


SOYBEAN

Herbicide	Product/A (ai/A)	Weeds	When to Apply	Remarks and Paragraphs
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Refer to page 6 for Fall or Spring Early Preplant Herbicides.

Refer to page 29 for additional herbicides to use in conventional or herbicide resistant soybean.

Soil-Applied Herbicides

Prowl Prowl H2O (pendimethalin)	2.4 to 3.6 pt EC 2.1 to 3 pt ACS (1 to 1.5 lb)	Annual grass and some broadleaf weeds.	PPI. Fall or Spring.	Adjust rate for soil type. Do not apply PRE. Poor wild oat and no wild mustard control. Dinitroaniline (DNA) herbicide resistant green foxtail has been documented in North Dakota. A1-2 B1 B6 E1 E11 S7 X1 Y14 Pages: 104-105, 108-110
Sonalan Sonalan 10G (ethalfluralin)	1.5 to 3 pt 5.5 to 11.5 10G (0.55 to 1.15 lb)			
Treflan / generic trifluralin	1 to 2 pt (0.5 to 1 lb)			
Dual / generic metolachlor	1 to 2 pt (0.95 to 1.9 lb)			
Intrro / generic alachlor RUP	2 to 3 qt (2 to 3 lb)			
Outlook / generic dimethenamid	16 to 21 fl oz (0.75 to 1 lb)	Small-seeded broadleaf weeds.	Shallow PPI, PRE or EPOST.	Dual may give greater weed control than generic metolachlor at equal product rates. Poor wild oat control and wild mustard control. Shallow PPI gives more consistent control than PRE. PRE requires precipitation for herbicide activation. Adjust rate for soil type and OM. Outlook gives greater nightshade control. A1-2 B1 E1 E6
Python (flumetsulam) 	0.8 to 1.33 oz DG or 5 to 3 A/pack (0.64 to 1.06 oz)			
Sencor / generic metribuzin	Soil pH >7.5 = 0.33 lb DF Soil pH <7.5 = 0.33 to 0.5 lb DF	Broadleaf weeds.	EPP, Shallow PPI, and PRE.	A1 E1 E8 S4 S7 Y2 Pages: 102-103, 108-110
Sharpen (saflufenacil)	1 to 1.5 fl oz (0.36 oz)			
Verdict (saflufenacil & dimethenamid)	5 to 7.5 fl oz (0.36 oz + 0.19 lb)			
Spartan (sulfentrazone)	4.5 to 12 fl oz F (2.25 to 6 oz)			
Valor (flumioxazin)	2 to 3 oz WDG (1 to 1.5 oz)			
		Shallow PPI and PRE.	Sencor may injure certain soybean varieties. Commercial mixture with S-metolachlor available as Boundary or with fomesafen as Prefix. E1 E10 S7 Y4 Y13 Pages: 104-105, 108-110	
		EPP, Shallow PPI, and PRE.	PRE requires precipitation for herbicide activation. Provides burndown control of emerged broadleaf weeds. Planting interval is dependant on soil texture and OM. Sharpen at 1.5 fl oz and Verdict at 7.5 fl oz require a 14 day plantback interval. Refer to label for tank-mix options. A1 B1-2 B9 S1 S3-5 S7-8 X1	
		EPP, Shallow PPI, and PRE.	PRE requires precipitation for herbicide activation. Commercial mixture with FirstRate available as Authority First, with Pursuit as Authority Assist, and with metribuzin as Authority MTZ. A1 B1-2 E1 E12 S3-5 S7 X1 Y15. Pages: 108-110	
		EPP, Shallow PPI, and PRE.	PRE requires precipitation for herbicide activation. Adjust rate for soil type. Refer to label for tank-mix options, application information, and rate structure. A1 B1-2 E1 E13 S3-5 S7 Y14	

Pages 102-103 = Herbicides resistance, Pages 104-105 = Generic and commercial names, Pages 108-110 = Crop rotation restrictions.

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Refer to page 29 for additional herbicides to use in conventional or herbicide resistant soybean.

