**	**E**	N	N	**E**	N
Basagran	6	2	**E**	F	**G**	**G**	P	N	P	F	F	**E**	**G**	N	**E**	N	N	N	N	N	N	N	N	N	**G**	N	F
Classic	2	2	**E**	N	**G**	N	N	N	**E**	**G**	**G**	**E**	**G**	N	**E**	N	N	P	P	P	N	N	N	N	F	N	**G**
Cobra	14	3	**G**	P	**G**	P	**G**	**G**	**E**	**E**	**G**	P	F	**G**	**E**	N	N	N	N	N	N	N	N	N	N	N	N
FirstRate	2	1	**E**	N	**E**	N	N	N	P	**E**	**E**	**E**	**G**	N	**G**	N	N	N	N	N	N	N	N	P	F	N	F
Flexstar	14	2	F	P	**G**	F	**G**	**G**	**E**	**E**	**G**	**G**	F	**G**	**E**	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	N	N	**E**	**G**	**E**	**E**	**E**	**E**	**E**	**E**	N	N	**G**	N
Harmony SG	2	3	F	N	F	**G**	N	N	**E**	P	P	**E**	**G**	N	**E**	N	N	N	N	N	N	N	N	N	N	N	N
Marvel	14/14	3	F	P	F	F	**G**	F	**E**	**G**	F	F	**E**	F	**E**	N	N	N	N	N	N	N	N	N	N	N	N
Perpetuo	14/15	2	P	P	P	F	P	P	P	P	P	P	**E**	P	P	N	N	N	N	N	N	N	N	N	N	N	N
Poast	1	1	N	N	N	N	N	N	N	N	N	N	N	N	N	**E**	**G**	**E**	**E**	**E**	**E**	**E**	**E**	N	N	F	N
Prefix	14/15	2	P	P	F	P	**G**	**G**	**E**	**G**	**G**	P	P	**G**	**E**	N	N	N	N	N	N	N	N	N	N	N	N
Pursuit	2	2	**E**	N	F	P	**E**	N	**E**	F	**G**	**G**	**G**	N	**G**	F	F	**G**	**G**	**G**	F	F	P	P	P	N	F
Raptor	2	2	**G**	N	**G**	**G**	**E**	N	**E**	F	**G**	**G**	**G**	N	**E**	F	F	**E**	**G**	**G**	F	F	N	P	F	N	P
Reflex	14	1	P	P	F	P	**G**	**G**	**E**	**G**	**G**	P	P	**G**	**E**	N	N	N	N	N	N	N	N	N	N	N	N
Resource	14	2	P	P	P	F	P	P	P	P	P	P	**E**	P	P	N	N	N	N	N	N	N	N	N	N	N	N
Select Max	1	1	N	N	N	N	N	N	N	N	N	N	N	N	N	**E**	**G**	**E**	**E**	**E**	**E**	**E**	**E**	N	N	**G**	N
Synchrony XP	2/2	2	**E**	N	**G**	**G**	N	N	**E**	**G**	**G**	**E**	**G**	N	**E**	N	N	N	N	N	N	N	N	N	F	N	F
Ultra Blazer	14	2	F	P	**G**	P	**G**	F	**E**	**E**	F	**G**	P	**G**	**E**	N	N	N	N	N	N	N	N	N	N	N	N
Varisto	2/6	2	**E**	N	**G**	**G**	**E**	N	**E**	F	F	**G**	**G**	N	**E**	P	P	F	P	P	P	P	P	N	**G**	N	F
Warrant Ultra	14/15	2	P	P	F	P	**G**	**G**	**E**	**G**	**G**	P	P	**G**	**E**	N	N	N	N	N	N	N	N	N	N	N	N
Glyphosate-Resistant Soybean (RR/GT)																											
Glyphosate	9	1	**E**	N	**E**	**G**	**G**	N	**E**	**G**	**G**	**G**	**G**	N	**G**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**G**	**G**	**E**	F
Extreme	2/9	2	**E**	N	**E**	**G**	**E**	N	**E**	**G**	**G**	**G**	**G**	N	**G**	**G**	**G**	**E**	**E**	**E**	**G**	**G**	**G**	**G**	**G**	**E**	F
Flexstar GT 3.5	9/14	2	**E**	N	**E**	**G**	**E**	**G**	**E**	**E**	**E**	**G**	**G**	**G**	**G**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**G**	**G**	**E**	F
Sequence	9/15	2	**E**	N	**E**	**G**	**G**	N	**E**	**G**	**G**	**G**	**G**	N	**G**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**G**	**G**	**E**	F
Glufosinate-Resistant Soybean (LL)																											
Liberty	10	1	**E**	**E**	**E**	**G**	**G**	**G**	**E**	**E**	**G**	**G**	**G**	**G**	**E**	F	**G**	**G**	**G**	F	**G**	F	F	P	P	P	P
Enlist E3 Soybean Only																											
Enlist One	4	1	**G**	**G**	F	**G**	**G**	**G**	**G**	**G**	**G**	P	F	**G**	**G**	N	N	N	N	N	N	N	N	F	F	N	N
Enlist Duo	4/9	1	**E**	**G**	**E**	**G**	**G**	**G**	**E**	**E**	**E**	**G**	**G**	**G**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**G**	**G**	**E**	F

TABLE 2C — Weed Response to Postemergence Herbicides in Soybean*

RR2 Xtend and XtendFlex Soybean Only	Site of Action	Soybean Tolerance**	Annual Broadleaves													Annual Grassess								Perennials			
			Cocklebur	Horseweed (marestail)[a]	Jimsonweed	Lambsquarters	Nightshade (E. black)	Palmer amaranth[b]	Pigweed	Ragweed (Common)	Ragweed (Giant)	Smartweed	Velvetleaf	Waterhemp[b]	Wild mustard	Barnyardgrass	Crabgrass	Giant foxtail	Green foxtail	Yellow foxtail	Fall panicum	Witchgrass	Sandbur	Bindweed (Field & Hedge)	Canada thistle	Quackgrass	Yellow nutsedge
Engenia	4	1	**G**	**E**	**G**	**G**	**G**	**G**	**G**	**G**	**E**	**E**	F	**G**	**G**	N	N	N	N	N	N	N	N	**G**	F	N	N
XtendiMax	4	1	**G**	**E**	**G**	**G**	**G**	**G**	**G**	**G**	**E**	**E**	F	**G**	**G**	N	N	N	N	N	N	N	N	**G**	F	N	N

Herbicide Site of Action: The site of action key is located on pages 14-15. 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.

a Most horseweed populations in Michigan are resistant to ALS-inhibiting herbicides (Group 2) and glyphosate (Group 9). Herbicides that have these site of action groups will not control these resistant horseweed populations and therefore are rated as no control. Refer to the "Controlling Horseweed" factsheet on page 174-177.

b Most Palmer amaranth and waterhemp populations in Michigan are resistant to ALS-inhibiting herbicides (Group 2) and glyphosate (Group 9). Herbicides that have these site of action groups will not control the resistant populations and therefore are rated as no control. Refer to the "Keys to Managing Multiple-Resistant Palmer amaranth and waterhemp" on pages 169-173.

TABLE 2D — Herbicide Premixes in Soybean

Trade Name	Company	Formulation	Typical Use Rate/A[a]	=	Equivalent Rates
Afforia	Corteva	50.8DG	2.5 oz	=	0.25 oz Harmony SG + 0.25 oz Express + 2 fl oz Valor EZ
Anthem Flex	FMC	4SE	4.5 fl oz	=	0.6 fl oz Aim + 4 fl oz Zidua SC
Anthem MAXX	FMC	4.3SE	4 fl oz	=	0.6 fl oz Cadet + 3.92 fl oz Zidua SC
Authority Assist	FMC	4SC	10 fl oz	=	8.3 fl oz Spartan + 3.34 fl oz Pursuit
Authority Edge	FMC	4.25SC	9 fl oz	=	6.1 fl oz Spartan + 3.25 fl oz Zidua SC
Authority First/Sonic	FMC/Corteva	70DF	6.4 oz	=	8 fl oz Spartan + 0.6 oz FirstRate
Authority Supreme	FMC	4.16SC	8 fl oz	=	4 fl oz Spartan + 4 fl oz Zidua SC
Authority XL	FMC	70WDG	4 oz	=	5 fl oz Spartan + 1.25 oz Classic
Autumn Super	Bayer	51WDG	0.5 fl oz	=	0.0019 lb ai iodosulfuron + 0.014 lb ai thiencarbazone
Boundary 6.5EC	Syngenta	6.5EC	2 pt	=	1.33 pt Dual Magnum + 6.67 oz Metribuzin
BroadAxe XC	Syngenta	7L	32 fl oz	=	5.6 fl oz Spartan + 1.65 pt Dual Magnum
Dimetric Charged	Winfield Solutions	3.67L	12 fl oz	=	6 oz Metribuzin + 2 fl oz Valor EZ
Enlist Duo[b]	Corteva	3.33SL	4.75 pt	=	32 fl oz Enlist One + 1 lb a.e. glyphosate
Envive[c]	Corteva	41.3DG	3.5 oz	=	2 fl oz Valor EZ + 1.28 oz Classic + 0.192 oz Harmony SG
Extreme	BASF	2.17SL	3 pt	=	0.56 lb a.e. glyphosate + 4 fl oz Pursuit
Fierce EZ	Valent	3.04SC	6 fl oz	=	2 fl oz Valor EZ + 2.5 fl oz Zidua SC
Fierce MTZ	Valent	2.64SC	1 pt	=	2 fl oz Valor EZ + 4 oz Metribuzin + 2.5 fl oz Zidua SC
Fierce XLT	Valent	62.41WDG	4 oz	=	1 oz Classic + 2 oz Valor EZ + 2.5 fl oz Zidua SC
Flexstar GT 3.5	Syngenta	2.82SL	3.5 pt	=	0.99 lb a.e. glyphosate + 1 pt Flexstar
Marvel	FMC	3L	7.25 fl oz	=	0.9 fl oz Cadet + 11 fl oz Flexstar
OpTill	BASF	68WG	2 oz	=	1 fl oz Sharpen + 4 fl oz Pursuit
Panoflex	FMC	50SG	0.3 oz	=	0.24 oz Express + 0.06 oz Harmony SG
Perpetuo	Valent	2.3SC	6 fl oz	=	4.12 fl oz Resource + 2.46 fl oz Zidua SC
Prefix	Syngenta	5.29EC	2 pt	=	1 pt Dual Magnum + 1 pt Reflex

TABLE 2D — Herbicide Premixes in Soybean

Trade Name	Company	Formulation	Typical Use Rate/A[a]	=	Equivalent Rates
Sequence	Syngenta	5.25EW	2.5 pt	=	0.98 pt Dual Magnum + 0.7 lb a.e. glyphosate
Spartan Charge	FMC	3.5SC	8 fl oz	=	1.33 fl oz Aim + 6.27 fl oz Spartan
Surveil	Corteva	48WG	3.5 oz	=	2.47 fl oz Valor EZ + 0.5 oz FirstRate
Synchrony XP	Corteva	28.4DG	0.375 oz	=	0.32 oz Classic + 0.053 oz Harmony SG
Tendovo	Syngenta	4.18ZC	1.75 qt	=	1.6 pt Dual Magnum + 0.54 oz FirstRate + 6 oz Metribuzin
Tripzin ZC	United Phosphorus, Inc.	4ZC	42 fl oz	=	2.3 pt Prowl + 7.7 oz Metribuzin
Trivence[d]	Corteva	61.3DG	8 oz	=	1.28 oz Classic + 4.75 oz Metribuzin + 2 fl oz Valor EZ
Valor XLT	Valent	40.3WDG	4 oz	=	1.65 oz Classic + 2.34 fl oz Valor EZ
Varisto	BASF	4.18SL	27 fl oz	=	5 fl oz Raptor + 21.6 fl oz Basagran 5L
Verdict	BASF	5.57EC	5 fl oz	=	1 fl oz Sharpen + 4.2 fl oz Outlook
Warrant Ultra	Bayer	3.45CS	50 fl oz	=	3 pt Warrant + 1 pt Reflex
Zidua PRO	BASF	4.09SC	6 fl oz	=	4 fl oz Pursuit + 1 fl oz Sharpen + 3.2 fl oz Zidua SC
Zone Defense	Helm	77.2DG	5 oz	=	6.2 fl oz Spartan + 1.47 fl oz Valor EZ

[a] Typical use rates recommended are for medium textured soils with 3% organic matter. Additional information on use rates can be found in the Remarks and Limitations section for each herbicide.

[b] Only use in Enlist E3 soybean.

[c] 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.

[d] DO NOT apply more than 6 oz/A of Trivence is you are located north of State Road 46 or have a composite soil pH between 7.1 and 7.6.

TABLE 2E — Maximum Weed Sizes for Postemergence Herbicide Applications in Soybean[a,b]

		Annual Broadleaves													Annual Grasses								
		Cocklebur	Horseweed (marestail)	Jimsonweed	Lambsquarters	Nightshade (E. black)	Palmer amaranth	Pigweed	Ragweed (Common)	Ragweed (Giant)	Smartweed	Velvetleaf	Waterhemp	Wild mustard	Barnyardgrass	Crabgrass	Giant foxtail	Green foxtail	Yellow foxtail	Fall panicum	Witchgrass	Sandbur	Volunteer corn[c]
Herbicide	**Rate/A**	**Maximum Weed Sizes - Heights (inches)/Leaf number (L)**																					
Anthem MAXX	3 fl oz	–	–	2	2	2*	–	2*	–	–	2*	6	2*	–	–	–	–	–	–	–	–	–	–
Assure II	7 fl oz	–	–	–	–	–	–	–	–	–	–	–	–	–	6	6	8	4	4	6	6	6	30
Basagran 5L	1.6 pt	10	–	10	2*	–	–	–	3	6	10	6	–	8	–	–	–	–	–	–	–	–	–
Classic	0.6 oz	6	–	4	–	–	–	2	–	–	2	–	–	4	–	–	–	–	–	–	–	–	–
Cobra	10 fl oz	4	–	4	–	4	2*	4	2	2*	4*	4*	2	4*	–	–	–	–	–	–	–	–	–
FirstRate	0.3 oz	10	–	4	–	–	–	–	8	10	6	6	–	2	–	–	–	–	–	–	–	–	–
Flexstar	1 pt	4L	–	6L	2L*	4L	4L	4L	4L	4L	4L	2L*	2L	6L	–	–	–	–	–	–	–	–	–
Fusilade DX	12 fl oz	–	–	–	–	–	–	–	–	–	–	–	–	–	3	2	6	4	4	6	4	4	24
Harmony SG	0.125 oz	–	–	–	4	–	–	12	–	–	6	6	–	4	–	–	–	–	–	–	–	–	–
Marvel	7.25 fl oz	–	–	4	4	4	3	4	3	–	4	36	4	4	–	–	–	–	–	–	–	–	–
Perpetuo	6 fl oz	4L*	–	4L*	3L*	–	4L*	3L*	3L*	–	–	6L	–	–	–	–	–	–	–	–	–	–	–
Poast	16 fl oz	–	–	–	–	–	–	–	–	–	–	–	–	–	8	6	8	8	8	8	8	3	20
Prefix	2 pt	–	–	4L	–	2L	4L	2L	4L	–	4L	–	2L	4L	–	–	–	–	–	–	–	–	–
Pursuit	4 fl oz	8	–	3	<1*	2	–	6	3	3	3	3	–	3	3	3	6	3	3	–	–	–	8
Raptor	5 fl oz	8	–	6	3	5	–	8	3	5	5	8	–	8	5	4	6	6	6	6	–	–	8
Reflex	1 pt	–	–	4L	–	2	4L	4L	4L	–	4L	–	2L	4L	–	–	–	–	–	–	–	–	–
Resource	6 fl oz	–	–	–	3L*	–	–	3L*	4L*	–	–	8L	–	–	–	–	–	–	–	–	–	–	–
Select Max	9 fl oz	–	–	–	–	–	–	–	–	–	–	–	–	–	8	6	12	8	8	8	8	6	24
Synchrony XP	0.375 oz	6	–	3	4*	–	–	8	4*	4*	4	4*	–	4	–	–	–	–	–	–	–	–	–
Ultra Blazer	1.5 pt	2	–	6	2*	2	4	4	3	3	6	–	–	4	–	–	–	–	–	–	–	–	–
Varisto	27 fl oz	8	–	6	5	3	–	4	3	3	6	3	–	3	3	3*	3	3	3	6	–	–	3
Warrant Ultra	3 pt	–	–	4L	–	2L	4L	2L	4L	–	4L	–	2L	4L	–	–	–	–	–	–	–	–	–
Glyphosate-Resistant Soybean (RR/GT)																							
Glyphosate	1.13 lb a.e.	36	–	18	20	12	–	24	18	18	9	12	–	18	9	12	20	12	20	12	12	12	20
Extreme	3 pt	8	–	6	8	8	–	8	9	9	6	5	–	8	6	8	8	8	8	8	–	–	20
Flexstar GT 3.5	3.5 pt	4	–	4	4	4	1	4	4	4	4	4	2	6	6	12	18	18	18	6	12	–	24
Sequence	2.5 pt	12	–	12	6	6	–	12	12	12	6	6	–	18	6	12	18	18	18	6	12	12	18
Glufosinate-Resistant Soybean (LL)																							
Liberty	32 fl oz	14	6	10	6	8	4	4	10	12	14	4	5	6	3	3*	3	3	3*	3	3	3*	6
Enlist E3 Soybean Only																							
Enlist One	2 pt	6	6	6	6	6	6	6	6	6	6	6	6	6	–	–	–	–	–	–	–	–	–
Enlist Duo	4.75 pt	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	20

TABLE 2E — Maximum Weed Sizes for Postemergence Herbicide Applications in Soybean[a,b]

		Annual Broadleaves												Annual Grasses								
		Cocklebur	Horseweed (marestail)	Jimsonweed	Lambsquarters	Nightshade (E. black)	Palmer amaranth	Pigweed	Ragweed (Common)	Ragweed (Giant)	Smartweed	Velvetleaf	Waterhemp	Wild mustard	Barnyardgrass	Crabgrass	Giant foxtail	Green foxtail	Yellow foxtail	Fall panicum	Witchgrass	Sandbur	Volunteer corn[c]
Xtend and XtendFlex Soybean Only	**Rate/A**	**Maximum Weed Sizes - Heights (inches)/Leaf number (L)**																					
Engenia	12.8 fl oz	4	4	4	4	4	4	4	4	4	4	4	4	4	–	–	–	–	–	–	–	–	–
XtendiMax	22 fl oz	4	4	4	4	4	4	4	4	4	4	4	4	4	–	–	–	–	–	–	–	–	–

[a] The weed sizes 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.