POST-Applied Herbicides

Warrant (acetochlor - microencapsulated)	1.25 to 2 qt (0.94 to 1.5 lb)	PRE control of grasses and small-seeded broadleaf weeds.	POST. Soybean: After emergence until R2. Optimum stage = V2-3. Weeds: PRE.	Do not apply PRE to soybean. Rainfall required for activation. Does not control emerged weeds. Provides 4 to 6 weeks of residual PRE weed control. No adjuvant is required. A1 D1 D8 S2-5 S7 X1
Basagran / generic bentazon	0.5 to 2 pt applied 1 to 4 times. (0.25 to 1 lb)	Some broadleaf weeds.	POST. Soybean: After emergence. Broadleaf weeds: Small.	Non-residual, contact herbicide requiring thorough coverage. Most active in hot and sunny conditions. Add oil adjuvant at 1 to 2 pt/A. Allow a 30 day PHI. A3 A7 E1 E3 S1 S3-5 S7-8
Rezult + MSO oil adjuvant (bentazon & sethoxydim)	1.6 + 1.6 pt or 0.8 + 0.8 pt 2X or 0.56 + 0.56pt 3X + 1.25 pt/A (1 + 0.2 lb or 0.5 + 0.1 lb or 0.38 + 0.75 lb)	Most small annual grass and broadleaf weeds and Canada thistle.	First application: Weeds: 1 inch or less. Make consecutive applications 7 to 10 days later.	Weeds must be small at application. Refer to E3 for additional information. Add only MSO adjuvants at 1.25 to 1.5 pt/A. Sequential applications at 7 to 10 day intervals improves overall weed control. Tank-mix with Raptor at 2 fl oz/A for improved weed control. Allow 30 day PHI. A3 A7 E1-3 S1 S3-5 S7-8 T2
Ultra Blazer (acifluorfen)	0.5 to 1.5 pt (0.125 to 0.375 lb)	Small broadleaf weeds including pigweed and common lambsquarters.	POST. Soybean: 1 to 2 trifoliates. Weeds: Small.	Contact, non-residual herbicides requiring thorough coverage. Most active in hot and sunny conditions. May cause speckling on soybean leaves. Refer to label for crop response, adjuvant type and rate, and tank-mix options. A3 E1 S3 X1
Cadet (fluthiacet)	0.4 to 0.9 fl oz EC (0.045 to 0.1 oz)			
Cobra (lactofen)	6 to 12.5 fl oz (1.5 to 3.2 oz)			
Resource (flumiclorac)	2 to 3 fl oz EC (0.215 to 0.32 oz)			
Flexstar (fomesafen + adjuvants)	0.8 to 1 pt (0.188 to 0.24 lb)	Many broadleaf weeds. Poor buckwheat, lambsquarters and hairy nightshade control.	POST. Soybean: Prior to flowering. Weeds: Small.	Contact herbicide requiring thorough coverage and hot and sunny conditions. Apply at 1 pt/A in ND east of I-29 and south of I-94. Use 0.75 pt/A in ND east of Hwy 281. Add MSO adjuvants at 1% v/v + AMS at 10 lb/100 gal water. Refer to label for additional restrictions. Refer to E4 for improved broadleaf weed control. A3 E1 E4 S3-5 S8 Y11 Pages: 108-110
FirstRate (cloransulam)	0.3 oz WDG or 10 A/pack (0.25 oz)	Large-seeded broadleaf weeds.	POST. Soybean: Up to 50% flowering. Weeds: Up to 4 inches tall.	Add NIS at 0.125% v/v or oil adjuvant at 1.25% v/v + 28% UAN at 2.5% v/v. Refer to label for weed size, and tank-mix options. A3 E1 X1 Y2 Pages: 102-103, 108-110
Harmony / generic thifensulfuron	0.083 (1/12) oz DF 0.125 (1/8) oz SG (0.062 oz)	Wild mustard, pigweed, and lambsquarters. No ALS-resistant weed control.	POST. Soybean: Fully expanded 1st trifoliolate leaf until 60 days PHI.	Add NIS at 0.25% v/v or oil additive at 1 to 2 pt/A + 28% UAN or AMS. Refer to label for tank-mix options. A3 A5-7 E1 E5 S1 S5 X1 Pages: 102-103, 104-105
Pursuit (imazethapyr)	3 fl oz (0.75 oz ae)	Annual broadleaf weeds. Poor common lambsquarters, ragweed, wild buckwheat and biennial wormwood control. No control of ALS-resistant weeds.	POST. Soybean: Fully expanded first trifoliolate leaf but prior to flowering.	Add NIS at 0.25% v/v or oil adjuvant at 1 to 2 pt/A + 28% UAN at 2.5% v/v. MSO adjuvants enhance weed control more than petroleum oil or NIS. Refer to label for weed size and application information. Raptor has less soil residual carryover than Pursuit. A3 A5-7 E7 E9 S4 X1 Y2 Y17 Pages: 102-103, 108-110
Raptor (imazamox)	4 to 5 fl oz (0.5 to 0.625 oz ae)		Weeds: Small and actively growing.	