[b] Symbols: (-) = no control or weed size listed on the label; (*) = weed suppression only.

[c] Herbicides listed will only control volunteer corn that does not have a resistant trait associated with the corresponding herbicide.

Table 2F — Soybean Herbicides — Remarks and Limitations

Herbicide	Common Name	Site of Action Number	Application Timing	Rate/A	Trait
2,4-D ester 4L	2,4-D ester	4	Burndown (Fall, >7 d EPP)	1 pt	N

- 2,4-D ester can be applied to control emerged annual, biennial, and perennial broadleaf weeds.
- Refer to Table 2A for maximum weed heights and weed and cover crop control ratings in no-till soybean.
- 2,4-D ester at 1 qt/A can be applied in the fall and up to 15 days prior to soybean planting.
- 2,4-D ester at 1 pt/A can be applied up to 7 days prior to soybean planting.
- 2,4-D ester does not control common chickweed and should be tank-mixed with additional herbicides (i.e., glyphosate, Gramoxone, Liberty) to broaden the spectrum of weed control. Include AMS with glyphosate or Liberty tank-mixtures.
- DO NOT graze or feed forage or hay to livestock.
- Preharvest interval (PHI): none listed
- Refer to Table 12 and the label for crop rotation restrictions.

Afforia 50.8DG	flumioxazin + thifensulfuron + tribenuron	14 2 2	Burndown (Fall, PP, PRE)	2.5 oz + COC 1% v/v	N
			PP, PRE	2.5 oz	N

- Refer to Table 2A for maximum weed heights and weed and cover crop control ratings in no-till soybean.
- Burndown applications need COC (1% v/v); NIS (0.25% v/v) can be used if tank-mixtures do not allow for the use of COC. Tank-mixtures are needed for a complete burndown program (i.e., 2,4-D, dicamba, glyphosate, Gramoxone, Liberty). Include AMS with glyphosate or Liberty tank-mixtures.
- Refer to Table 2B for soil-applied weed control and crop tolerance ratings.
- See Table 2D for individual product rate equivalents for the premix.
- Afforia at 2.5 oz/A can be applied preemergence up to 3 days after planting, but prior to soybean emergence; at rates greater than 2.5 to 3.75 oz/A 7 days is needed prior to planting.
- Crop injury may occur from applications made to poorly drained soils under cool, wet conditions.
- Afforia should be used as part of a planned preemergence followed by postemergence herbicide program.
- DO NOT tank-mix with metolachlor (Dual), dimethenamid (Outlook), or acetochlor (Warrant) products within 14 days of planting, unless soybeans are planted under no-till or minimum tillage conditions on wheat stubble or no-till field corn stubble or crop injury will occur.
- DO NOT apply more than 3.75 oz/A/year.
- DO NOT graze or feed forage to livestock no sooner than 21 days after application.
- Preharvest interval (PHI): none listed
- Rotation restrictions under reduced tillage systems are the longer of the two listed in Table 12. Refer to the label for additional crop rotation restriction information.

Aim 2EC	carfentrazone	14	Burndown (PP, PRE)	1.5 fl oz + NIS 0.25% v/v	N

- Aim can be applied preplant through preemergence from 0.5 to 1.5 fl oz/A. Use the higher rate to control larger weeds (4 inches tall).
- Refer to Table 2A for maximum weed heights and weed and cover crop control ratings in no-till soybean.
- Aim DOES NOT have residual activity and will only control a narrow spectrum of existing broadleaf weeds.
- Always add NIS (0.25% v/v) or COC (1% v/v).
- Visual injury symptoms appear soon after application.
- Aim should be tank-mixed with additional products (i.e., glyphosate, Gramoxone, or Liberty) to broaden the spectrum of weed control. Include AMS with glyphosate or Liberty tank-mixtures.
- Preharvest interval (PHI): V10 soybean
- Refer to Table 12 and the label for crop rotation restrictions.

Anthem Flex 4SE	pyroxasulfone + carfentrazone	15 14	PP, PPI, PRE	4.5 fl oz	N

- Refer to Table 2B for soil-applied weed control and crop tolerance ratings.
- See Table 2D for individual product rate equivalents for the premix.
- Application rates vary by soil texture and organic matter and range from 2.25 to 6.4 fl oz/A.
- Anthem Flex should be used as part of a planned preemergence followed by postemergence herbicide program.
- Ensure that the seed furrow is closed over the seed and is planted at least 1 inch deep to avoid risk of soybean injury.
- DO NOT apply after soybean emergence – severe injury or death may occur.
- DO NOT graze or feed forage or hay to livestock.
- Preharvest interval (PHI): none listed
- The rotation restriction to wheat is extended to 4 months at the soybean rate. Refer to Table 12 and the label for crop rotation restrictions.

TABLE 2F — Soybean Herbicides — Remarks and Limitations

Herbicide	Common Name	Site of Action Number	Application Timing	Rate/A	Trait
Anthem MAXX 4.3SC	pyroxasulfone + fluthiacet	15 14	PP, PPI, PRE	4 fl oz	N
			POST	3 fl oz + COC 1% v/v	N

- Refer to Table 2B for soil-applied and Table 2C for postemergence weed control and crop tolerance ratings.
- See Table 2D for individual product rate equivalents for the premix.
- Soil-applied application rates vary by soil type and organic matter and range from 2.5 to 5.5 fl oz/A.
- Anthem MAXX should be used as part of a planned preemergence followed by postemergence herbicide program.
- Postemergence applications can be made from soybean emergence through the V6 (6 trifoliate) stage at rates ranging from 2 to 5.7 fl oz/A. AMS (2 lb/A) may be added to COC (1% v/v) to enhance weed control.
- Refer to Table 2E for maximum weed sizes for Anthem MAXX.
- Applied postemergence the pyroxasulfone component of Anthem MAXX will provide residual control of grass and small seeded broadleaf weeds.
- Tank-mixtures with other herbicides will be needed to broaden the spectrum of weed control.
- DO NOT make more than 2 applications per year or apply more than 3.4 fl oz/A/year on coarse textured soils; 5.7 fl oz/A/year on medium and fine textured soils.
- DO NOT graze or feed forage or hay to livestock.
- Preharvest interval (PHI): 60 days
- Refer to Table 12 and the label for crop rotation restrictions.

Assure II 0.88EC (others)	quizalofop	1	POST	7 fl oz + COC 1% v/v	N

- Assure II provides postemergence grass and volunteer corn control. Refer to Table 2C for weed control and crop tolerance ratings.
- Assure II rates range from 5 to 12 fl oz/A and are based on weed size and sensitivity. Refer to Table 2E for maximum weed sizes.
- Apply Assure II with COC (1% v/v) for best results. NIS (0.25% v/v) may replace COC for certain tank-mixtures (see label).
- Apply 5 fl oz/A of Assure II for volunteer corn control up to 18 inches tall; and 8 fl oz/A for corn up to 30 inches tall. Assure II will not control volunteer Enlist corn.
- Apply a minimum of 8 fl oz/A of Assure II for barnyardgrass and large crabgrass control.
- For perennial grass control, higher rates (10-12 fl oz/A) and sequential applications may be needed.
- Tank-mixtures of Assure II with certain postemergence broadleaf herbicides (Group 14 and certain Group 2 herbicides) can antagonize grass control.
- Applying Assure II either 1 day before or 7 days after the broadleaf herbicide will prevent the antagonism.
- Increasing the Assure II rate by 2 fl oz/A will also improve grass control in certain tank-mixtures.
- Apply Assure II at 12 fl oz/A when tank-mixed with auxin (Group 4) herbicides to optimize grass control. Sequential applications are more effective.
- DO NOT apply more than 18 fl oz/A/year.
- DO NOT graze or feed forage or hay to livestock.
- Preharvest interval (PHI): 80 days
- Refer to Table 12 and the label for crop rotation restrictions.

Authority Assist 4SC	sulfentrazone + imazethapyr	14 2	Burndown (Fall, PP, PRE)	10 fl oz COC 1% v/v	N
			PP, PPI, PRE	10 fl oz	N

- Refer to Table 2A for maximum weed heights and weed and cover crop control ratings in no-till soybean.
- Burndown applications need COC (1% v/v). Tank-mixtures are needed for a complete burndown program (i.e., 2,4-D, dicamba, glyphosate, Gramoxone, Liberty). Include AMS with glyphosate or Liberty tank-mixtures.
- Refer to Table 2B for soil-applied weed control and crop tolerance ratings.
- See Table 2D for individual product rate equivalents for the premix.
- Authority Assist use rates are based on soil texture, organic matter, and pH and range from 6 to 12 fl oz/A.
- DO NOT apply more than 3 days after planting — soybean injury may occur.
- DO NOT apply to sands with less than 1% organic matter.
- Soybean stunting may occur if excessive rainfall occurs after application but before soybean emergence, especially at higher rates.
- Soybean varieties vary in their tolerance to sulfentrazone. Consult your local seed dealer for more information.
- Authority Assist should be used as part of a planned preemergence followed by postemergence herbicide program.
- DO NOT graze or feed forage or hay to livestock.
- Preharvest interval (PHI): none listed
- Rotation to sugarbeets, cucumbers, and tomatoes requires 40 months and a successful bioassay. Refer to Table 12 and the label for additional crop rotation restrictions.

TABLE 2F — Soybean Herbicides — Remarks and Limitations

Herbicide	Common Name	Site of Action Number	Application Timing	Rate/A	Trait
Authority Edge 4.25SC	pyroxasulfone + sulfentrazone	15 14	PP, PPI, PRE	9 fl oz	N

- Refer to Table 2B for soil-applied weed control and crop tolerance ratings.
- See Table 2D for individual product rate equivalents for the premix.
- Authority Edge use rates are based on soil texture, organic matter, and pH and range from 5.9 to 9.4 fl oz/A for coarse textured soils; 7 to 12 fl oz/A for medium textured soils; and 9 to 15.7 fl oz/A for fine textured soils. For soils with pH greater than 7.2 use the lowest rate for that specific soil texture.
- Ensure that the seed furrow is closed and seeds are planted at least 1 inch deep to avoid risk of soybean injury.
- Apply within 3 days of soybean planting. DO NOT apply after soybean cracking or emergence – severe injury or death may occur.
- Some soybean varieties are sensitive to sulfentrazone. Consult your local seed dealer for information.
- Authority Edge should be used as part of a planned preemergence followed by postemergence herbicide program.
- DO NOT graze or feed forage or hay to livestock.
- Preharvest interval (PHI): none listed
- Rotation to sugarbeets requires 24 months and a successful bioassay. Rotation restrictions are extended for rates higher than 13.4 fl oz/A. Refer to Table 12 and the label for additional crop rotation restrictions.

Herbicide	Common Name	Site of Action Number	Application Timing	Rate/A	Trait
Authority First, Sonic 70DF	sulfentrazone + cloransulam	14 2	Burndown (PP, PRE)	6.4 oz + NIS 0.25% v/v + AMS 2.5 lb	N
			PP, PPI, PRE	6.4 oz	N

- Refer to Table 2A for maximum weed heights and weed and cover crop control ratings in no-till soybean.
- Burndown applications need NIS (0.25% v/v) + AMS (2.5 lb/A), or COC/MSO (1% v/v) + AMS. Tank-mixtures are needed for a complete burndown program (i.e., 2,4-D, dicamba, glyphosate, Gramoxone, Liberty).
- Refer to Table 2B for soil-applied weed control and crop tolerance ratings.
- See Table 2D for individual product rate equivalents for the premix.
- Apply Authority First/Sonic at 6.4 oz/A.
- DO NOT apply after soybean emergence - death or severe injury may occur.
- DO NOT apply to sands with less than 1% organic matter.
- Soybean stunting may occur if excessive rainfall occurs after application but before soybean emergence.
- Soybean varieties vary in their tolerance to sulfentrazone. Consult you local seed dealer for more information.
- Authority First/Sonic should be used as part of a planned preemergence followed by postemergence herbicide program.
- DO NOT graze or feed forage or hay to livestock.
- Preharveest interval (PHI): 65 days
- Rotation to sugarbeets, cucumbers, and tomatoes requires 30 months and a successful bioassay. Refer to Table 12 and the label for additional crop rotation restrictions.

Herbicide	Common Name	Site of Action Number	Application Timing	Rate/A	Trait
Authority Supreme 4.16SC	pyroxasulfone + sulfentrazone	15 14	PP, PPI, PRE	8 fl oz	N

- Refer to Table 2B for soil-applied weed control and crop tolerance ratings.
- See Table 2D for individual product rate equivalents for the premix.
- Authority Supreme use rates are based on soil texture, organic matter, and pH and range from 6 to 6.9 fl oz/A for coarse textured soils; 6 to 9.8 fl oz/A for medium textured soils; and 7 to 11.5 fl oz/A for fine textured soils. For soils with pH greater than 7.2 use the lowest rate for that specific soil texture and organic matter.
- DO NOT apply on soils classified as sands, which have less than 1% organic matter.
- Ensure that the seed furrow is closed over the seed and is planted at least 1 inch deep to avoid risk of soybean injury.
- Apply within 3 days of soybean planting. DO NOT apply after soybean cracking or emergence – severe injury or death may occur.
- Some soybean varieties are sensitive to sulfentrazone. Consult your local seed dealer for information.
- Authority Supreme should be used as part of a planned preemergence followed by postemergence herbicide program.
- DO NOT graze or feed forage or hay to livestock.
- Preharvest interval (PHI): none listed
- For rates greater than 9.8 fl oz/A use the longer rotation restriction listed in Table 12. Refer to Table 12 and the label for additional crop rotation restrictions.

TABLE 2F — Soybean Herbicides — Remarks and Limitations

Herbicide	Common Name	Site of Action Number	Application Timing	Rate/A	Trait
Authority XL 70WDG	sulfentrazone + chlorimuron	14 2	Burndown (Fall, PP, PRE)	4 oz + COC 1% v/v	N
			PP, PPI, PRE	4 oz	N

- Refer to Table 2A for maximum weed heights and weed and cover crop control ratings in no-till soybean.
- Burndown applications need COC/MSO (1% v/v), or NIS (0.25% v/v). Tank-mixtures are needed for a complete burndown program (i.e., 2,4-D, dicamba, glyphosate, Gramoxone, Liberty). Include AMS with glyphosate or Liberty tank-mixtures.
- Refer to Table 2B for soil-applied weed control and crop tolerance ratings.
- See Table 2D for individual product rate equivalents for the premix.
- Apply Authority XL at 3 to 5 oz/A as part of a 2-pass program.
- DO NOT apply more than 3 days after planting as soybean injury may occur.
- DO NOT apply to soils with pH greater than 7.6.
- Soybean stunting may occur if excessive rainfall occurs after application, but before soybean emergence, especially at higher rates.
- Soybean varieties vary in their tolerance to sulfentrazone. Consult your local seed dealer for more information.
- DO NOT graze or feed forage or hay to livestock.
- Preharvest interval (PHI): none listed
- Soil pH strongly affects crop rotation restrictions. Rotation restrictions are lengthened to 18 months for all crops, except small grains and those with rotation restrictions of 36 months, if the soil pH is greater than 6.8. Refer to Table 12 and the label for additional crop rotation restrictions.

Autumn Super 51WDG	iodosulfuron + thiencarbazone	2 2	Burndown (Fall only)	0.5 oz + COC 1% v/v + AMS 2.5 lb	N

- Autumn Super should only be applied in the fall. Refer to Table 2A for maximum weed heights and weed and cover crop control ratings in no-till soybean.
- See Table 2D for individual product rate equivalents for the premix.
- Always add COC/MSO (1% v/v) and AMS (2.5 lb/A).
- Autumn Super will not control ALS-resistant weeds (i.e., horseweed).
- Tank-mixtures with 2,4-D, dicamba or glyphosate are recommended for improved control.
- Refer to Table 12 and the label for crop rotation restrictions.

Basagran 4L	bentazon	6	POST	2 pt + COC 1 qt	N
Basagran 5L	bentazon	6	POST	1.6 pt + COC 1 qt	N

- Refer to Table 2C for postemergence weed control and crop tolerance ratings.
- Most effective on small weeds. Rates can be reduced to 1.5 pt/A (4L) or 1.2 pt/A (5L) if weeds are smaller than the maximum growth stage (Table 2E).
- AMS (2.5 lb/A) can be used instead of COC for improved velvetleaf control. If common ragweed and common lambsquarters are present COC must also be included.
- Adequate spray coverage is essential; a minimum of 20 gallons/A of spray solution is recommended.
- Apply 3 pt/A (4L) or 2.4 pt/A (5L) + COC (1 qt/A) to suppress common cocklebur up to 24 inches and velvetleaf up to 12 inches tall. Split applications provide better control.
- Split applications (10 days apart) are also needed to control yellow nutsedge and Canada thistle. Higher rates 2 pt/A (4L) or 1.6 pt/A (5L) in each application will provide improved control of Canada thistle.
- NIS (0.25% v/v) + AMS is recommended when Basagran is tank-mixed with Classic, FirstRate, or Harmony.
- DO NOT apply if soybeans are under stress from herbicide injury, cold or dry weather, or hail damage.
- DO NOT apply more than 4 pt/A/year (4L) or 3.2 pt/A/year (5L).
- DO NOT graze or feed forage or hay to livestock for at least 30 days after the last treatment.
- Preharvest intervanl (PHI): 30 days
- Refer to Table 12 and the label for crop rotation restrictions.

TABLE 2F — Soybean Herbicides — Remarks and Limitations

Herbicide	Common Name	Site of Action Number	Application Timing	Rate/A	Trait
Boundary 6.5EC	s-metolachlor + metribuzin	15 5	PP, PPI, PRE	2 pt	N

- Refer to Table 2B for soil-applied weed control and crop tolerance ratings.
- See Table 2D for individual product rate equivalents for the premix.
- Boundary 6.5EC use rates are based on soil texture, organic matter, and pH and range from 1.2 to 1.8 pt/A for coarse textured soils; 1.8 to 2.4 pt/A for medium and fine textured soils.
- DO NOT use Boundary 6.5EC at rates greater than 1.5 pt/A on soils with pH above 7.
- 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.
- Some soybean varieties are sensitive to metribuzin and should not be planted. Consult your local seed dealer for information.
- Boundary 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.
- DO NOT apply more than 3.7 lb ai/A of s-metolachlor per year.
- DO NOT graze or feed forage or hay to livestock for at least 40 days following application.
- Preharvest interval (PHI): 75 days
- Refer to Table 12 and the label for crop rotation restrictions.

BroadAxe XC 7L	s-metolachlor + sulfentrazone	15 14	PP, PPI, PRE	32 fl oz	N

- Refer to Table 2B for soil-applied weed control and crop tolerance ratings.
- See Table 2D for individual product rate equivalents for the premix.
- BroadAxe XC use rates are based on soil texture, organic matter, and pH and range from 19 to 25 fl oz/A for coarse textured soils; 25 to 32 fl oz/A for medium textured soils; and 25 to 38.7 fl oz/A for fine textured soils. For soils with pH greater than 7.2 use the lowest rate for that specific soil texture and organic matter.
- DO NOT apply on soils classified as sands, which have less than 1% organic matter.
- Apply within 3 days of soybean planting. DO NOT apply after soybean cracking or emergence – severe injury or death may occur.
- Some soybean varieties are sensitive to sulfentrazone. Consult your local seed dealer for information.
- BroadAxe XC should be used as part of a planned preemergence followed by postemergence herbicide program.
- BroadAxe XC can be tank-mixed with 1 fl oz/A of Sharpen in reduced and no-till soybean if it is applied 14 days prior to planting. DO NOT apply this tank-mixture to coarse textured soils with 2% organic matter or less.
- DO NOT graze or feed forage or hay to livestock for at least 30 days after the last treatment.
- Preharvest intervanl (PHI): 30 days
- Refer Table 12 and the label for crop rotation restrictions.

Classic 25DG	chlorimuron	2	PRE	1 oz	N
			POST	0.66 oz + COC 1% v/v + AMS 2 lb	N

- Classic (1 oz/A) can be tank-mixed with several soil-applied herbicides for control of specific weeds. Refer to Table 2B for soil-applied weed control and crop tolerance ratings.
- Postemergence applications can be applied any time after soybean reaches the first trifoliate (V1) stage and is fully expanded until 60 days prior to harvest. Refer to Table 2C for postemergence weed control and crop tolerance ratings.
- Apply Classic postemergence at rates ranging from 0.33-0.75 oz/A with COC (1% v/v) + AMS (2 lb/A) or NIS (0.25% v/v) + AMS (2 lb/A). Classic is most effective on small weeds (Table 2E). COC provides better control under hot conditions. However, increased injury may result.
- 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.
- Tank-mixtures are needed to broaden the spectrum of weed control. Classic can be applied at 0.25 or 0.33 oz/A with glyphosate or Harmony SG. Specific adjuvant and tank-mixture restrictions can be found on the label.
- DO NOT apply more than 1 oz/A/year of Classic on soils with pH greater than 7.0; a maximum of 1.5 oz/A/year can be used on soils with pH 7.0 or less.
- DO NOT graze or feed forage or hay to livestock for at least 14 days following application.
- Preharvest interval (PHI): 60 days
- When Classic is applied at 0.33 oz/A or less, rotation restrictions for alfalfa and cucumber are shorter. Soil pH and Classic use rates are critical for rotational crops. Refer to Table 12 and the label for additional crop rotation restrictions.

TABLE 2F — Soybean Herbicides — Remarks and Limitations

Herbicide	Common Name	Site of Action Number	Application Timing	Rate/A	Trait
Cobra 2EC	lactofen	14	POST	10 fl oz + COC 1.5 pt + AMS 2 lb	N

- Refer to Table 2C for postemergence weed control and crop tolerance ratings.
- Cobra can be applied at 8-12.5 fl oz/A when applied alone or in tank-mixture with other herbicides. Refer to Table 2E for maximum weed sizes.
- Higher rates of Cobra 10 to 12.5 fl oz/A are needed to control common ragweed, and herbicide-resistant Palmer amaranth and common waterhemp.
- COC rates are dependent on environmental conditions. If the relative humidity (RH) is greater than 80% use 1 pt/A; RH 60 to 80% use 1.5 pt/A; less than 60% use 2 pt/A. NIS (0.25% v/v) may be substituted for COC when weeds are actively growing under high temperature, high humidity and high soil moisture conditions.
- Adequate spray coverage is essential; a minimum of 20 gallons/A of spray solution is recommended.
- DO NOT apply to soybeans in the cotyledon stage or after the R6 (full seed) stage.
- 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.
- Cobra causes more soybean leaf burn than other postemergence herbicides.
- Tank-mixtures with other herbicides will be needed to broaden the spectrum of weed control. Tank-mixtures for postemergence grass control may lead to grass antagonism under certain condictions. Follow label directions closely regarding spray additives for tank-mixtures.
- DO NOT make more than 2 applications of Cobra or apply more than 25 fl oz/A/year.
- DO NOT graze or feed forage or hay to livestock.
- Preharvest interval (PHI): 45 days
- Refer to Table 12 and the label for crop rotation restrictions.

Command 3ME	clomazone	13	PP, PRE	2 pt	N

- Refer to Table 2B for soil-applied weed control and crop tolerance ratings.
- Poor weed control will result if Command 3ME is incorporated.
- Precautions should be taken to avoid spray drift. Several ornamental, horticultural and agronomic crops are sensitive to Command spray drift and volatilization.
- DO NOT apply Command within 1,200 ft. of housing developments, commercial fruit and vegetable production, and greenhouses.
- DO NOT apply in winds above 10 mph or at pressures above 30 PSI.
- Special precaution: A special sprayer clean-out procedure is required for Command 3ME. See label for specific instructions.
- DO NOT graze or feed forage or hay to livestock.
- Preharvest interval (PHI): none listed
- Tomatoes may be transplanted 9 months after Command application, but the rotation restriction for tomatoes grown from seed is 12 months. Refer to Table 12 and the label for additional crop rotation restrictions.

Dimetric Charged 3.67L	metribuzin + flumioxazin	5 14	Burndown (Fall, PP, PRE)	12 fl oz + COC 1% v/v + AMS 2.5 lb	N
			PP, PRE	12 fl oz	N

- Refer to Table 2A for maximum weed heights and weed and cover crop control ratings in no-till soybean.
- Burndown applications need COC/MSO (1% v/v) + AMS (2.5 lb/A), or NIS (0.25% v/v) + AMS (2.5 lb/A). Tank-mixtures are needed for a complete burndown program (i.e., 2,4-D, dicamba, glyphosate, Gramoxone, Liberty).
- Refer to Table 2B for soil-applied weed control and crop tolerance ratings.
- See Table 2D for individual product rate equivalents for the premix.
- Dimetric Charged use rates are based on soil texture, organic matter, and pH and are 12 fl oz/A for coarse textured or calcareous soils; 15 to 18 fl oz/A for medium textured soils; and 18 fl oz/A for fine textured soils. For soils with pH of 7.5 or higher use a maximum of 12 fl oz/A.
- DO NOT apply on coarse soils with less than 2% organic matter or soils with less than 1% organic matter.
- Crop injury may occur from applications made to poorly drained soils, under cool, wet conditions.
- DO NOT apply after soybean emergence – severe injury or death may occur.
- Some soybean varieties are sensitive to flumioxazin and metribuzin. Consult your local seed dealer for information.
- DO NOT tank-mix with metolachlor (Dual), dimethenamid (Outlook), or acetochlor (Warrant) products within 14 days of planting, unless soybeans are planted under no-till or minimum tillage conditions on wheat stubble or no-till field corn stubble or crop injury will occur.
- DO NOT graze or feed forage or hay to livestock for at least 40 days following application.
- Preharvest interval (PHI): none listed
- Refer to Table 12 and the label for crop rotation restrictions.

TABLE 2F — Soybean Herbicides — Remarks and Limitations

Herbicide	Common Name	Site of Action Number	Application Timing	Rate/A	Trait
Dual Magnum, EverpreX 7.62EC Dual II Magnum 7.64EC	s-metolachlor	15	PP, PPI, PRE	1.33 pt	N
			POST	1.33 pt	N

- Refer to Table 2B for weed control and crop tolerance ratings.
- Soil-applied use rates should be increased to 1.67 pt/A for effective nutsedge control. Nutsedge control is improved with incorporation.
- Application rates range from 1 to 2 pt/A and are based on soil texture and organic matter.
- Postemergence s-metolachlor will not control emerged weeds. Tank-mixtures with effective postemergence herbicides are needed.
- The maximum use rate of a single application of Dual Magnum/Dual II Magnum is 2.6 pt/A (PRE) and 2 pt/A (POST).
- DO NOT exceed 3.7 lb ai/A/year of s-metolachlor (3.9 pt/A/year).
- DO NOT graze or feed forage or hay treated postemergence with s-metolachlor.
- Preharvest interval (PHI): 75 days
- Refer to Table 12 and the label for crop rotation restrictions.

Elevore 0.572SC	halauxifen	4	Burndown (Fall, >14 d EPP)	1 fl oz + MSO 1% v/v	N

- Can be applied up to 14 days prior to planting soybean to control existing vegetation i.e., glyphosate-resistant horseweed.
- Refer to Table 2A for maximum weed heights and weed and cover crop control ratings in no-till soybean.
- Apply with either MSO (1% v/v) or COC (1% v/v).
- Tank-mixtures are needed for a complete burndown program (i.e., glyphosate, Gramoxone, Liberty).
- Refer to Table 12 and the label for crop rotation restrictions.

Engenia 5L	dicamba (BAPMA salt)	4	Burndown (PP, PRE)	12.8 fl oz	RR2X XF
			POST	12.8 fl oz	RR2X XF

- **Apply to Roundup Ready 2 Xtend or XtendFlex (dicamba resistant) soybean only. Engenia is a restricted-use pesticide.**
- Engenia can be applied preplant, preemergence, or postemergence up to and including June 30.
- Refer to Table 2A for maximum weed heights and weed and cover crop control ratings in no-till soybean.
- Engenia provides a short period of residual activity on certain small-seeded broadleaf weeds, including horseweed. However, this is dependent on weather conditions. Residual activity is longer under reduced rainfall.
- Refer to Table 2C for postemergence weed control and crop tolerance ratings.
- Apply to broadleaf weeds that are less than 4-inches in size. Refer to Table 2E for maximum weed sizes.
- DO NOT mix any other herbicides or additives with Engenia unless approved on: **engeniatankmix.com**.
- The inclusion of a volatility reduction agent (VRA)/buffering agent (pH modifier) and a drift reduction agent (DRA) are required unless otherwise indicated, see application requirement website.
- Several broadleaf plants including non-Xtend soybean are extremely susceptible to dicamba.
- CAUTION should be taken to avoid spray system contamination, vapor and/or spray particle drift.
- Specific guidelines for use are required when applying Engenia to Roundup Ready 2 Xtend or XtendFlex soybeans. Information on application guidelines and stewardship to reduce potential off-target movement of these products can be found in Table 2H - “Guidelines and Precautions for Dicamba Use in Roundup Ready 2 Xtend and XtendFlex Soybean”.
- DO NOT apply more than 12.8 fl oz/A of Engenia in a single application, a total of 25.6 fl oz/A postemergence, or a total of 51.2 fl oz/A for all applications.
- DO NOT graze or harvest forage for at least 7 days; or graze or harvest hay for at least 14 days after application.
- Refer to Table 12 and the label for crop rotation restrictions.

TABLE 2F — Soybean Herbicides — Remarks and Limitations

Herbicide	Common Name	Site of Action Number	Application Timing	Rate/A	Trait
Enlist Duo 3.33L	2,4-D choline + glyphosate	4 9	Burndown (Fall, >14 d EPP)	4.75 pt	N
			Burndown (PP, PRE)	4.75 pt	E3
			POST	4.75 pt	E3

Burndown in no-till soybean:

- Enlist Duo can be applied to control emerged annual, biennial, and perennial broadleaf weeds.
- Enlist Duo at 4.75 pt/A can be applied in the fall and up to 14 days prior to soybean planting.
- Unacceptable injury may occur to soybean that do not have the Enlist E3 trait when conditions are cool and rainy and there is less vegetation and residue present at the time of application.
- Refer to Table 2A for maximum weed heights and weed and cover crop control ratings in no-till soybean.
- DO NOT use on sandy soils with less than 1% organic matter. Soybean should be planted at least 1 inch deep.

Burndown (PRE)/Postemergence: Apply to Enlist E3 (2,4-D resistant) soybean only.

- Enlist E3 soybean are resistant to 2,4-D choline, glufosinate, and glyphosate.
- Enlist Duo can be applied preplant, preemergence, or postemergence (through R1 soybean).
- Refer to Table 2A for maximum weed heights and weed and cover crop control ratings in no-till soybean.
- Refer to Table 2C for postemergence weed control and crop tolerance ratings.
- See Table 2D for individual product rate equivalents for the premix .
- Refer to Table 2E for application rates and maximum weed sizes.
- Apply 3.5 to 4.75 pt/A of Enlist Duo. Use the higher rate to control less susceptible species, larger weeds, and perennials. Use prior to weeds reaching 6-inches tall.
- DO NOT apply more than one preemergence and no more than two postemergence applications of Enlist Duo per season.
- DO NOT exceed 4.75 pt/A of Enlist Duo per application or 14.25 pt/A per season.
- DO NOT mix with any other herbicide or additive without first consulting **EnlistTankmix.com** within 7 days prior to application for the approved list of tank-mix partners.
- Several broadleaf plants including non-Enlist soybean are extremely susceptible to 2,4-D.
- Specific guidelines for use are required when applying Enlist Duo to Enlist E3 soybeans. Information on application guidelines and stewardship to reduce potential off-target movement of Enlist Duo can be found in Table 2G - “Guidelines and Precautions for 2,4-D Use in Enlist E3 Soybean”.
- DO NOT graze or feed forage or hay to livestock.
- Preharvest interval (PHI): 50 days
- Refer to Table 12 and the label for crop rotation restrictions.

TABLE 2F — Soybean Herbicides — Remarks and Limitations

Herbicide	Common Name	Site of Action Number	Application Timing	Rate/A	Trait
Enlist One 3.8L	2,4-D choline	4	Burndown (Fall, >7 d EPP)	1 pt	N
			Burndown (PP, PRE)	2 pt	E3
			POST	2 pt	E3

Burndown in no-till soybean:
- Enlist One can be applied to control emerged annual, biennial, and perennial broadleaf weeds.
- Refer to Table 2A for maximum weed heights and weed and cover crop control ratings in no-till soybean.
- Enlist One at 2 pt/A can be applied in the fall and up to 14 days prior to soybean planting.
- Enlist One at 1 pt/A can be applied up to 7 days prior to soybean planting.
- DO NOT use on sandy soils with less than 1% organic matter. Soybean should be planted at least 1 inch deep.
- Enlist One does not control common chickweed and can be tank-mixed with a number of herbicides for improved weed control.

Burndown (PRE)/Postemergence: Apply to Enlist E3 (2,4-D resistant) soybean only.
- Enlist E3 soybean are resistant to 2,4-D choline, glufosinate, and glyphosate.
- The 2,4-D choline formulation in Enlist One is the only registered 2,4-D formulation for use in Enlist E3 soybeans.
- Enlist One can be applied preplant, preemergence, or postemergence (through R1 soybean).
- Refer to Table 2A for maximum weed heights and weed and cover crop control ratings in no-till Enlist E3 soybean.
- Refer to Table 2C for postemergence weed control and crop tolerance ratings.
- Refer to Table 2E for application rates and maximum weed sizes.
- Apply 1.5 to 2 pt/A of Enlist One. Use the higher rate to control less susceptible species, larger weeds, and perennials. Use prior to weeds reaching 6-inches tall.
- DO NOT apply more than one preemergence and no more than two postemergence applications of Enlist One per season.
- DO NOT exceed 2 pt/A of Enlist One per application or 6 pt/A per season.
- DO NOT mix with any other herbicide or additive without first consulting **EnlistTankmix.com** within 7 days prior to application for the approved list of tank-mix partners.
- Several broadleaf plants including non-Enlist soybean are extremely susceptible to 2,4-D. CAUTION should be taken to avoid spray system contamination, vapor and/or spray particle drift.
- Specific guidelines for use are required when applying Enlist One to Enlist E3 soybeans. Information on application guidelines and stewardship to reduce potential off-target movement of Enlist One can be found in Table 2G - “Guidelines and Precautions for 2,4-D Use in Enlist E3 Soybean”.
- DO NOT graze or feed forage or hay to livestock.
- Preharvest interval (PHI): 50 days
- Refer to Table 12 and the label for crop rotation restrictions.

Herbicide	Common Name	Site of Action Number	Application Timing	Rate/A	Trait
Envive 41.3DG	flumioxazin + chlorimuron + thifensulfuron	14 2 2	Burndown (Fall, PP, PRE)	3.5 oz + COC 1% v/v	N
			PP, PRE	3.5 oz	N

- Refer to Table 2A for maximum weed heights and weed and cover crop control ratings in no-till soybean.
- Burndown applications need COC (1% v/v); NIS (0.25% v/v) can be used if the tank-mix partner does not allow for the use of COC. Tank-mixtures are needed for a complete burndown program (i.e., 2,4-D, dicamba, glyphosate, Gramoxone, Liberty). Include AMS with glyphosate or Liberty tank-mixtures.
- Refer to Table 2B for soil-applied weed control and crop tolerance ratings.
- See Table 2D for individual product rate equivalents for the premix.
- Envive 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 Envive for portions of the Michigan north of I-96 is 2.5 oz/A.
- DO NOT apply Envive at rates greater than 2.5 oz/A to soils with a composite pH between 7.1 and 7.6.
- DO NOT apply to soils with a composite pH exceeding 7.6.
- DO NOT apply after soybean emergence or severe injury may occur.
- DO NOT tank-mix with metolachlor (Dual), dimethenamid (Outlook), or acetochlor (Warrant) products within 14 days of planting, unless soybeans are planted under no-till or minimum tillage conditions on wheat stubble or no-till field corn stubble or crop injury will occur.
- Envive can be tank-mixed with pendimethalin (Prowl) for annual grass control.
- DO NOT graze or feed forage or hay to livestock.
- Preharvest interval (PHI): none listed
- Tomatoes may be transplanted 12 months after Envive application. Refer to Table 12 and the label for additional crop rotation restrictions.

TABLE 2F — Soybean Herbicides — Remarks and Limitations

Herbicide	Common Name	Site of Action Number	Application Timing	Rate/A	Trait
Express 50SG	tribenuron	2	Burndown (Fall, >7 d EPP)	0.5 oz + COC 1% v/v	N

- Express can be applied up to 7 days prior to planting soybean to control existing vegetation i.e., chickweed.
- Refer to Table 2A for maximum weed heights and weed and cover crop control ratings in no-till soybean.
- If applied at 0.25 oz/A soybean can be planted 1 day after application, unless on light textured soils or soils with pH greater than 7.9.
- Always add COC at 1% v/v.
- Express should be tank-mixed with additional products (i.e., glyphosate, Gramoxone, or Liberty) to broaden the spectrum of weed control.
- Refer to label and Table 12 for crop rotation restrictions.