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SOYBEAN

Herbicide	Product/A (ai/A)	Weeds	When to Apply	Remarks and Paragraphs
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Refer to page 29 for additional herbicides to use in conventional or herbicide resistant soybean.

NDSU Soybean Micro-rate

Rezult B & Rezult G + Raptor + Flexstar + Select/clethodim + MSO adjuvant	0.5 to 0.6 pt & 0.5 to 0.6 pt + 1 fl oz + 2 to 4 fl oz + 2 fl oz (optional) + 1.25 pt/A	Grass and broadleaf weeds, including kochia, pigweed, and nightshade. May not control wild buckwheat.	POST. Weeds. Small. Must be less than 1 to 2 inches tall.	User assumes all risk of inadequate weed control when using this reduced-rate treatment. Apply with MSO adjuvants at 1.25 to 1.5 pt/A. Select/clethodim can be excluded if grass infestation is low. Refer to E3, E6, and Rezult section above. A3 A5-7 E2-4 E9 F1 F4-6 S1-8 X1 Y2-3 Y11 Pages: 102-103, 104-105, 108-110
Assure II Targa (quizalofop)	4 to 12 fl oz (0.44 to 1.32 oz)	Annual grasses and quackgrass.	Soybean: Prior to pod set. Grass weeds: Refer to table below.	Add oil adjuvant at 1 to 2 pt/A. Use highest rate of Assure II for yellow foxtail control. Grass control is reduced by tank mixtures or close interval application of POST broadleaf control herbicides. Antagonism generally can be avoided by applying a higher rate of grass herbicide or apply the grass control herbicide 1 or more days before or 7 days after the broadleaf control herbicide. Do not cultivate prior to 5 days before or 7 days after application. Refer to label for tank-mix options. Refer to page 115 for control of volunteer corn. A3 A5-7 E1-2 X1. Pages: 102-103, 104-105
Fusilade DX (fluazifop)	5 to 12 fl oz (1.25 to 3 oz)			
Poast (sethoxydim)	0.5 to 1.5 pt (0.1 to 0.3 lb)	Annual grasses.	Soybean: All stages.	
Select / generic clethodim	4 to 8 fl oz (1 to 2 oz)	Annual grasses and quackgrass.	Grass weeds: Refer to table below.	
Select Max (clethodim)	9 to 16 fl oz (1.125 to 2 oz)			

Grass Control with POST Herbicides

	Foxtail, green and yellow		Corn, volunteer (See page 115)		Quackgrass		Wheat, barley, oat, and sandbur		Proso millet, wild	
	inches	fl oz/A	inches	fl oz/A	inches	fl oz/A	inches	fl oz/A	inches	fl oz/A
Assure II/Targa	2 to 4	7 to 8	6 to 30	5 to 8	6 to 10	12	2 to 6	7 to 8	2 to 6	5 to 8
Fusilade DX	2 to 4	10 to 12	12 to 24	4 to 6	6 to 10	12	2 to 6	8	4 to 8	6
Fusion	2 to 4	8	12	4 to 6	6 to 10	12	2 to 6	8	4 to 8	6
Poast	1 to 8	1 pt	1 to 20	1 pt	6 to 8	2 pt	1 to 4	1 pt	4 to 10	0.5 pt
Select	2 to 8	4 to 6	4 to 12 12 to 24	4 6	4 to 12	8	2 to 6	6	1 to 10	4 to 6
Select Max	2 to 6 6 to 8	9 12	1 to 12 12 to 24 24 to 36	6 9 12	4 to 12	12	2 to 6 6 to 8	9 12	2 to 6 6 to 8	9 12

Preharvest Application

Herbicide	Product/A (ai/A)	Weeds	When to Apply	Remarks and Paragraphs
Roundup / generic glyphosate	Up to 1.5 lb ae See Remarks.	Preharvest weed control.	Prior to harvest. Apply after pod set and no green color. Allow a 7 day PHI.	Add NIS plus AMS fertilizer at 4 to 17 lb/100 gal. Do not apply on soybean grown for seed because reduced germination/vigor may occur. A4-6 B2 X1 Pages: 102-103, 104-105.
paraquat	8 to 12 fl oz 2SL 5.6 to 8.4 fl oz 3SL (0.13 to 0.188 lb)	Desiccant.	Prior to harvest. Paraquat - Allow a 15 day PHI.	Add oil adjuvant at 1 to 2 pt/A. Most active in hot and sunny conditions. Apply when at least 65% of seed pods are a mature brown color or when seed moisture is 30% or less. A3 B4 B8 Pages: 104-105
Aim (carfentrazone)	1 to 1.5 oz (0.256 to 0.384)		Aim - Allow a 3 day PHI.	
Clarity (dicamba)	Up to 2 pt/A (up to 1 lb)	Preharvest weed control - broadcast or spot application.	Prior to harvest. Allow a 14 day PHI.	Apply when seed pods are a mature brown color and at least 75% leaf drop. For maximum activity apply with MSO adjuvant at 1.5 to 2 pt/A. Soybean seed germination may be reduced. Pages 102-103, 104-105, 108-110.

Pages 102-103 = Herbicides resistance, Pages 104-105 = Generic and commercial names, Pages 108-110 = Crop rotation restrictions.

HERBICIDE RESISTANT SOYBEAN

Refer to page 29 for additional herbicides to use in conventional or herbicide resistant soybean.

LibertyLink Soybean

Herbicide	Product/A (ai/A)	Weeds	When to Apply	Remarks and Paragraphs
Ignite 280 (glufosinate)	22 to 36 fl oz (0.4 to 0.65 lb) 1 st application: 29 to 36 fl oz. 2 nd application: Up to 29 fl oz.	Annual grass and broadleaf weeds including ALS and glyphosate resistant weeds.	POST. Soybean: Emergence up to bloom. Weeds: Up to 3 inches tall.	Apply only to LibertyLink soybean varieties. Non-selective, contact, non-residual herbicide requiring thorough coverage. Apply a PRE foundation treatment prior to Ignite POST. Add AMS at 3 lb/A. Can be applied with a registered grass herbicide. Refer to label for tank-mix options and restrictions. Most active in hot and sunny conditions. Controls weeds resistant to other herbicides. A3 A5-6 D13 S2 S7 X1 Pages: 102-103

Roundup Ready and Roundup Ready 2 Yield Soybean

Herbicide	Product/A (ae/A)	Weeds	When to Apply	Remarks and Paragraphs																																												
Roundup / generic glyphosate	Maximum single application = 1.5 lb ae Maximum in-crop = 2.25 lb ae See Remarks.	Annual and perennial grass and broadleaf weeds.	POST. Soybean: Emergence through R2 of full flowering. The R2 stage ends when a pod 3/16 inch long at one of the four uppermost nodes appears on the main stem along with a fully developed leaf (R3 stage). Allow a 14 day PHI.	Apply only to RR / RR 2 Yield soybean varieties. Cannot plant harvested patented soybean seed. <table style="margin-left: auto; margin-right: auto;"> <tr> <td></td> <td style="text-align: center;">Maximum -</td> <td style="text-align: center;">Maximum -</td> <td></td> </tr> <tr> <td></td> <td style="text-align: center;"><u>single appl.</u></td> <td style="text-align: center;"><u>in-crop</u></td> <td></td> </tr> <tr> <td></td> <td style="text-align: center;"><u>1.5 lb ae</u></td> <td style="text-align: center;"><u>2.25 lb ae</u></td> <td></td> </tr> <tr> <td></td> <td style="text-align: center;">-----</td> <td style="text-align: center;">-----</td> <td style="text-align: center;">fl oz -----</td> </tr> </table> <table style="margin-left: auto; margin-right: auto;"> <tr> <td>lb ae/gal</td> <td>lb ai/gal</td> <td></td> <td>fl oz</td> </tr> <tr> <td>3</td> <td>= 4</td> <td>=</td> <td>64</td> </tr> <tr> <td>3.75</td> <td>= 5</td> <td>=</td> <td>77</td> </tr> <tr> <td>4/4.17</td> <td>= 5.4/5.1</td> <td>=</td> <td>48</td> </tr> <tr> <td>4.5</td> <td>= 5.5</td> <td>=</td> <td>44</td> </tr> <tr> <td>4.72</td> <td>= 6.3</td> <td>=</td> <td>40</td> </tr> <tr> <td>5</td> <td>= 6.1</td> <td>=</td> <td>38</td> </tr> </table> Add AMS fertilizer at 4 lb/100 gal, or more for hard water. Multiple applications may be necessary for weed flushes. Drift and off-site movement may cause injury or death to other plants and crops. Refer to label for weeds controlled, application information, adjuvant use, tank-mix options with residual herbicides and restrictions. A4-6 B2 D14 S4 X1 Pages: 102-103, 104-105, 115		Maximum -	Maximum -			<u>single appl.</u>	<u>in-crop</u>			<u>1.5 lb ae</u>	<u>2.25 lb ae</u>			-----	-----	fl oz -----	lb ae/gal	lb ai/gal		fl oz	3	= 4	=	64	3.75	= 5	=	77	4/4.17	= 5.4/5.1	=	48	4.5	= 5.5	=	44	4.72	= 6.3	=	40	5	= 6.1	=	38
	Maximum -	Maximum -																																														
	<u>single appl.</u>	<u>in-crop</u>																																														
	<u>1.5 lb ae</u>	<u>2.25 lb ae</u>																																														
	-----	-----	fl oz -----																																													
lb ae/gal	lb ai/gal		fl oz																																													
3	= 4	=	64																																													
3.75	= 5	=	77																																													
4/4.17	= 5.4/5.1	=	48																																													
4.5	= 5.5	=	44																																													
4.72	= 6.3	=	40																																													
5	= 6.1	=	38																																													