Extreme 2.17L	glyphosate + imazethapyr	9 2	Burndown (Fall, PP, PRE)	3 pt + NIS 0.25% v/v + AMS 17 lb/100 gal	N
			POST	3 pt + NIS 0.25% v/v + AMS 17 lb/100 gal	RR LLGT27 RR2X E3 XF

Burndown in no-till soybean:
- Extreme can be applied to control emerged annual, biennial, and perennial weeds and provide residual weed control.
- Refer to Table 2A for maximum weed heights and weed and cover crop control ratings in no-till soybean.
- See Table 2D for individual product rate equivalents for the premix.
- Refer to Table 2B for soil-applied weed control and crop tolerance ratings (Pursuit).
- Tank-mixtures with 2,4-D, dicamba, or Sharpen are needed to control horseweed.
- Refer to Table 12 for crop rotation restrictions.

Postemergence: Apply only to soybean with the glyphosate-resistance trait.
- Apply Extreme after the first trifoliate leaf of soybean has fully expanded (V1) up to soybean bloom (R1).
- Refer to Table 2C for postemergence weed control and crop tolerance ratings.
- Best when applied to weeds 4 inches tall or less. Refer to Table 2E for maximum weed sizes.
- DO NOT graze or feed forage or hay to livestock.
- Preharvest interval (PHI): 85 days
- Extreme is very persistent and can limit rotational crops. Forty months and a successful bioassay are required prior to planting sugarbeets, cucumbers, and tomatoes. Refer to Table 12 and the label for additional crop rotation restrictions.

Fierce EZ 3.04SC	pyroxasulfone + flumioxazin	15 14	Burndown (Fall, PP, PRE)	6 fl oz + COC 1% v/v	N
			PP, PRE	6 fl oz	N

- Refer to Table 2A for maximum weed heights and weed and cover crop control ratings in no-till soybean.
- Burndown applications need COC/MSO (1% v/v), or NIS (0.25% v/v). Tank-mixtures are needed for a complete burndown program (i.e., 2,4-D, dicamba, glyphosate, Gramoxone, Liberty). Include AMS with glyphosate or Liberty tank-mixtures.
- Apply Fierce EZ at 6 to 7.5 fl oz/A, depending on soil type and application timing.
- Refer to Table 2B for soil-applied weed control and crop tolerance ratings.
- See Table 2D for individual product rate equivalents for the premix.
- DO NOT apply after soybean cracking or emergence – severe injury or death may occur.
- Crop injury may occur when Fierce EZ is applied to poorly drained soils and/or under cool, wet conditions.
- DO NOT graze or feed forage or hay to livestock for at least 21 days following application.
- Preharvest interval (PHI): none listed
- The rotation restriction for field corn is based on tillage system. Corn can be planted 7 days after application of Fierce EZ at 6 fl oz/A under reduced tillage systems. Otherwise corn can be planted 30 days after application. Refer to Table 12 and the label for additional crop rotation restrictions.

TABLE 2F — Soybean Herbicides — Remarks and Limitations

Herbicide	Common Name	Site of Action Number	Application Timing	Rate/A	Trait
Fierce MTZ 2.64SC	flumioxazin + metribuzin + pyroxasulfone	14 5 15	Burndown (Fall, PP, PRE)	1 pt + COC 1% v/v	N
			PP, PRE	1 pt	N

- Refer to Table 2A for maximum weed heights and weed and cover crop control ratings in no-till soybean.
- Burndown applications need COC/MSO (1% v/v), or NIS (0.25% v/v). Tank-mixtures are needed for a complete burndown program (i.e., 2,4-D, dicamba, glyphosate, Gramoxone, Liberty). Include AMS with glyphosate or Liberty tank-mixtures.
- Apply Fierce MTZ at 1 to 1.5 pt/A, depending on soil type and application timing.
- Refer to Table 2B for soil-applied weed control and crop tolerance ratings.
- See Table 2D for individual product rate equivalents for the premix.
- DO NOT apply on coarse soils with less than 2% organic matter or soils with less than 1% organic matter.
- Crop injury may occur from applications made to poorly drained soils, under cool, wet conditions or when soils with a pH of 7.5 or higher.
- DO NOT apply after soybean emergence – severe injury or death may occur.
- Some soybean varieties are sensitive to flumioxazin and metribuzin. Consult your local seed dealer for information.
- DO NOT graze or feed forage or hay to livestock for at least 40 days following application.
- Preharvest interval (PHI): none listed
- Refer to Table 12 and the label for crop rotation restrictions.

Fierce XLT 62.41WDG	chlorimuron + flumioxazin + pyroxasulfone	2 14 15	Burndown (Fall, PP, PRE)	4 oz + COC 1% v/v	N
			PP, PRE	4 oz	N

- Refer to Table 2A for maximum weed heights and weed and cover crop control ratings in no-till soybean.
- Burndown applications need COC/MSO (1% v/v), or NIS (0.25% v/v). Tank-mixtures are needed for a complete burndown program (i.e., 2,4-D, dicamba, glyphosate, Gramoxone, Liberty). Include AMS with glyphosate or Liberty tank-mixtures.
- Apply Fierce XLT at 4 oz/A as part as a preemergence followed by postemergence program.
- Refer to Table 2B for soil-applied weed control and crop tolerance ratings.
- See Table 2D for individual product rate equivalents for the premix.
- DO NOT apply Fierce XLT to soils with a composite pH greater than 6.8.
- DO NOT apply after soybean cracking or emergence – severe injury or death may occur.
- Crop injury may occur when Fierce XLT is applied to poorly drained soils and/or under cool, wet conditions.
- DO NOT graze or feed forage or hay to livestock.
- Preharvest interval (PHI): none listed
- Refer to Table 12 and the label for crop rotation restrictions.

FirstRate 84WDG	cloransulam	2	PP, PPI, PRE	0.6 oz	N
			POST	0.3 oz + NIS 0.25% + AMS 2 lb	N

- Refer to Tables 2B for soil-applied and Table 2C for postemergence weed control and crop tolerance ratings.
- Excellent control of non-ALS (Group 2) resistant common and giant ragweed.
- Soil-applied application rates depend on soil organic matter, if organic matter is greater than 3.0% FirstRate can be applied at 0.75 oz/A.
- Postemergence applications can be made from soybean emergence up to the R2 (full flower) growth stage. However, applications prior to V1 (first trifoliate) stage may cause temporary yellowing.
- Postemergence application require NIS (0.25% v/v) + AMS (2 lb/A), when weeds are stressed by hot and dry conditions use COC (1% v/v) - soybean injury will be more severe. AMS must be added for velvetleaf control.
- Refer to Table 2E for maximum weed sizes for FirstRate.
- Tank-mixtures with other herbicides will be needed to broaden the spectrum of weed control. Tank-mixtures for postemergence grass control may lead to grass antagonism under certain conditions. Follow label directions closely regarding spray additives for tank-mixtures.
- DO NOT exceed 1.05 oz/A/year of FirstRate.
- DO NOT graze or feed forage or hay to livestock for at least 25 days following application.
- Preharvest interval (PHI): 70 days
- Rotation to sugarbeets, cucumbers, and tomatoes requires 30 months and a successful bioassay. Refer to Table 12 and the label for additional crop rotation restrictions.

TABLE 2F — Soybean Herbicides — Remarks and Limitations

Herbicide	Common Name	Site of Action Number	Application Timing	Rate/A	Trait
Flexstar 1.88SL	fomesafen	14	POST	1 pt + COC 1% v/v + AMS 8.5 lb/100 gal	N

- Refer to Table 2C for postemergence weed control and crop tolerance ratings.
- Apply Flexstar at 1 pt/A when applied alone or in tank-mixture with other herbicides. Refer to Table 2E for maximum weed sizes.
- NIS (0.25% v/v) may be substituted for COC for certain tank-mixtures.
- Flexstar can only be applied in the lower peninsula of Michigan.
- DO NOT apply products containing fomesafen (Flexstar, Flexstar GT 3.5, Marvel, Prefix, Reflex, or Warrant Ultra) to the same field in consecutive years.
- Adequate spray coverage is essential; a minimum of 15 gallons/A of spray solution is recommended.
- Some soybean leaf burn occurs after Flexstar application, but soybeans soon outgrow this injury.
- Tank-mixtures with other herbicides will be needed to broaden the spectrum of weed control. Tank-mixtures for postemergence grass control may lead to grass antagonism under certain conditions. Follow label directions closely regarding spray additives for tank-mixtures.
- DO NOT make more than one application of Flexstar (1 pt/A) in consecutive years.
- DO NOT graze or feed forage or hay to livestock.
- Preharvest interval (PHI): 45 days
- Refer to Table 12 and the label for crop rotation restrictions.

Flexstar GT 3.5 2.82SL	glyphosate + fomesafen	9 14	Burndown (PP, PRE)	3.5 pt + COC 1% v/v + AMS 17 lb/100 gal	N
			POST	3.5 pt + NIS 0.25% v/v + AMS 17 lb/100 gal	RR LLGT27 RR2X E3 XF

Burndown in no-till soybean:
- Flexstar GT 3.5 can be applied to control emerged annual, biennial, and perennial weeds.
- Refer to Table 2A for maximum weed heights and weed and cover crop control ratings in no-till soybean.
- See Table 2D for individual product rate equivalents for the premix.
- DO NOT apply products containing fomesafen (Flexstar, Flexstar GT, Marvel, Prefix or Reflex) to the same field in consecutive years.
- Tank-mixtures with 2,4-D, dicamba, or Sharpen are needed to control horseweed.

Postemergence: Apply only to soybean with the glyphosate-resistance trait.
- Refer to Table 2C for postemergence weed control and crop tolerance ratings.
- See Table 2D for individual product rate equivalents for the premix.
- Best if applied when weeds are 4 inches tall or less. Refer to Table 2E for maximum weed sizes.
- Adequate spray coverage is essential; a minimum of 15 gallons/A of spray solution is recommended.
- DO NOT apply products containing fomesafen (Flexstar, Flexstar GT 3.5, Marvel, Prefix, Reflex, or Warrant Ultra) to the same field in consecutive years.
- Some cosmetic bronzing and leaf crinkling can occur after application.
- DO NOT make more than one application of Flexstar GT 3.5 (3.5 pt/A) in consecutive years.
- DO NOT graze or feed forage or hay to livestock.
- Preharvest interval (PHI): 45 days
- Refer to Table 12 and the label for crop rotation restrictions.

TABLE 2F — Soybean Herbicides — Remarks and Limitations

Herbicide	Common Name	Site of Action Number	Application Timing	Rate/A	Trait
Fusilade DX 2EC	fluazifop	1	POST	12 fl oz + COC 1% v/v	N

- Fusilade DX provides postemergence grass and volunteer corn control. Refer to Table 2C for weed control and crop tolerance ratings.
- Fusilade DX rates range from 6 to 12 fl oz/A and are based on weed size and sensitivity. Refer to Table 2E for maximum weed sizes.
- Apply Fusilade with COC (1% v/v) for best results. NIS (0.25% v/v) may replace COC for certain tank-mixtures (see label).
- Apply 6 fl oz/A of Fusilade DX for volunteer corn control from 12 to 24 inches tall. The rate can be reduced to 4 fl oz/A if volunteer corn is less than 12 inches tall and Fusilade DX is tank-mixed with glyphosate with AMS (17 lb/100 gal). Fusilade DX will not control volunteer Enlist corn.
- For perennial grass control, sequential applications (10-21 days apart) are needed 12 followed by 8 fl oz/A or 16 followed by 14 fl oz/A for heavy grass pressure.
- Tank-mixtures of Fusilade DX with certain postemergence broadleaf herbicides (Group 14 and certain Group 2 herbicides) can antagonize grass control.
- Applying Fusilade DX either 1 day before or 7 days after the broadleaf herbicide will prevent the antagonism.
- DO NOT apply more than 24 fl oz/A to soybeans prebloom or 6 fl oz/A from bloom through post-bloom or 30 fl oz/A/year.
- DO NOT graze or feed forage or hay to livestock.
- Preharvest interval (PHI): 60 days
- Refer to Table 12 and the label for crop rotation restrictions.

glyphosate (see Table 10)	glyphosate	9	Burndown (Fall, EPP, PRE)	0.75-1.13 lb ae (see Table 10) + AMS 17 lb/100 gal	N
			POST	1.13 lb ae (see Table 10) + AMS 17 lb/100 gal	RR LLGT27 RR2X E3 XF

- There are several glyphosate products and formulations registered in Michigan. Refer to Table 10 and the label to determine application rates and additives needed for the different glyphosate products.
- Glyphosate DOES NOT have residual activity and will only control existing vegetation.
- For best results apply glyphosate at 1.13 lb ae/A. Lower application rates (0.75 lb ae/A) may be used to control smaller weeds (consult label). DO NOT apply below a minimum rate of 0.75 lb ae/A.
- Higher rates of glyphosate (1.5 lb ae/A) can be applied for perennial weed control, to control larger weeds, or weeds under stress.
- AMS (17 lb/100 gal) should be added to minimize hard water antagonisms and improve control of large weeds and weeds under stress.
- Glyphosate will not control glyphosate (Group 9)-resistant weeds, including horseweed, Palmer amaranth, and waterhemp. Recommendations for control of these weeds can be found in the back of this guide.
- DO NOT exceed a combined total of 6 lb ae/A/year of glyphosate for all applications.

Burndown in no-till soybean:
- Glyphosate can be applied anytime prior to soybean emergence to control emerged weeds.
- Refer to Table 2A for maximum weed heights and weed and cover crop control ratings in no-till soybean.
- Tank-mixtures with other burndown herbicides can improve control of horseweed and key no-till weeds. Herbicides with residual activity can also be tank-mixed with glyphosate or glyphosate mixtures.

Postemergence: Apply only to soybean with the glyphosate-resistance trait.
- Refer to Table 2C for postemegence weed control and crop tolerance ratings.
- Refer to Table 2E for application rates and maximum weed sizes.
- Apply from soybean cracking through full flower (R2 soybean).
- DO NOT apply more than 2.25 lb ae/A in-crop per season.
- Glyphosate should be applied before annual weeds are 4 inches tall to reduce weed competition and maximize soybean yield.
- Two postemergence applications of glyphosate will improve perennial broadleaf weed control.
- For quackgrass control, apply glyphosate when quackgrass is 6-8 inches tall.
- For yellow nutsedge suppression, apply glyphosate when nutsedge is 3-4 inches tall. Adding Classic (chlorimuron) or making a second glyphosate application 2-3 weeks later will improve suppression.
- For volunteer glyphosate-resistant corn control, tank-mix glyphosate with Assure II, Fusilade DX, or Select Max.
- 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 include ammonium sulfate.
- Preharvest interval (PHI): 14 days

TABLE 2F — Soybean Herbicides — Remarks and Limitations

Herbicide	Common Name	Site of Action Number	Application Timing	Rate/A	Trait
Gramoxone SL 3.0L	paraquat	22	Burndown (Fall, PP, PRE)	1.3 pt + NIS 0.25% v/v	N

- **Gramoxone is a restricted-use pesticide.** Certified applicators are required to complete a paraquat specific training prior to use of Gramoxone. The paraquat training course can be found at: **www.epa.gov/pesticide-worker-safety/paraquat-dichloride-training-certified-applicators**.
- Gramoxone DOES NOT have residual activity and will only control existing vegetation.
- DO NOT apply to emerged soybean.
- Refer to Table 2A for maximum weed heights and weed and cover crop control ratings in no-till soybean.
- Apply at 1.3 pt/A for weeds less than 3 inches tall and 2 pt/A for weeds from 3 to 6 inches tall.
- Always add NIS at 0.25% v/v or COC at 1% v/v.
- DO NOT apply more than 2.7 pt/A in a single application or 4.0 pt/A/year for all uses.
- Regrowth of cereal 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 other herbicides with foliar activity and with herbicides with residual control (i.e., metribuzin).
- Preharvest interval (PHI): forage/hay - after R3 soybean; seed - at normal maturity

Harmony SG 50SG	thifensulfuron	2	POST	0.125 oz + NIS 0.25% v/v + AMS 2 lb	N

- Apply Harmony SG after the first trifoliate leaf of soybeans has fully expanded (V1). Refer to Table 2C for postemergence weed control and crop tolerance ratings.
- Harmony SG is most effective on small weeds (Table 2E).
- Applications of Harmony SG may cause temporary wilting, leaf yellowing, and stunting.
- DO NOT apply to soybeans or weeds under stress. Delay application until the stress passes.
- Tank-mixtures are needed to broaden the spectrum of weed control. Specific adjuvant and tank-mixture restrictions can be found on the label. However, in most cases the rate of NIS should be reduced to 0.125% v/v particularly under hot, humid conditions.
- Under dry conditions, Harmony can be applied with COC, but soybean injury is likely to be more severe.
- Special precaution: A special sprayer clean-out procedure is required (see label).
- DO NOT make more than one application of Harmony SG per year.
- DO NOT graze or harvest forage for at least 7 days; or feed dry hay for at least 30 days.
- Preharvest interval (PHI): 60 days
- Refer to Table 12 and the label for crop rotation restrictions.

Liberty 2.34SL	glufosinate	10	Burndown (PP, PRE)	32 fl oz + AMS 8.5 lb/100 gal	N
			POST	32 fl oz + AMS 8.5 lb/100 gal	LL LLGT27 E3 XF

- There are other glufosinate products registered for use in Michigan consult specific labels.
- Liberty DOES NOT have residual activity and will only control existing vegetation.
- Liberty can be applied at rates ranging 32 to 43 fl oz/A, depending on weed species and size.
- An additional application of 32 to 43 fl oz/A of Liberty can be applied up to a maximum of 87 fl oz/A/year.
- Always add AMS (8.5-17 lb/100 gal). If conditions are hot and humid, the AMS rate should be 8.5 lb/100 gal.
- Reduced weed control can occur if Liberty is applied 2 hours before sunset or later.
- Use a minimum carrier volume of 15 gallons per acre.
- The use of drift control agents that reduce spray coverage will result in reduced weed control from Liberty.
- Refer toTable 12 and the label for crop rotation restrictions.

Burndown in no-till soybean:
- Liberty can be applied anytime prior to soybean emergence to control emerged weeds.
- Refer to Table 2A for maximum weed heights and weed and cover crop control ratings in no-till soybean.
- Tank-mixtures with Sharpen or Metribuzin can greatly improve burndown activity. Liberty can also be tank-mixed with other burndown herbicides and herbicides with residual activity.