Refer to page 115 for control of volunteer Roundup Ready corn and canola in Roundup Ready soybean.

Roundup Ready/STS (sulfonylurea-tolerant) Soybean

Herbicide	Product/A (ae/A)	Weeds	When to Apply	Remarks and Paragraphs
Harmony / generic thifensulfuron	0.33 oz DF 0.5 oz SG (0.25 oz)	Annual broadleaf weeds including, wild buckwheat, lambsquarters, mustard species, and volunteer RR canola.	POST. RR/STS soybean: 1 st fully expanded trifoliolate to 60 days PHI.	Apply only to RUR/STS soybean varieties. Apply with glyphosate at 0.38 to 1.125 lb ae/A. Add NIS at 0.125 to 0.25% v/v to non-loaded glyphosate. Refer to label for adjuvant use. Apply with AMS at 4 lb/100 gal water, or more for hard water. Refer to label for weeds controlled and application information. A4-7 D14 D16 E5 S1 X1 Pages: 102-103, 104-105, 115

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WEED MANAGEMENT IN ROUNDUP READY SOYBEAN

NDSU recommends using herbicides with different modes of action and different weed control management practices in Roundup Ready soybean production to delay development of glyphosate resistant weeds. See Herbicide Resistant Weeds section (pages 102-103) for more information on weed resistance.

COMMANDMENT #1 - Control weeds BEFORE 2 to 4 inches tall to avoid yield loss.

Soybean yield loss from weeds.

<u>Weed height when sprayed with glyphosate</u>	<u>Soybean yield</u>
Weed free	47
0-4 inches	44
4-8 inches	41
8-12 inches	39
12-16 inches	35
16-24 inches	33
Weedy check	16

Source: Dr. Bryan Young, S Illinois University

Remove weeds early especially when grass weed populations are high. Some data from the mid-west indicate that soybean yield may not be reduced by delaying Roundup / generic glyphosate application until weeds are up to 6 inches tall. However, data from the northern Plains show that, especially under dry conditions, soybean yield loss will occur if weeds become greater than 4 inches tall prior to Roundup/glyphosate application.

Roundup/glyphosate at 1.5 oz ae/A controls foxtail, 2.25 oz ae/A controls volunteer small grain, and 3 oz ae/A controls wild oat and downy brome. Use higher rates on broadleaf weeds, larger weeds, tolerant weeds, or if weeds are under - environmental stress. See Roundup/glyphosate section (A4) on page 69-70 for more information about increasing weed control using Roundup/glyphosate.

Three Systems of Weed Control in RR Soybean

1. PRE followed by glyphosate POST: **All PRE herbicides require rain for activation.**

Page 24 lists many registered PRE soybean herbicides that can be used in herbicide resistant soybean. PRE herbicides at full labeled rate may give 60 to 99% grass and broadleaf weed control, will reduce weed infestations emerging with soybean, will allow more flexibility in application of POST herbicides, and will help protect yield from early season weed competition.