Postemergence: Apply only to soybean with the glufosinate-resistance trait.
- Refer to Table 2C for postemergence weed control and crop tolerance ratings.
- Refer to Table 2E for application rates and maximum weed sizes.
- Apply from soybean emergence up to but not including the bloom stage (R1 soybean).
- DO NOT graze or feed forage or hay to livestock.
- Preharvest interval (PHI): 70 days

TABLE 2F — Soybean Herbicides — Remarks and Limitations

Herbicide	Common Name	Site of Action Number	Application Timing	Rate/A	Trait
Lorox 50DF	linuron	5	PP, PRE	1.5 lb	N
Linex 4L	linuron	5	PP, PRE	1.5 pt	N

- Refer to Table 2B for soil-applied weed control and crop tolerance ratings.
- If heavy rainfall occurs soon after application, injury to the crop may result.
- DO NOT use on coarse-textured sandy or sandy loam soils or on soils with less than 1% organic matter.
- Plant soybeans at least 1.75 inches deep.
- Tank-mixtures or sequential herbicide programs are needed to increase the spectrum of weed control.
- DO NOT graze or feed forage or hay to livestock.
- Preharvest interval (PHI): none listed
- Refer to Table 12 and the label for crop rotation restrictions.

Marvel 3L	fluthiacet + fomesafen	14 14	POST	7.25 fl oz + COC 1% v/v	N

- Apply Marvel from the first trifoliate (V1) through full flower (prior to R3 stage). Refer to Table 2C for postemergence weed control and crop tolerance ratings.
- See Table 2D for individual product rate equivalents for the premix.
- AMS (2.5 lb/A) may be added to enhance weed control.
- Marvel can be tank-mixed for postemergence grass control. Use the adjuvant recommended for use with the tank-mix partner.
- DO NOT apply more than 0.24 lb ai/A of fomesafen (from any fomesafen containing product) (i.e., 1 pt/A of Reflex) to the same field in consecutive years.
- DO NOT graze or feed forage or hay to livestock.
- Preharvest interval (PHI): 60 days
- Refer to Table 12 and the label for crop rotation restrictions.

Metribuzin 75DF	metribuzin	5	Burndown (Fall, PP, PRE)	5.3 oz + COC 1% v/v	N
			PP, PPI, PRE	8 oz	N
Metribuzin 4L	metribuzin	5	Burndown (Fall, PP, PRE)	8 fl oz + COC 1% v/v	N
			PP, PPI, PRE	12 fl oz	N

- Refer to Table 2A for maximum weed heights and weed and cover crop control ratings in no-till soybean.
- Metribuzin at rates as low as 4 oz/A (75DF) or 6 fl oz/A (4L) can be included as part of a complete burndown program. The addition of metribuzin to Liberty or Gramoxone improves control of several species, including horseweed.
- Higher metribuzin rates, 6 to 8 oz/A (75DF) or 9 to 12 fl oz/A (4L) are needed for residual weed control. However, metribuzin rates are dependent on soil texture, organic matter, and pH. Refer to Table 2B for weed control and crop tolerance ratings.
- Tank-mixtures or prepackaged herbicide mixes are needed for eastern black nightshade and annual grass control.
- 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% organic matter.
- Some soybean varieties are sensitive to metribuzin and should not be planted. Consult your local seed dealer for information.
- DO NOT graze or feed forage or hay to livestock for at least 40 days following application.
- Preharvest interval (PHI): none listed
- Refer to Table 12 and the label for crop rotation restrictions.

TABLE 2F — Soybean Herbicides — Remarks and Limitations

Herbicide	Common Name	Site of Action Number	Application Timing	Rate/A	Trait
OpTill 68WG	saflufenacil + imazethapyr	14 2	Burndown (PP, PRE)	2 oz + MSO 1% v/v + AMS 17 lb/100 gal	N
			PP, PRE	2 oz	N

- Refer to Table 2A for maximum weed heights and weed and cover crop control ratings in no-till soybean.
- Tank-mixtures are needed for a complete burndown program (i.e., 2,4-D, dicamba, glyphosate, Gramoxone, Liberty).
- Apply Optill at 2 oz/A as part as a preemergence followed by postemergence program.
- Refer to Table 2B for soil-applied weed control and crop tolerance ratings.
- See Table 2D for individual product rate equivalents for the premix.
- DO NOT apply after soybean emergence or severe crop injury will occur.
- Some soybean varieties are sensitive to saflufenacil and should not be planted. Consult your local seed dealer for information.
- 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) or fomesafen (Reflex).
- Applying a full rate of products containing chlorimuron, chloransulam, flumetsulam, imazaquin or imazethapyr the same year as OpTill may increase the risk of injury to sensitive follow crops.
- DO NOT graze or feed forage or hay to livestock.
- Preharvest interval (PHI): 85 days
- Rotation to sugarbeets, cucumbers, and tomatoes requires 40 months and a successful bioassay. Refer to Table 12 and the label for additional crop rotation restrictions.

Outlook 6EC	dimethenamid-P	15	PP, PPI, PRE	18 fl oz	N
			POST	18 fl oz	N

- Refer to Table 2B for weed control and crop tolerance ratings.
- Soil-applied use rates should be increased to 21 fl oz/A for effective nutsedge control. Nutsedge control is improved with incorporation.
- Application rates range from 12 to 21 fl oz/A and are based on soil texture and organic matter.
- Outlook can be applied postemergence from emergence to the fifth trifoliate (V5) soybean.
- Postemergence Outlook will not control emerged weeds. Tank-mixtures with effective postemergence herbicides are needed.
- The maximum use rate of a single application of Outlook is 21 fl oz/A.
- Outlook can be applied in two split applications, 8 to 16 fl oz/A for the first application (PP, PRE, or POST) and the remaining 8 to 16 fl oz/A POST, as long as the maximum application rate of 24 fl oz/A/year (1.13 lb ai/A/year) of Outlook is not exceeded.
- DO NOT graze or feed forage, hay, or straw to livestock.
- Preharvest interval (PHI): none listed
- Refer to Table 12 and the label for crop rotation restrictions.

Panoflex 50SG	tribenuron thifensulfuron	2 2	Burndown (Fall, >7 d EPP)	0.6 oz + NIS 0.5% + AMS 2 lb	N

- Can be applied up to 7 days prior to planting soybean to control existing vegetation (i.e., chickweed).
- Refer to Table 2A for maximum weed heights and weed and cover crop control ratings in no-till soybean.
- If applied at 0.3 oz/A soybean can be planted 1 day after application.
- When used on light textured soils (sands or loamy sands) or the soil pH is >7.9 extend the time to planting by 7 additional days.
- The higher application rate is needed for Canada thistle control.
- Always add NIS (0.5% v/v) or COC (1% v/v) + AMS (2 lb/A).
- Tank-mixtures with a Group 4 herbicide (i.e., 2,4-D, dicamba) is recommended for control of horseweed, curly dock, and hairy vetch.
- Panoflex should be tank-mixed with additional products (i.e., glyphosate, Gramoxone, or Liberty) to broaden the spectrum of weed control.
- Refer to Table 12 and the label for crop rotation restrictions.

TABLE 2F — Soybean Herbicides — Remarks and Limitations

Herbicide	Common Name	Site of Action Number	Application Timing	Rate/A	Trait
Perpetuo 2.3SC	pyroxasulfone + flumiclorac	15 14	POST	6 fl oz + COC 1% + AMS 2.5 lb	N

- Refer to Table 2C for weed control and crop tolerance ratings.
- See Table 2D for individual product rate equivalents for the premix.
- Apply to soybean until the V6 (6 trifoliate) growth stage.
- Perpetuo use rates range from 6 to 10 fl oz/A. DO NOT apply more than 8 fl oz/A on coarse textured soils. Refer to Table 2E for maximum weed sizes for Perpetuo.
- The pyroxasulfone component of Perpetuo will provide residual control of grass and small seeded broadleaf weeds.
- Tank-mixtures with other herbicides will be needed to broaden the spectrum of weed control. Please refer to tank-mix partner adjuvant requirements.
- DO NOT make more than one application or apply more than 10 fl oz/A/year.
- DO NOT graze or feed forage or hay to livestock.
- Preharvest interval (PHI): 60 days
- Rotation restrictions are extended to 15 months for sugarbeets and 4 months for wheat when the use rate is higher than 8 fl oz/A. Refer to Table 12 and the label for additional crop rotation restrictions.

Poast 1.5EC	sethoxydim	1	POST	16 fl oz + COC 1 qt + AMS 2.5 lb	N

- Poast provides postemergence grass and volunteer corn control. Refer to Table 2C for weed control and crop tolerance ratings.
- Poast rates range from 12 to 16 fl oz/A and are based on weed size and sensitivity. Refer to Table 2E for maximum weed sizes.
- Apply Poast with COC (1 qt/A) + AMS (2.5 lb/A) or MSO (1.5 pt) + AMS (2.5 lb/A) for best results.
- Apply 24 fl oz/A of Poast to control volunteer and interseeded small grains (barley, oats, rye, and wheat).
- Sequential applications 24 fl oz/A followed by 16 fl oz/A, 7-14 days apart are usually needed for control of perennial grasses.
- Poast are not as effective for control of volunteer corn or perennial grasses as the other postemergence grass herbicides.
- Tank-mixtures of Poast with certain postemergence broadleaf herbicides (Group 14 and certain Group 2 herbicides) can antagonize grass control.
- Applying Poast either 1 day before or 7 days after the broadleaf herbicide will prevent the antagonism.
- DO NOT apply more than 40 fl oz/A per application or 80 fl oz/A/year.
- Only processed meal from seed and hay maybe grazed or fed to livestock.
- Preharvest interval (PHI): 75 days
- Refer to Table 12 and the label for crop rotation restrictions.

Prefix 5.29EC	s-metolachlor + fomesafen	15 14	PP, PPI, PRE	2 pt	N
			POST	2 pt + NIS 0.25%	N

- Refer to Table 2B for soil-applied and Table 2C for postemergence weed control and crop tolerance ratings.
- See Table 2D for individual product rate equivalents for the premix.
- Soil-applied Prefix will provide 4-5 weeks of control and/or suppression of broadleaf and grass weeds and should be used as part of a planned preemergence followed by postemergence herbicide program.
- Postemergence applications can be applied from planting up to 90 days prior to harvest. Include NIS (0.25% v/v) unless applied with glyphosate with a built-in adjuvant. DO NOT use COC or soybean injury will be increased.
- Postemergence applications may cause temporary leaf bronzing and crinkling.
- Refer to Table 2E for maximum weed sizes for postemergence applications of Prefix.
- Applied postemergence the s-metolachlor component of Prefix will provide residual control of grass and small seeded broadleaf weeds.
- DO NOT make more than one application of Prefix per year or apply more than 0.24 lb ai/A of fomesafen (from any fomesafen containing product) (i.e., 1 pt/A of Reflex) to the same field in consecutive years.
- DO NOT apply more than 3.7 lb ai/A/year of s-metolachlor.
- DO NOT graze or feed forage or hay to livestock.
- Preharvest interval (PHI): 90 days
- Refer to Table 12 and the label for crop rotation restrictions.

TABLE 2F — Soybean Herbicides — Remarks and Limitations

Herbicide	Common Name	Site of Action Number	Application Timing	Rate/A	Trait
Prowl 3.3EC	pendimethalin	3	PP, PPI, PRE	2.4 pt	N
Prowl H_2O 3.8ACS	pendimethalin	3	PP, PPI, PRE	2 pt	N

- Refer to Table 2B for weed control and crop tolerance ratings.
- Application rates range from 1.8 to 3.0 pt/A of Prowl 3.3EC and 1.5 to 2.5 pt/A of Prowl H_2O and are based on soil texture and organic matter.
- Preemergence applications may be made up to 2 days after planting.
- DO NOT apply after soybean cracking or emergence.
- Applications close to or after planting may result in soybean injury, including stem swelling and brittleness. Preplant (>7 day prior to planting) or preplant incorporated applications reduce the risk of injury.
- DO NOT make more than one application per season.
- Livestock can graze or be fed forage or hay from treated soybean fields.
- Preharvest interval (PHI): 85 days
- Refer to Table 12 and the label for crop rotation restrictions.

Pursuit 2L	imazethapyr	2	PP, PPI, PRE	4 fl oz	N
			POST	4 fl oz + COC 1% v/v + AMS 12 lb/100 gal	N

- Refer to Table 2B for soil-applied and Table 2C for postemergence weed control and crop tolerance ratings.
- Postemegence Pursuit can be applied after the first trifoliate leaf of soybean has fully expanded (V1) up to soybean bloom (R1).
- Best when applied to weeds 4 inches tall or less. Refer to Table 2E for maximum weed sizes. Postemergence Pursuit will control yellow and green foxtail, barnyardgrass and crabgrass up to 3 inches tall, and giant foxtail up to 6 inches tall.
- Tank-mixtures or a sequential herbicide program is needed to improve ragweed control.
- Pursuit can be tank-mixed with postemergence grass herbicides for volunteer corn control only.
- DO NOT make more than one application per season.
- DO NOT graze or feed forage or hay to livestock.
- Preharvest interval (PHI): 85 days
- Pursuit is very persistent and can limit rotational crops. Rotation to sugarbeets, cucumbers, and tomatoes requires 40 months and a successful bioassay. Refer to Table 12 and the label for additional crop rotation restrictions.

Python 80WDG	flumetsulam	2	PP, PPI, PRE	1.14 oz	N

- Refer to Table 2B for soil-applied weed control and crop tolerance ratings.
- Apply Python at rates ranging from 0.8 to 1 oz/A for coarse textured and 0.89 to 1.33 oz/A on medium and fine textured soils.
- 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.
- Tank-mixtures or sequential herbicide programs are needed to improve control of ragweed, cocklebur and jimsonweed.
- DO NOT make more than one application per season.
- DO NOT graze or feed forage or hay to livestock.
- Preharvest interval (PHI): 85 days
- Refer to Table 12 and the label for crop rotation restrictions.

Raptor 1SL	imazamox	2	POST	5 fl oz + COC 1% v/v + AMS 12 lb/100 gal	N

- Apply Raptor after the first trifoliate leaf of soybean has fully expanded (V1) up to soybean bloom (R1). Refer to Table 2C for postemergence weed control and crop tolerance ratings.
- Best when applied to weeds 4 inches tall or less. Refer to Table 2E for maximum weed sizes.
- Raptor will control barnyardgrass, foxtails, and fall panicum, but will only suppress large crabgrass.
- Tank-mixing Raptor with Cobra (10 fl oz/A), Ultra Blazer (1 pt/A), or Flexstar (1 pt/A) will improve control of common and giant ragweed. These tank-mixtures can cause grass antagonism.
- Raptor can be tank-mixed with postemergence grass herbicides for volunteer corn control only.
- DO NOT make more than one application per season.
- Preharvest interval (PHI): none listed
- Refer to label and Table 12 for crop rotation restrictions.

TABLE 2F — Soybean Herbicides — Remarks and Limitations

Herbicide	Common Name	Site of Action Number	Application Timing	Rate/A	Trait
Reflex 2SL	fomesafen	14	POST	1 pt + COC 1% v/v + AMS 10 lb/100 gal	N

- Refer to Table 2C for postemergence weed control and crop tolerance ratings.
- Apply Reflex at 1 pt/A when applied alone or in tank-mixture with other herbicides. Refer to Table 2E for maximum weed sizes.
- NIS (0.25% v/v) may be substituted for COC for certain tank-mixtures.
- Reflex can only be applied in the lower peninsula of Michigan.
- DO NOT apply products containing fomesafen (Flexstar, Flexstar GT 3.5, Marvel, Prefix, Reflex, or Warrant Ultra) to the same field in consecutive years.
- Adequate spray coverage is essential; a minimum of 15 gallons/A of spray solution is recommended.
- Some soybean leaf burn occurs after Reflex application, but soybeans soon outgrow this injury.
- Tank-mixtures with other herbicides will be needed to broaden the spectrum of weed control. Tank-mixtures for postemergence grass control may lead to grass antagonism under certain conditions. Follow label directions closely regarding spray additives for tank-mixtures.
- DO NOT make more than one application of Reflex (1 pt/A) in consecutive years.
- DO NOT graze or feed forage or hay to livestock.
- Preharvest interval (PHI): 45 days
- Refer to Table 12 and the label for crop rotation restrictions.

Resource 0.86EC	flumiclorac	14	POST	6 fl oz + COC 1 qt	N

- Refer to Table 2C for postemergence weed control and crop tolerance ratings.
- Resource is extremely effective for velvetleaf control and can be applied from 4 to 12 fl oz/A. Refer to Table 2E for maximum weed sizes.
- AMS (2.5 lb/A) may be added to COC for enhanced weed control.
- Resource will cause some temporary leaf burn, but soybean will soon outgrow this injury.
- Resource can be applied at 4 fl oz/A when tank-mixed with other herbicides for additional broadleaf weed control.
- Resource can control velvetleaf escapes up to 24 inches tall (8 fl oz/A) and 30 inches tall (12 fl oz/A).
- DO NOT apply more than 12 fl oz/A of Resource in a single application or more than 16 fl oz/A/year.
- DO NOT graze or feed forage or hay to livestock.
- Preharvest interval (PHI): 60 days
- Refer to Table 12 and the label for crop rotation restrictions.

Reviton 2.83SC	tiafenacil	14	Burndown (PP, PRE)	1 fl oz + MSO 1% v/v + AMS 8.5 lb/100 gal	N

- Can be applied preplant through preemergence at rates from 1 to 3 fl oz/A.
- DO NOT apply within 7 days of planting if applied to coarse soils, sandy clay loam soils, or soils with < 2% organic matter, or if the rate is 2 fl oz/A or greater.
- Refer to Table 2A for maximum weed heights and weed and cover crop control ratings in no-till soybean.
- The use of a methylated seed oil (1% v/v) + ammonium sulfate is the preferred adjuvant.
- Visual injury symptoms appear soon after application.
- Reviton will only control a narrow spectrum of existing broadleaf weeds and should be tank-mixed with additional products (i.e., glyphosate, Gramoxone, or Liberty) to broaden the spectrum of weed control.
- Refer to Table 12 and the label for crop rotation restrictions.

TABLE 2F — Soybean Herbicides — Remarks and Limitations

Herbicide	Common Name	Site of Action Number	Application Timing	Rate/A	Trait
Select Max 0.97EC	clethodim	1	POST	9 fl oz + NIS 0.25% v/v + AMS 2.5 lb	N

- Select Max provides postemergence grass and volunteer corn control. Refer to Table 2C for weed control and crop tolerance ratings.
- Select Max rates range from 9 to 16 fl oz/A for annual grass and 12 to 32 fl oz/A for perennial grass control. Application rates are based on weed size and sensitivity. Refer to Table 2E for maximum weed sizes.
- COC/MSO (1% v/v) can replace NIS (0.25% v/v) for certain tank-mixtures (see label).
- Apply 6 fl oz/A of Select Max for volunteer corn control up to 12 inches tall; 9 fl oz/A for corn up to 24 inches tall; and 12 fl oz/A for corn up to 36 inches tall. Select Max will control Enlist corn.
- For perennial grass control, higher rates (12 to 32 fl oz/A) and sequential applications may be needed.
- Tank-mixtures of Select Max with certain postemergence broadleaf herbicides (Group 14 and certain Group 2 herbicides) can antagonize grass control.
- Applying Select Max either 1 day before or 7 days after the broadleaf herbicide will prevent the antagonism.
- Increasing the Select Max rate by 2 fl oz/A will also improve grass control in certain tank mixtures.
- Apply Select Max at 12 fl oz/A when tank-mixed with auxin (Group 4) herbicides to optimize grass control. Sequential applications are more effective.
- Tank-mixes with Warrant have also resulted in reduced volunteer corn and grass control. To overcome this antagonism: always add AMS, increase the Select Max rate by 33%, apply with a crop oil concentrate, and add an acidifying agent (i.e., LI-700 or FS Transform). If Select Max is to be tank-mixed with Warrant and a dicamba product (i.e., XtendiMax or Engenia), it is best to separate the applications by 3 days. However, if tank-mixed together, increase the Select Max rate by 33%, add a crop oil concentrate, and limit the Warrant rate to 2 pt/A, since AMS or an acidifying agent cannot be applied.
- DO NOT apply more than 32 fl oz/A per application and 64 fl oz/A/year.
- DO NOT graze or feed forage or hay to livestock.
- Preharvest interval (PHI): 60 days
- Refer to Table 12 and the label for crop rotation restrictions.

Sequence 5.25EW	glyphosate + s-metolachlor	9 15	Burndown (PP, PRE)	2.5 pt + AMS 17 lb/100 gal	N
			POST	2.5 pt + AMS 17 lb/100 gal	RR LLGT27 RR2X E3 XF

Burndown in no-till soybean
- Sequence can be applied to control emerged annual, biennial, and perennial weeds.
- Refer to Table 2A for maximum weed heights and weed and cover crop control ratings in no-till soybean.
- See Table 2D for individual product rate equivalents for the premix.
- Tank-mixtures with 2,4-D, dicamba, or Sharpen are needed to control horseweed.

Postemergence: Apply only to soybean with the glyphosate-resistance trait.
- Apply Sequence from soybean cracking through full flower (R2 soybean). Refer to Table 2C for postemergence weed control and crop tolerance ratings.
- See Table 2D for individual product rate equivalents for the premix.
- Best if applied when weeds are 4 inches tall or less. Refer to Table 2E for maximum weed sizes.
- Cosmetic soybean leaf crinkling or necrotic spots may occur under certain conditions.
- The maximum single use rate of Sequence preemergence or postemergence is 4.5 pt/A. DO NOT apply more than 3.7 lb ai/A of s-metolachlor or 9.8 pt/A of Sequence per year.
- DO NOT graze or feed forage or hay to livestock.
- Preharvest interval (PHI): 75 days
- Refer to Table 12 and the label for crop rotation restrictions.

TABLE 2F — Soybean Herbicides — Remarks and Limitations

Herbicide	Common Name	Site of Action Number	Application Timing	Rate/A	Trait
Sharpen 2.85SC	saflufenacil	14	Burndown (Fall, PP, PRE)	1 fl oz + MSO 1% v/v + AMS 8.5 lb/100 gal	N

- Sharpen can be applied in the fall, and preplant through preemergence at 1 fl oz/A.
- Refer to Table 2A for maximum weed heights and weed and cover crop control ratings in no-till soybean.
- For enhanced burndown activity higher rates can be applied; however at 1.5 fl oz/A a minimum of 14 days is needed prior to planting soybean and 30 days for 2 fl oz/A. Always add MSO (1% v/v) + AMS (8.5 lb/100 gal).
- DO NOT apply Sharpen after soybean emergence or severe crop injury will occur.
- Some soybean varieties are sensitive to Sharpen and should not be planted. Consult your local seed dealer for information.
- DO NOT apply to coarse-textured soils with 2% or less organic matter unless soybean is planted 1 month after application; Sharpen at 2 fl oz/A requires 44 days. Tank-mixtures or sequential applications of Sharpen with other Group 14 containing herbicides, such as flumioxazin (Valor), sulfentrazone (Authority or Spartan), or fomesafen (Reflex), require 14 days between application and soybean planting with Sharpen at 1 fl oz/A and 30 days with Sharpen at 1.5 to 2 fl oz/A in reduced and no-till soybean.
- Sharpen is a very effective herbicide on horseweed and may provide 2 to 4 weeks of residual control against this weed.
- Sharpen should be tank-mixed with (i.e., glyphosate, Gramoxone, or Liberty) to broaden the spectrum of burndown weed control.
- DO NOT graze or feed forage or hay to livestock for at least 65 days following application.
- Rotation restrictions are longer for application rates greater than 1 fl oz/A. Consult Table 12 and the label for additional crop rotation restrictions.

Sonalan HFP 3EC	ethalfluralin	3	PPI only	2.5 pt	N

- Refer to Table 2B for weed control and crop tolerance ratings.
- Incorporate Sonalan HFP in top 2 to 3 inches of soil within 2 days of application.
- Tank-mixtures or sequential herbicide programs are needed to broaden the spectrum of weed control.
- DO NOT graze or feed forage or hay to livestock.
- Sugarbeets may be planted 8 months after application only if the Sonalan is applied at 3 pt/A or less and the treated soil is moldboard-plowed to a depth of 12 inches. Refer to Table 12 and the label for additional crop rotation restrictions.

Spartan 4L	sulfentrazone	14	PP, PPI, PRE	8 fl oz	N

- Refer to Table 2B for weed control and crop tolerance ratings.
- Spartan use rates are based on soil texture, organic matter, and pH. Spartan rates range from 4.5 to 12 fl oz/A.
- Apply within 3 days of planting. DO NOT apply after soybean cracking or emergence — severe injury or death may occur.
- Soybean stunting may occur if excessive rainfall occurs after application but before soybeans emerge.
- Some soybean varieties are sensitive to sulfentrazone. Consult your local seed dealer for information.
- DO NOT apply to soils with pH of 7.5 or greater or on sands with less than 1% organic matter.
- Tank-mixtures or sequential herbicide programs can be used to improve the weed control spectrum.
- DO NOT apply more than 12 fl oz/A/year.
- Preharvest interval (PHI): none listed
- Refer to Table 12 for and the label crop rotation restrictions.

Spartan Charge 3.5SC	carfentrazone + sulfentrazone	14 14	Burndown (Fall, PP, PRE)	8 fl oz + MSO 1% v/v	N
			PP, PPI, PRE	8 fl oz	N

- Refer to Table 2A for maximum weed heights and weed and cover crop control ratings in no-till soybean.
- Burndown applications need MSO/COC (1% v/v). Tank-mixtures are needed for a complete burndown program (i.e., 2,4-D, dicamba, glyphosate, Gramoxone, Liberty). Include NIS (0.25% v/v) + AMS with glyphosate or Liberty tank-mixtures.
- Refer to Table 2B for soil-applied weed control and crop tolerance ratings.
- See Table 2D for individual product rate equivalents for the premix.
- Spartan Charge use rates are based on soil texture, organic matter, and pH. Spartan Charge rates range from 5.75 to 8.5 fl oz/A (8 oz/A). Use the lower end of the rate range if soil pH is greater than 7.0.
- DO NOT apply after soybean cracking or emergence – severe injury or death may occur.
- DO NOT apply to soils with pH of 7.5 or greater or on sands with less than 1% organic matter.
- Soybean stunting may occur if excessive rainfall occurs after application but before soybean emergence.
- Some soybean varieties are sensitive to sulfentrazone. Consult your local seed dealer for information.
- Tank-mixtures or sequential herbicide programs can be used to improve the weed control spectrum.
- DO NOT apply more than 8.5 fl oz/A/year.
- DO NOT graze or feed forage or hay to livestock.
- Preharvest interval (PHI): none listed
- Refer to Table 12 and the label for crop rotation restrictions.

TABLE 2F — Soybean Herbicides — Remarks and Limitations

Herbicide	Common Name	Site of Action Number	Application Timing	Rate/A	Trait
Surveil 48WG	cloransulam + flumioxazin	2 14	Burndown (Fall, PP, PRE)	3.5 oz + COC 1% v/v + AMS 17 lb/100 gal	N
			PP, PRE	3.5 oz	N

- Refer to Table 2A for maximum weed heights and weed and cover crop control ratings in no-till soybean.
- Tank-mixtures are needed for a complete burndown program (i.e., 2,4-D, dicamba, glyphosate, Gramoxone, Liberty). Include NIS (0.25% v/v) + AMS with glyphosate or Liberty tank-mixtures.
- Refer to Table 2B for soil-applied weed control and crop tolerance ratings.
- See Table 2D for individual product rate equivalents for the premix.
- Surveil use rates range from 2.1-4.2 oz/A. Surveil at 2.8 oz/A can be applied as part of a 2-pass program.
- Apply within 3 days of planting. DO NOT apply after soybean cracking or emergence – severe injury or stand reduction may occur.
- Sequential herbicide programs are needed to increase the spectrum of weed control and for season-long control.
- Crop injury may occur when applied to poorly drained soils and/or under cool, wet conditions.
- DO NOT tank-mix with Group 15 herbicides such as metolachlor (Dual), dimethenamid (Outlook), acetochlor (Warrant), or pyroxasulfone (Zidua) products within 14 days of planting, unless soybeans are planted under no-till or minimum till conditions on wheat stubble or no-till field corn stubble.
- DO NOT apply more than 4.2 oz/A/year.
- DO NOT graze or feed forage or hay to livestock.
- Preharvest interval (PHI): none listed
- Refer to Table 12 and the label for crop rotation restrictions.

Herbicide	Common Name	Site of Action Number	Application Timing	Rate/A	Trait
Synchrony XP 28.4DG	chlorimuron + thifensulfuron	2 2	Burndown (Fall, PP, PRE)	0.375 oz + COC 1% v/v	N
			PP, PPI, PRE	1.5 oz	N
			POST	0.375 oz + NIS 0.25% v/v + AMS 2 lb	N

- Refer to Table 2A for maximum weed heights and weed and cover crop control ratings in no-till soybean.
- Tank-mixtures are needed for a complete burndown program (i.e., 2,4-D, dicamba, glyphosate, Gramoxone, Liberty).
- Refer to Table 2B for soil-applied weed control and crop tolerance ratings.
- See Table 2D for individual product rate equivalents for the premix.
- Soil-applied Synchrony XP 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.
- DO NOT apply Synchrony XP 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. DO NOT apply to soils with a composite pH exceeding 7.6.
- Tank-mixtures or sequential herbicide programs are needed to increase the spectrum of weed control.
- Postemergence applications can be applied any time after soybean reaches the first trifoliate (V1) stage and is fully expanded until 60 days prior to harvest. Refer to Table 2C for postemergence weed control and crop tolerance ratings.
- The postemergence use rate of Synchrony XP is 0.375 oz/A. Apply only with NIS. DO NOT include COC or MSO or severe injury will occur.
- Synchrony XP is most effective on small weeds. Refer to Table 2K for maximum weed sizes (Table 2E).
- Synchrony XP will suppress pokeweed, perennial sow thistle, and dandelion.
- DO NOT apply more than 0.82 oz ai/A/year of chlorimuron (3.8 oz/A/year of Synchrony XP).
- DO NOT graze or feed forage or hay to livestock for at least 14 days following application.
- Preharvest interval (PHI): 60 days
- Soil pH and Synchrony XP use rates are critical for rotational crops. Refer to Table 12 and the label for additional crop rotation restrictions.

TABLE 2F — Soybean Herbicides — Remarks and Limitations

Herbicide	Common Name	Site of Action Number	Application Timing	Rate/A	Trait
Tendovo 4.18ZC	s-metolachlor + metribuzin + cloransulam	15 5 2	PP, PPI, PRE	1.75 qt	N

- Refer to Table 2B for soil-applied weed control and crop tolerance ratings.
- See Table 2D for individual product rate equivalents for the premix.
- Tendovo use rates are based on soil texture, organic matter, and pH. Use rates range from 1.2 to 1.5 qt/A for coarse textured soils; 1.5 to 2.1 qt/A for medium textured soils; and 1.75 to 2.35 qt/A for fine textured soils.
- Use the higher rates in the rate range: in fields with a history of severe weed pressure; when the time between early preplant application and planting reaches 30 days; when soil organic matter is over 3%; or when heavy crop residues are present on the soil surface.
- Tank-mixtures with 2,4-D, dicamba, glyphosate, Gramoxone, or Liberty are needed for a complete burndown program in no-till soybean.
- For preplant incorporated applications, use the lowest rate for that specific soil texture.
- Soybean injury may occur under the following conditions: soils with pH of 7.5 or higher; soils with less than 0.5% organic matter; soybeans planted less than 1.5-inches deep; where high levels of atrazine are present; coarse textured soils (loamy sands or sand) with less than 1% organic matter; and in poorly drained areas after heavy rains.
- DO NOT apply after soybean cracking or emergence – severe injury or death may occur.
- Some soybean varieties are sensitive to metribuzin. Consult your local seed dealer for information.
- DO NOT make more than one application of this product per year or exceed 3.71 lb ai/A/year of s-metolachlor containing products.
- DO NOT graze or feed forage or hay to livestock for at least 40 days following application.
- Preharvest interval (PHI): 75 days
- Sugarbeets require a 30-month rotation interval and a successful field bioassay. Refer to Table 12 and the label for crop rotation restrictions.

trifluralin (many) 4EC	trifluralin	3	PPI only	1.5 pt	N

- Refer to Table 2B for soil-applied weed control and crop tolerance ratings.
- Incorporate trifluralin in the top 2 to 3 inches of soil within 24 hr after application.
- On sandy and sandy loam soils low in organic matter, use 0.5 lb ai/A (1 pt/A).
- Trifluralin is most effective if the application is made 10 days to 2 weeks ahead of planting and field is reworked just prior to planting.
- Sugarbeets may be planted 12 months after application. Moldboard plowing to a depth of 12 inches is recommended to reduce the risk of crop inury. Refer to Table 12 and the label for crop rotation restrictions.

Tripzin ZC 4ZC	pendimethalin + metribuzin	3 5	PP, PPI, PRE	40 fl oz	N

- Refer to Table 2B for soil-applied weed control and crop tolerance ratings.
- See Table 2D for individual product rate equivalents for the premix.
- Tripzin ZC use rates are based on soil texture, and organic matter. Use 29 fl oz/A on coarse textured soils; 29 to 44 fl oz/A on medium and fine textured soils with soil organic matter from 0.5 to 3%; and 44 fl oz/A on medium and 44 to 58 fl oz/A on fine textured soils with organic matter >3%.
- DO NOT use if soil pH 7.5 or greater, or if soils are classified as sands; or loamy sand or sandy loam soils that have less than 1% organic matter.
- Preemergence applications may be made up to 2 days after planting.
- Applications close to or after planting may result in soybean injury, including stem swelling and brittleness. Preplant (>7 day prior to planting) or preplant incorporated applications reduce the risk of injury.
- Some soybean varieties are sensitive to metribuzin. Consult your local seed dealer for information.
- Tripzin ZC will provide 3-6 weeks of weed control. Tank-mixtures or sequential herbicide programs are needed to increase the length and spectrum of weed control.
- DO NOT make more than one application per season.
- DO NOT graze or feed forage or hay to livestock for at least 40 days following application.
- Preharvest interval (PHI): 85 days
- Refer to Table 12 and the label for crop rotation restrictions.

TABLE 2F — Soybean Herbicides — Remarks and Limitations

Herbicide	Common Name	Site of Action Number	Application Timing	Rate/A	Trait
Trivence 61.3DG	chlorimuron + flumioxazin + metribuzin	2 14 5	Burndown (Fall, PP, PRE)	8 oz + COC 1% v/v	N
			PP, PRE	8 oz	N

- Refer to Table 2A for maximum weed heights and weed and cover crop control ratings in no-till soybean.
- Tank-mixtures are needed for a complete burndown program (i.e., 2,4-D, dicamba, glyphosate, Gramoxone, Liberty).
- Refer to Table 2B for soil-applied weed control and crop tolerance ratings.
- See Table 2D for individual product rate equivalents for the premix.
- Trivence use rates range between 6 and 8 oz/A for portions of Michigan south of State Road 46. The maximum use rate of Trivence for portions north of State Road 46 is 6 oz/A.
- If soil pH is greater than 7, do not exceed 6 oz/A of Trivence. DO NOT use Trivence if soil pH exceeds 7.6.
- Crop injury may occur from applications made to poorly drained soils under cool, wet conditions.
- DO NOT apply after soybean emergence or death or severe injury may occur.
- DO NOT tank mix or apply with metolachlor (Dual), dimethenamid (Outlook) or acetochlor (Warrant) products within 14 days of planting, unless soybeans are planted under no-till or minimum tillage conditions on wheat stubble or no-till field corn stubble or crop injury will occur.
- DO NOT make more than one application per season.
- DO NOT graze or feed forage or hay to livestock for at least 40 days following application.
- Preharvest interval (PHI): none listed
- Refer to Table 12 and the label for crop rotation restrictions.

Ultra Blazer 2SC	acifluorfen	14	POST	1.5 pt + NIS 0.25% v/v	N

- Refer to Table 2C for postemergence weed control and crop tolerance ratings.
- Ultra Blazer is most effective on small weeds. Refer to Table 2E for maximum weed sizes.
- Adequate spray coverage is essential; a minimum of 20 gallons/A of spray solution is recommended.
- Sequential applications of 1 pt/A followed by 1 pt/A of Ultra Blazer can be applied to control additional weed flushes or weed escapes.
- Soybean leaf burn occurs after Ultra Blazer application, but soybeans soon outgrow this injury.
- DO NOT apply if soybeans are under stress from herbicide injury, cold or dry weather, or hail damage.
- Tank-mixtures with other herbicides will be needed to broaden the spectrum of weed control. Tank-mixtures for postemergence grass control may lead to grass antagonism under certain conditions. Follow label directions closely regarding spray additives for tank-mixtures.
- DO NOT apply more than 1.5 pt/A in a single application or more than 2 pt/A/year of Ultra Blazer.
- DO NOT graze or feed forage or hay to livestock.
- Preharvest interval (PHI): 50 days
- Refer to Table 12 and the label for crop rotation restrictions.

TABLE 2F — Soybean Herbicides — Remarks and Limitations

Herbicide	Common Name	Site of Action Number	Application Timing	Rate/A	Trait
Valor EZ 4SC	flumioxazin	14	Burndown (PP, PRE)	2.5 fl oz + COC 1% v/v	N
			PP, PRE	2.5 fl oz	N
Valor SX 51WGD	flumioxazin	14	Burndown (PP, PRE)	2.5 oz + COC 1% v/v	N
			PP, PRE	2.5 oz	N

- Refer to Table 2A for maximum weed heights and weed and cover crop control ratings in no-till soybean.
- Tank-mixtures are needed for a complete burndown program (i.e., 2,4-D, dicamba, glyphosate, Gramoxone, Liberty).
- Valor foliar activity is greater when conditions are warm and sunny.
- Refer to Table 2B for soil-applied weed control and crop tolerance ratings.
- Valor EZ/Valor SX use rates range from 2 to 3 fl oz/A (2.5 fl oz/A). Valor can be applied at 2 fl oz/A when tank-mixed with other soil-applied herbicides or when applied as part of a 2-pass weed control program.
- Soils with high organic matter and/or high clay content may require 3 fl oz/A.
- Apply within 3 days of planting. DO NOT apply after soybean cracking or emergence — severe injury or death may occur.
- Crop injury may occur when applied to poorly drained soils and/or under cool, wet conditions.
- DO NOT tank-mix or apply with metolachlor (Dual), dimethenamid (Outlook) or acetochlor (Warrant) products — crop injury will occur. Under no-till or reduced till conditions these tank-mixtures can be made if there is 14 days between application and planting or if there is 14 days between application of Valor EZ/Valor SX and applications of these other products. Valor can be tank-mixed with pendimethalin (Prowl) for annual grass control.
- DO NOT make more than one application per season.
- DO NOT graze or feed forage or hay to livestock for at least 21 days following application.
- Preharvest interval (PHI): none listed
- Crop rotation restrictions are dependent on rainfall, use rate and tillage. Rotation restrictions for 2 fl oz/A or less 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 sugarbeets may be planted after 4 months if the ground is tilled prior to planting or 8 months if no tillage is performed. Rotation restrictions for the higher use rates (3 fl oz/A or less) can be found in Table 12. Refer to Table 12 and the label for crop rotation restrictions.

Valor XLT 40.3WDG	flumioxazin + chlorimuron	14 2	Burndown (Fall, PP, PRE)	4 oz + COC 1% v/v + AMS 8.5 lb/100 gal	N
			PP, PRE	4 oz	N

- Refer to Table 2A for maximum weed heights and weed and cover crop control ratings in no-till soybean.
- Tank-mixtures are needed for a complete burndown program (i.e., 2,4-D, dicamba, glyphosate, Gramoxone, Liberty).
- Refer to Table 2B for soil-applied weed control and crop tolerance ratings.
- See Table 2D for individual product rate equivalents for the premix.
- Valor XLT use rates range from 3 to 5 oz/A. DO NOT apply at rates greater than 2.5 oz/A to soils with a composite pH greater than 7. Weeds will only be suppressed at this rate. DO NOT apply to soils with a composite pH exceeding 7.6.
- DO NOT apply after soybean emergence or death or severe injury may occur.
- DO NOT tank-mix or apply with metolachlor (Dual), dimethenamid (Outlook) or acetochlor (Warrant) products — crop injury will occur. Under no-till or reduced till conditions these tank-mixtures can be made if there is 14 days between application and planting or if there is 14 days between application of Valor XLT and applications of these other products. Valor XLT can be tank-mixed with pendimethalin (Prowl) for annual grass control.
- DO NOT make more than one application per season or apply additional chlorimuron-containing herbicides to the field.
- DO NOT graze or feed forage or hay to livestock.
- Preharvest interval (PHI): none listed
- Tomatoes may be transplanted 12 months after Valor XLT application. Refer to Table 12 and the label for crop rotation restrictions.

Varisto 4.18SL	basagran + imazamox	6 2	POST	27 fl oz + COC 1% v/v + AMS 12 lb/100 gal	N

- Apply Varisto after the first trifoliate leaf of soybean has fully expanded (V1) up to soybean bloom (R1). Refer to Table 2C for postemergence weed control and crop tolerance ratings.
- Varisto can be applied at rates from 21 to 27 fl oz/A. See Table 2D for individual product rate equivalents for the premix.
- Best when applied to weeds 4 inches tall or less. Refer to Table 2E for maximum weed sizes.
- DO NOT tank-mix with postemergence grass herbicides unless for volunteer corn – grass antagonism will occur.
- DO NOT make more than one application of Varisto per season or apply more than 27 fl oz/A per season.
- DO NOT graze or cut treated soybean fields for forage or hay for at least 30 days after application.
- Preharvest interval (PHI): none listed
- Refer to Table 12 and the label for crop rotation restrictions.

TABLE 2F — Soybean Herbicides — Remarks and Limitations

Herbicide	Common Name	Site of Action Number	Application Timing	Rate/A	Trait
Verdict 5.57EC	saflufenacil + dimethenamid-P	14 15	Burndown (Fall, PP, PRE)	5 fl oz + MSO 1% v/v + AMS 8.5 lb/100 gal	N
			PP, PRE	5 fl oz	N

- Refer to Table 2A for maximum weed heights and weed and cover crop control ratings in no-till soybean.
- Refer to Table 2B for soil-applied weed control and crop tolerance ratings.
- See Table 2D for individual product rate equivalents for the premix.
- The 5 fl oz/A rate is best used as part of a burndown program in no-till soybean and will not provide much 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 fl oz/A and 30 days for 10 fl oz/A of Verdict.
- DO NOT apply after soybean emergence or severe crop injury will occur.
- Some soybean varieties are sensitive to saflufenacil and should not be planted. Consult your local seed dealer for information.
- 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.
- DO NOT graze or feed forage, hay, or straw to livestock.
- Preharvest interval (PHI): none listed
- Rotation restrictions are longer for application rates greater than 5 fl oz/A. Refer to Table 12 and the label for additional crop rotation restrictions.

Warrant 3CS	acetochlor	15	PP, PRE	3 pt	N
			POST	3 pt	N

- Refer to Table 2B for residual weed control and crop tolerance ratings.
- Application rates range from 2.5 to 4 pt/A, depending on soil texture and organic matter.
- Crop injury may result when soil conditions are cold and wet, or waterlogged.
- Warrant can be applied postemergence up to R2 soybean.
- Postemergence Warrant will not control emerged weeds. Tank-mixtures with effective postemergence herbicides are needed.
- DO NOT apply more than 8 pt/A of Warrant per season.
- DO NOT graze or feed forage, hay, or straw to livestock.
- Preharvest interval (PHI): none listed
- Refer to Table 12 and the label for crop rotation restrictions.

Warrant Ultra 3.45CS	acetochlor + fomesafen	15 14	PP, PRE	50 fl oz	N
			POST	50 fl oz + NIS 0.25% v/v	N

- Refer to Table 2B for soil-applied and Table 2C for postemergence weed control and crop tolerance ratings.
- See Table 2D for individual product rate equivalents for the premix.
- Soil-applied Warrant Ultra will provide 4-5 weeks of control and/or suppression of broadleaf and grass weeds and should be used as part of a planned preemergence followed by postemergence herbicide program.
- Crop injury may result when soil conditions are cold and wet, or waterlogged.
- Postemergence applications can be applied from planting up to R2 soybean (full flower). Include NIS (0.25% v/v) unless applied with glyphosate with a built-in adjuvant. COC/MSO may be used, however soybean injury will be increased.
- Postemergence applications may cause temporary leaf bronzing and crinkling.
- Refer to Table 2E for maximum weed sizes for postemergence applications of Warrant Ultra.
- Applied postemergence the acetochlor component of Warrant Ultra will provide residual control of grass and small seeded broadleaf weeds.
- DO NOT apply more than 3 lb ai/A of acetochlor (i.e., 8 pt/A of Warrant) per season.
- DO NOT apply more than 0.24 lb ai/A of fomesafen (from any fomesafen containing product) (i.e., 1 pt/A of Reflex) to the same field in consecutive years.
- DO NOT make more than one application of Warrant Ultra per year.
- DO NOT graze or feed forage, hay, or straw to livestock.
- Preharvest interval (PHI): 45 days
- Refer to Table 12 and the label for crop rotation restrictions.

TABLE 2F — Soybean Herbicides — Remarks and Limitations

Herbicide	Common Name	Site of Action Number	Application Timing	Rate/A	Trait
XtendiMax 2.9L	dicamba (diglycolamine salt)	4	Burndown (PP, PRE)	22 fl oz	RR2X XF
			POST	22 fl oz	RR2X XF

- **Apply to Roundup Ready 2 Xtend or XtendFlex (dicamba resistant) soybean only. XtendiMax is a restricted-use pesticide.**
- XtendiMax can be applied preplant, preemergence, or postemergence up to and including June 30. XtendiMax applications occurring after R1 are prohibited.
- Refer to Table 2A for maximum weed heights and weed and cover crop control ratings in no-till soybean.
- XtendiMax provides a short period of residual activity on certain small-seeded broadleaf weeds, including horseweed. However, this is dependent on weather conditions. Residual activity is longer under reduced rainfall.
- Refer to Table 2C for postemergence weed control and crop tolerance ratings.
- Apply to broadleaf weeds that are less than 4-inches in size. Refer to Table 2E for maximum weed sizes.
- DO NOT mix any other herbicides or additives with XtendiMax unless approved on: **xtendimaxapplicationrequirements.com**.
- The inclusion of a volatility reduction agent (VRA)/buffering agent (pH modifier) and a drift reduction agent (DRA) are required unless otherwise indicated, see application requirement website.
- Several broadleaf plants including non-Xtend soybean are extremely susceptible to dicamba.
- CAUTION should be taken to avoid spray system contamination, vapor and/or spray particle drift.
- Specific guidelines for use are required when applying XtendiMax to Roundup Ready 2 Xtend or XtendFlex soybeans. Information on application guidelines and stewardship to reduce potential off-target movement of these products can be found in Table 2H - “Guidelines and Precautions for Dicamba Use in Roundup Ready 2 Xtend and XtendFlex Soybean”.
- DO NOT apply more than 22 fl oz/A in a single application, or more than a total of 44 fl oz/A preemergence or postemergence for a total of 88 fl oz/A for all applications.
- Livestock can graze or be fed forage or hay from treated soybean fields.
- Preharvest interval (PHI): 7 days
- Refer to Table 12 and the label for crop rotation restrictions.

Zidua 4.17SC	pyroxasulfone	15	PP, PPI, PRE	4 fl oz	N
			POST	2.5 fl oz	N

- Refer to Table 2B for weed control and crop tolerance ratings.
- Application rate varies with soil texture and application timing. DO NOT apply more than 3.5 fl oz/A on coarse textured; 5 fl oz/A on medium textured soil; or 5.75 fl oz/A fine textured soils of Zidua SC. DO NOT use on peat or muck soils with 10% or more organic matter.
- High rainfall and extended periods of water-saturated soils during soybean emergence may result in temporary growth suppression from soil-applied applications.
- Zidua SC may be applied postemergence from soybean emergence to the sixth trifoliate leaf stage (V6). This application will not control emerged weeds.
- Postemergence applications may result in tempory leaf burn and stunting.
- Sequential applications may be applied as long as the maximum cumulative amount of Zidua SC does not exceed 3.5 fl oz/A/year on coarse textured or 5.75 fl oz/A/year on all other soils.
- Preharvest interval (PHI): none listed
- Rotation restrictions are dependent on use rate. If Zidua SC is applied at the corn only rate of 6.5 fl oz/A the rotation restrictions are extended to 4 months for soybean, 6 months for wheat, and 18 months for other small grains. Refer to Table 12 and the label for additional crop rotation restrictions.

TABLE 2F — Soybean Herbicides — Remarks and Limitations

Herbicide	Common Name	Site of Action Number	Application Timing	Rate/A	Trait
Zidua PRO 4.09SC	saflufenacil + imazethapyr + pyroxasulfone	14 2 15	Burndown (Fall, PP, PRE)	6 fl oz + MSO 1% v/v + AMS 8.5 lb/100 gal	N
			PP, PRE	6 fl oz	N

- Refer to Table 2A for maximum weed heights and weed and cover crop control ratings in no-till soybean.
- Tank-mixtures are needed for a complete burndown program (i.e., 2,4-D, dicamba, glyphosate, Gramoxone, Liberty).
- Refer to Table 2B for soil-applied weed control and crop tolerance ratings.
- See Table 2D for individual product rate equivalents for the premix.
- Zidua PRO can be applied at rates from 4.5 to 6 fl oz/A. The 4.5 fl oz/A rate is best used on conventionally tilled fields with a planned postemergence herbicide application.
- DO NOT apply on coarse textured soils with 2% organic matter, unless soybean is planting 1 month after application.
- DO NOT apply after soybean emergence or severe crop injury will occur.
- Some soybean varieties are sensitive to saflufenacil and should not be planted. Consult your local seed dealer for information.
- DO NOT tank-mix or apply Zidua PRO within 30 days of flumioxazin (Valor), sulfentrazone (Authority or Spartan), or fomesafen (Reflex) containing products.
- Applying a full rate of products containing chlorimuron, cloransulam, flumetsulam, imazaquin, or imazethapyr the same year as Zidua PRO may increase the risk of injury to sensitive follow crops.
- DO NOT make more than one application of Zidua PRO per year.
- DO NOT graze or feed forage, hay, or straw to livestock.
- Preharvest interval (PHI): 85 days
- Rotation to sugarbeets, cucumbers, and tomatoes requires 40 months and a successful bioassay. Refer to Table 12 and the label for additional crop rotation restrictions.

Zone Defense 77.2DG	flumioxazin + sulfentrazone	14 14	Burndown (Fall, PP, PRE)	5 oz + COC 1% v/v + AMS 17 lb/100 gal	N
			PP, PRE	5 oz	N

- Refer to Table 2A for maximum weed heights and weed and cover crop control ratings in no-till soybean.
- Tank-mixtures are needed for a complete burndown program (i.e., 2,4-D, dicamba, glyphosate, Gramoxone, Liberty).
- Refer to Table 2B for soil-applied weed control and crop tolerance ratings.
- See Table 2D for individual product rate equivalents for the premix.
- Zone Defense rates are based on soil texture, organic matter, and pH. Use rates range from 3.5 to 5 oz/A for coarse textured soils; 4.5 to 6 oz/A for medium textured soils; and 5 to 6.6 oz/A for fine textured soils. For soils with less than 2% organic matter use the lowest rate for that specific soil texture.
- DO NOT use on coarse soils classified as sand which have less than 1% organic matter.
- Ensure that the seed furrow is closed over the seed and seeds are planted at least 1 inch deep to avoid risk of soybean injury.
- Apply within 3 days of soybean planting. DO NOT apply after soybean cracking or emergence – severe injury or death may occur.
- Some soybean varieties are sensitive to sulfentrazone. Consult your local seed dealer for information.
- DO NOT tank-mix or apply with dimethenamid (Outlook) or acetochlor (Warrant) products – crop injury will occur. Zone Defense can be tank-mixed with metolachlor (Dual) products as long as no more than 5 oz/A of Zone Defense is used.
- DO NOT make more than two applications of Zone Defense per year.
- DO NOT graze or feed forage, hay, or straw to livestock.
- Preharvest interval (PHI): none listed
- Use of Zone Defense on soils that exceed pH 6.8 may result in unacceptable injury to the following crop. Refer to Table 12 and the label for crop rotation restrictions.

TABLE 2G — Guidelines and Precautions for 2,4-D Use in Enlist E3 Soybean

The Enlist system in soybean was developed as a tool to help manage herbicide-resistant weeds. This system enables growers to apply registered 2,4-D choline formulations to soybean designated as Enlist E3. In addition to 2,4-D resistance, these soybeans are also resistant to glufosinate (i.e., Liberty) and glyphosate. The 2,4-D resistance in Enlist E3 soybeans also allows farmers to apply registered 2,4-D choline products in burndown herbicide applications right up to and after planting of Enlist E3 soybean without a plant-back window. The glufosinate resistance in the Enlist E3 soybean also provides an additional herbicide site of action that growers can use to manage glyphosate- and multiple-resistant weed species. The use of both 2,4-D and glufosinate together provides the use of multiple herbicide sites of action to help manage herbicide-resistant weeds, including horseweed (marestail), Palmer amaranth, and waterhemp. However, as with any herbicide system it is important to keep in mind that every application of either glufosinate or 2,4-D increases the selection for herbicide resistance. If a grower decides to use this technology it will be important to use an integrated approach to control problematic and resistant weeds. An overreliance on any one of these herbicides will lead to the development of additional herbicide resistances.

There are several plant species across the landscape that are susceptible to 2,4-D. Off-target movement of 2,4-D to susceptible plants can be a concern with postemergence 2,4-D use. The recent development of the lower volatility 2,4-D choline reduces this risk. However, to help ensure that susceptible species are not damaged by 2,4-D exposure, there are several label guidelines that need to be followed. Below is a synopsis of some of the label guidelines and restrictions that must be followed if a grower decides to use 2,4-D choline in Enlist E3 soybean. Remember it is the responsibility of the applicator to protect sensitive areas and susceptible crops from 2,4-D injury.

Label Guidelines and Restrictions:

1. **Use only approved 2,4-D products.** Currently, **Enlist One** and **Enlist Duo** (2,4-D choline + glyphosate) are the only 2,4-D products registered for preplant, preemergence, or postemergence use in Enlist E3 soybean. **Use of other 2,4-D formulations is a violation of state and federal law.**
2. **Wind direction.** There is a strict requirement on the approved Enlist One and Enlist Duo labels that states that 2,4-D should not be applied if the wind is blowing towards adjacent commercially grown tomatoes and other fruiting vegetables (EPA crop group 8), cucurbits (EPA crop group 9), and grapes. In fact, there are certain townships in Michigan's grape growing region that restrict 2,4-D use, due to grape sensitivity. Also **DO NOT** apply where spray drift may occur to food, forage, or other plantings that might be damaged or rendered unfit for sale, use or consumption. Additionally, there are sensitive crop registries, such as **DriftWatch.org**, that applicators may consult.
3. **Buffer requirements.** Downwind buffers are required when making applications near sensitive areas. Applicators must maintain a **30 foot downwind buffer** from any area, except roads, planted agricultural fields that don't include susceptible plants, fields that have been prepared for planting, and areas covered by a footprint of a building. Downwind buffers must be maintained until the wind is blowing away from the sensitive area.
4. **Wind speed.** The label states do not apply when wind speeds are greater than 15 mph, ideally applications would be made when the wind speed is below **10 mph**.
5. **Temperature inversions.** The labels clearly states **DO NOT apply during a temperature inversion**. Under a temperature inversion the atmosphere is very stable and vertical air mixing is restricted. Herbicide particles can be trapped in the stable air and then move unpredictably when wind movement finally occurs. Temperature inversions occur when the air temperature at the earth's surface begins to cool and warmer air is trapped above it. Temperature inversions often begin at sunset and continue into morning. Ground fog is often a good indicator of a temperature inversion, however fog is not always present during an inversion. New phone apps, such as Pocket Spray Smart, can be used to determine if a temperature inversion exists.
6. **Rain free interval.** Enlist One and Enlist Duo are rainfast within **4 hours** of application. However, to reduce the risk of runoff, applicators should plan to maximize the time between the application of these products and rainfall or irrigation. Applications must take place no less than **48 hours** prior to irrigation or predicted rainfall. This restriction helps prevent the movement of 2,4-D in runoff water after heavy rainfall events.

   Additionally, applicators need to consider mitigation measures to reduce the risk of 2,4-D runoff. Depending on the hydrologic soil group applicators must effectively implement mitigation strategies to reduce the risk of runoff. Mitigation measures and associated credits for each soils group can be found on the Enlist One and Enlist Duo labels and at **Enlist.com/mitigationmeasures**.
7. **Tank-mixtures and spray additives.** Only approved spray additives and herbicides can be tank mixed with Enlist One and Enlist Duo. The list of these approved products are found at **EnlistTankmix.com**. This website is part of the label and should be read within 7 days prior to making the application. Tank-mixing any products not listed on the website is a direct violation of the label.

   Mixing compatibility issues have occurred when Enlist One or Enlist Duo have been tank mixed with the potassium salt

TABLE 2G — Guidelines and Precautions for 2,4-D Use in Enlist E3 Soybean

of glyphosate (i.e., Roundup PowerMAX 3). These issues have occurred when both products have been poured into sprayer inductor tanks or have been mixed with low volumes of water. To overcome these mixing issues higher volumes of water (15 GPA) should be used to get the products into solution.

8. **Sprayer application requirements.**
   - **Nozzles:** Nozzle section is based on reducing off-target movement by lowering the amount of fines from the spray droplet spectrum. Only approved nozzles can be used. Consult the Enlist One and Enlist Duo labels for approved nozzles and spray pressures.
   - **Spray volume.** Applications should be made at a minimum of **10-15 GPA** (gallons of spray solution per acre).
   - **Boom height.** There is no requirement for boom height. However, it is important to use the minimum boom height suggested by the manufacturer to reduce the potential for off-target movement. Research has shown by simply reducing the boom height from 48 to 24 inches the travel distance of drift particles can be reduced by 50%. Slower travel speeds will also help keep the boom level at this lower height.
9. **Endangered species advisory/protection requirements.** Enlist One and Enlist Duo may have adverse effects on federally listed threatened or endangered species or their critical habitats. Prior to applying Enlist One or Enlist Duo, applicators need
   to obtain a Bulletin outlining measures to protect Endangered Species no earlier than 6 months prior to product use. To obtain Bulletins, consult **www.epa.gov/endangered-species/endangered-species-protection-bulletins**, call 1-844-447-3813, or email ESPP@epa.gov. You must use the Bulletin valid for the month in which the product will be applied.

Additional Recommendations:

Follow label recommendations. While the above is a synopsis of the label restrictions and guidelines, applicators of these products **must read the label and check the respective label websites** prior to making Enlist One and Enlist Duo applications. Violations of any of these restrictions increases the chances for off-target movement and damage to susceptible species. Not following the label is a direct violation of state and federal law. Remember it is the responsibility of the applicator to protect sensitive areas and crops from off-target movement.

TABLE 2H — Guidelines and Precautions for Dicamba Use in Roundup Ready 2 Xtend and XtendFlex Soybean

The Roundup Ready 2 Xtend system in soybean was developed as a tool to help manage herbicide-resistant weeds. This system enabled growers to apply registered dicamba formulations to soybean designated as Roundup Ready 2 Xtend. In addition to dicamba resistance these soybeans are also resistant to glyphosate. As glyphosate- and multiple-resistant weeds increase in Michigan, growers have the option to use the Roundup Ready 2 Xtend system to manage these resistant weeds. In 2021, the second generation of dicamba-resistant soybean, XtendFlex soybean, was made available. XtendFlex soybean are not only resistant to registered dicamba formulations and glyphosate, but they are also resistant to glufosinate (i.e., Liberty). Regardless of what herbicide is applied, it is important to keep in mind that every application increases the selection for herbicide-resistance. If a grower decides to use either one of these technologies, it will be important to use integrated approaches to control problematic and resistant weeds. An overreliance on any single herbicide site of action will lead to the development of new herbicide-resistant weeds.

Only lower volatility dicamba formulations are registered for used in Roundup Ready 2 Xtend and XtendFlex soybean. The labels of these products are very detailed on how to protect sensitive/susceptible species and crops from off-target dicamba movement. However, in areas with high use of dicamba in the Xtend system there have been complaints of off-target movement that injured susceptible species in the United States. Some of these instances occurred because applicators took some of the label restrictions too lightly and did not follow the label when making applications. Some of these violations included not using the correct nozzles, spraying in too high of winds or during temperature inversions, not following the buffer requirements or tank-mixture restrictions, and spraying when the wind was blowing toward susceptible crops. Improper sprayer and tank cleanout also lead to damage of susceptible crops. Other instances included dicamba movement in runoff waters following heavy rains and, in some instances, off-target movement could not easily be explained, leading some to believe dicamba volatility was occurring.

After cancellations in June 2020 of dicamba products registered for use in Xtend soybean, the EPA granted new 5-year registrations on October 27, 2020. These registrations were accompanied by several label changes and clarifications to address potential off-target injury to sensitive surrounding crops and plants.

Below is a synopsis of significant guidelines including label changes that must be followed if a grower decides to use dicamba in Roundup Ready 2 Xtend or XtendFlex soybean. Remember it is the responsibility of the applicator to protect sensitive areas and susceptible crops from dicamba injury.

Label Guidelines and Restrictions:

1. **Use only approved dicamba products.** Currently, Engenia, and XtendiMax are the only dicamba products registered for preplant, preemergence, or postemergence use in Roundup Ready 2 Xtend or XtendFlex soybean. **Use of other dicamba formulations is a violation of state and federal law.**
2. **The dicamba products Engenia and XtendiMax are Restricted Use Pesticides.** Unlike other Restricted Use Pesticides, **only certified applicators** can purchase and apply dicamba over-the-top of soybean. Those working under a certified applicator can no longer make these applications.
3. **Dicamba or auxin-specific training is required.** As part of the federal labels for Engenia and XtendiMax, applicators are required to attend dicamba or auxin-specific (Group 4) training prior to using these products. This training is **mandatory** on an **annual basis**.
4. **Record keeping of all dicamba applications and spray system cleanout is required.** Records must be generated within **72 hours** of application and kept for **2 years**. The full record keeping requirements are listed on the label. Additionally, specific sprayer and tank cleanout procedures are listed on the label.
5. **Wind direction.** There is a strict requirement on the approved dicamba labels that states that dicamba should not be applied if the wind is blowing towards adjacent susceptible/sensitive crops. What this really means is that if you are in the **vicinity of a susceptible/sensitive crop and the wind is blowing toward that crop DO NOT spray dicamba.** Susceptible/sensitive crops include, but are not limited to non-dicamba resistant soybean, tomatoes, grapes, dry beans, sugarbeets, fruiting trees and vegetables, cucurbits, potatoes, flowers and other broadleaf plants, including greenhouse plants. Currently, there is not an exact distance listed on the label between where the dicamba application is being made in relation to the adjacent susceptible/sensitive crop. However, realistically if you can see the susceptible/sensitive crop or if it is within 0.5 mile and the wind is blowing in that direction DO NOT apply dicamba until the wind is blowing away from that susceptible/sensitive crop. Additionally, there are sensitive crop registries, such as **DriftWatch.org**, that applicators must consult.
6. **Buffer requirements.** The applicator must always **maintain a 240-foot downwind buffer** between the last treated row and the nearest downwind field edge. The following areas may be included in the buffer distance composition when directly adjacent to the treated field edges: roads, mowed grassy, and bare ground areas. Planted agricultural fields containing corn, dicamba-resistant soybean, small grains,

or crops where dicamba is approved for postemergence use. A **310-foot downwind buffer** and **57-foot omnidirectional buffer** is also required in counties where **endangered species** exist.

Applicators will need to follow measures outlined in the Endangered Species Protection Bulletin prior to applying Engenia or XtendiMax. The Bulletin outlining measures to protect Endangered Species will need to be obtained no earlier than 6 months prior to product use. To obtain Bulletins, consult **www.epa.gov/endangered-species/bulletins-live-two-view-bulletins** or call 1-844-447-3813. You must use the Bulletin valid for the month in which the product will be applied.

7. **Wind speed.** The label states dicamba applications can only be made when the wind speed is between **3 and 10 mph**. Temperature inversions often exist when the wind speed is less than 3 mph, which can lead to unpredictable off-target movement. Wind speeds above 10 mph increase the chances for particle drift. Applicators also need to be aware of wind gusts. If wind gusts exceed 10 mph it is strongly recommended not to apply dicamba.
8. **Temperature inversions.** The labels clearly state **DO NOT apply** these products **during a temperature inversion**. Under a temperature inversion the atmosphere is very stable and vertical air mixing is restricted. Herbicide particles can be trapped in the stable air and then move unpredictably when wind movement finally occurs. Temperature inversions occur when the air temperature at the earth's surface begins to cool and warmer air is trapped above it. Temperature inversions often begin at sunset and continue into morning. Ground fog is often a good indicator of a temperature inversion; however, fog is not always present during an inversion. That is one reason for the wind speed and new time of day restrictions. New apps, such as Pocket Spray Smart, can be used to determine if a temperature inversion exists.
9. **Time of day.** The new labels now only allow for applications between 1 hour after sunrise and **2 hours before sunset**. Again, this is to avoid applications during times when temperature inversions are likely to occur.
10. **Rain free interval.** Additional label restrictions include: DO NOT apply dicamba if soil is saturated with water or when rainfall that may exceed soil field capacity is forecasted to occur within **48 hours**. This restriction is to help prevent the movement of dicamba in runoff water after heavy rainfall events.
11. **Tank-mixtures and spray additives.** Only approved spray additives and herbicides can be tank mixed with approved dicamba products. **New requirements** include the inclusion of a **volatility reduction agent (VRA)**/buffering agent (pH modifier). The list of these approved products is found on the respective dicamba products websites and change frequently. Many tank mixtures require the addition of a drift reduction agent (DRA), these requirements can be found on the label websites. These websites are part of the label and should be read within 7 days of making the application. The tank mixing of any products not listed on the websites is a direct violation of the label. Finally, **DO NOT add ammonium sulfate** or any products containing ammonium sulfate. The addition of ammonium sulfate and unapproved products increases the volatility of dicamba.

    Approved dicamba label websites:
    engeniatankmix.com
    xtendimaxapplicationrequirements.com
12. **Sprayer application requirements.**
    - **Nozzles:** Nozzle section is based on reducing off-target movement by lowering the number of fines from the spray droplet spectrum. **Only approved nozzles** can be used. Consult the approved dicamba product websites for approved nozzles and spray pressures.
    - **Spray volume.** Applications must be made at a minimum of **15 GPA** (gallons of spray solution per acre).
    - **Travel speed.** The maximum travel speed when applying approved dicamba products is 15 mph.
    - **Boom height.** The requirement on the label is to keep the boom height **24 inches** or less above the target pest or crop canopy. It is important to keep the boom close to this height to minimize the potential for off-target movement. Research has shown by simply reducing the boom height from 48 to 24 inches the travel distance of drift particles can be reduced by 50%. The slower travel speed mentioned above will help with keeping the boom level at this lower height.

Additional Recommendations:

1. **Follow label recommendations.** While the above is a synopsis of the label restrictions and guidelines, applicators of these products **must read the label and check the respective label websites** prior to making dicamba applications. Violations of any of these restrictions increases the chances for off-target movement and damage to susceptible species. Not following the label is a direct violation of state and federal law. Remember it is the responsibility of the applicator to protect sensitive areas and crops from off-target movement.
2. **Consider applying dicamba only preplant, preemergence or very early postemergence.** Over 90% of the off-target dicamba movement complaints occurred from postemergence applications. Postemergence applications have the greatest potential for coming into contact with susceptible vegetation. The new label **prohibits** over-the-top applications of dicamba after **June 30th**. This

TABLE 2H — Guidelines and Precautions for Dicamba Use in Roundup Ready 2 Xtend and XtendFlex Soybean

cutoff date helps reduce the number of off-target injury complaints that tend to occur from late-season applications. Additionally, applications later in the season will likely occur under higher temperatures, which may impact off-target movement. While there is not a strict temperature cutoff on the label, our recommendations are to avoid applications when temperatures exceed 80° F. If there is a possibility of volatility with some of these new lower volatility formulations it would likely increase with temperature.

3. **Communicate with neighbors.** It is important to have conversations with your neighbors to know what crops and technologies are being planted near your Roundup Ready 2 Xtend or XtendFlex soybean fields. In the past, off-target movement of dicamba to non-Xtend soybeans most frequently happened when neighbors planted Xtend soybeans next to non-Xtend fields. Communication prior to planting may have helped resolve some of these issues. Additionally, one of Michigan's agricultural strengths is its diversity. In order to maintain this strength, we need to insure that our specialty crops are protected. Many of Michigan's specialty crops are susceptible to dicamba and do not have maximum residue limits (MRLs) established. Meaning if off-target movement occurs, these crops cannot be marketed and will need to be destroyed. The applicator will be responsible for the total loss of these crops. **This is especially serious in perennial crops, such as vineyards, fruit trees, and orchards, where damage from dicamba will result in severe economic losses.**

Table 2I — Soybean – Preharvest Applications

Herbicide	Common Name	Site of Action Number	Application Timing	Rate/A	Trait
Aim 2EC	carfentrazone	14	Preharvest	1.5 fl oz + MSO 1% v/v	N

- Apply to mature soybeans once pods have lost their color.
- Aim is not as effective as glyphosate or Gramoxone on most weeds.
- Aim at 1 fl oz/A can be applied with glyphosate or Gramoxone to broaden the spectrum of weed control over Aim alone.
- It generally takes 7-10 days to reach maximum desiccation.
- Spray coverage is important - apply in a minimum of 10 gallons of water per acre (20 gal/A is recommended).
- DO NOT graze or harvest for forage or hay.
- Preharvest interval (PHI): 3 days.

Clarity 4L (others)	dicamba	4	Preharvest	8-32 fl oz	N

- Apply after soybean pods have reached mature brown color and at least 75% leaf drop has occurred.
- The use rate should be based on the target broadleaf weed species. Higher use rates can be used for perennial weed control.
- Clarity is not as effective as glyphosate or Gramoxone on most weeds.
- It generally takes 7-10 days to reach maximum desiccation.
- Spray coverage is important - apply in a minimum of 10 gallons of water per acre (20 gal/A is recommended).
- DO NOT apply to soybeans grown for seed - unless germination tests result in 95% germination or more.
- DO NOT graze or harvest for forage or hay.
- Preharvest interval (PHI): 7 days.
- Refer to Table 12 and the label for crop rotation restrictions. DO NOT include time in the rotation interval when the ground is frozen.

glyphosate (see Table 10)	glyphosate	9	Preharvest	0.75-3.6 lb ae (see Table 10) + AMS 17 lb/100 gal	N
			Preharvest	0.75 lb ae (see Table 10) + AMS 17 lb/100 gal	RR LLGT27 RR2X E3 XF

- See Table 10 for a list of glyphosate products, formulations, and rates.
- Apply after pods are set and have lost all green color.
- **Non-glyphosate resistant (GR) soybean:** the glyphosate use rate should be based on the target weed species ranging from 0.75 to 3.6 lb ae/A. The higher use rates can be used for perennial weed control. Consult the specific glyphosate product rate tables for perennial weeds.
- **Glyphosate-resistant (RR, LLGT27, RR2X, E3, XF) soybean:** DO NOT apply more than 0.75 lb ae/A.
- It generally takes 10-14 days to reach maximum desiccation.
- Spray coverage is important - apply in a minimum of 10 gallons of water per acre (20 gal/A is recommended).
- DO NOT graze or harvest hay for livestock within 25 days if more than 0.75 lb ae/A is applied. The harvest and grazing restriction can be reduced to 14 days if only 0.75 lb ae/A is applied.
- Preharvest intervals (PHI): 7 days (non-GR soybean); 14 days (RR, LLGT27, RR2X, E3, or XF soybean).

Gramoxone SL 3.0L	paraquat	22	Preharvest	10.7 fl oz + NIS 0.25% v/v	N

- **Gramoxone is a restricted-use pesticide.** Certified applicators are required to complete a paraquat specific training prior to use of Gramoxone. The paraquat training course can be found at: **www.epa.gov/pesticide-worker-safety/paraquat-dichloride-training-certified-applicators**.
- Apply when at least 65% of pods are mature brown or when seed moisture is 30% or less; immature soybean will be injured.
- Gramoxone is effective at desiccating glyphosate-resistant weeds and common lambsquarters.
- It generally takes 7-10 days to reach maximum desiccation.
- Spray coverage is important - apply in a minimum of 20 gallons of water per acre.
- DO NOT graze or harvest for forage or hay.
- Preharvest interval (PHI): 15 days.

Table 2I — Soybean – Preharvest Applications

Herbicide	Common Name	Site of Action Number	Application Timing	Rate/A	Trait
Sharpen 2.85SC	saflufenacil	14	Preharvest	1 fl oz + MSO 1% v/v + AMS 8.5 lb/100 gal	N

- Apply when at least 65% of pods are mature brown and greater than 70% leaf drop or when seed moisture is 30% or less; immature soybean will be injured.
- Sharpen can be applied at rates up to 2 fl oz/A.
- Sharpen is effective at desiccating glyphosate-resistant broadleaf weeds.
- It generally takes 7-10 days to reach maximum desiccation.
- Spray coverage is important - apply in a minimum of 10 gallons of water per acre (20 gal/A is recommended).
- DO NOT apply to soybeans grown for seed.
- DO NOT graze or harvest for forage or hay.
- Preharvest interval (PHI): 3 days.
- Refer to Table 12 and the label for crop rotation restrictions. DO NOT include time in the rotation interval when the ground is frozen.