2. Roundup / generic glyphosate + POST broadleaf herbicide (different mode of action):

Several herbicides listed in the following table will improve control of weeds not controlled by Roundup/glyphosate.

Roundup/glyphosate has no soil residual and will not control weeds emerging after application. Roundup/glyphosate may not control some weed species or biotypes. Many POST herbicides listed will give residual weed control. Follow label directions for tank-mix and application information.

3. Roundup / generic glyphosate (EPOST = 2 to 4 inch tall weeds) followed by Roundup/glyphosate (POST = 14 to 21 days later):

This program will increase the risk of weed resistance unless other strategies are used in rotational crops - see Herbicide Resistant Weed Section, pages 102-103.

The following table shows herbicides to apply in tank-mix or sequentially with Roundup/glyphosate in RR soybean for control of weeds not controlled by Roundup/glyphosate. Weed ratings are control without glyphosate. Refer to label for tank-mix and specific application information. Residual weed control listed in the table refers to control of subsequent flushes of weeds after herbicide application.

Herbicides to apply in tank-mix or sequentially with Roundup / generic glyphosate in RR soybean for control of weeds not controlled by Roundup/glyphosate. Refer to page 24 through 27 for additional herbicides.

Soybean	Rate/A	Cost/A	Buckwheat, Wild	Canola, Vol. RR ¹	Horseweed (Marestail)	Kochia	Lambsquarters	Mallow, Com. (small)	Nightshade species	Prickly lettuce	Ragweed, Common	Smartweed, Annual	Waterhemp	
Preplant or PRE herbicides - no residual weed control			Weed Control Ratings ³											
2,4-D ester	Plant >7 d	0.5 - 1 pt	\$1.00 - 2.00	P	P-G	G-E	P	E	P	N-P	E	E	P-F	F-G
Aim		0.5 - 1 fl oz	\$3.45 - 6.90	P	N-P	N	F-E	F-G	-	N-P	P	N	N	F-E
Express SG		0.25 - 0.5 oz	4.75 - 9.50	P-F	G-E	P ⁴	E ⁴	F	P-F	F	G ⁴	P	F-G	P ⁴
Harmony/generic thifensulf*		See label	\$2.50 - 15.75	P-E	F-E	N-F	G-E ⁴	E	G-E	N	G-E ⁴	N	E ⁴	P-E ⁴
Sharpen (burndown)		1 fl oz	\$5.10	G-E	G-E	G-E	E	E	P-E	G-E	G-E	G-E	E	G-E

Preplant or PRE herbicides - with residual weed control - See Combination herbicides for soybean.

Prowl, Sonalan, Treflan* ² - PPI	See label	\$2.50 - 13.00	N	N	N	P	F-E	N	N	N	N	N-P	F-E
Python ²	0.8 - 1 oz DG	\$11.60 - 14.50	F-G	G-E	F-E ⁴	E ⁴	E	-	G-E	-	P	G-E	G ⁴
Sencor/generic metribuzin	0.33 - 0.5 lb	\$5.40 - 10.75	F-G	F-E	F	F-G	P-F	-	P	G-E	F-G	G	F-G
Spartan ²	3 - 6 fl oz	\$14.10 - 28.15	P-F	P	F-G	E	E	-	F-E	P	P	E	F-G
Valor	2 - 3 oz WDG	\$11.00 - 16.50	P-F	G-E	F-E	G-E	G-E	E	E	F-E	P-F	F	G-E

POST herbicides - See Combination herbicides for soybean.

FirstRate ²	<50% flower	0.3 oz WDG	\$10.50	P-F	P-G	G-E ⁴	P ⁴	P	-	N	-	E	E	N
Flexstar ²	< Flowering	0.5 - 0.75 pt	\$7.80 - 11.75	P	E	N-P	G-E	P-F	G-E	F-E	-	G-E	G-E	E
Harmony*DG/SG	60 day PHI	1/12 oz / 1/8 oz	\$1.00 / \$4.00	P	P-F	N	N	G	N	N	P ⁴	N	G-E	N
Pursuit ²	< Flowering	2 - 3 fl oz	\$12.20 - 14.75	P	P-E	N	E ⁴	P-F	P	E	E ⁴	P	G	N
Raptor ²	< Flowering	2 - 3 fl oz	\$9.80 - 14.75	P	P-E	N	E ⁴	P-F	P	E	G ⁴	P	G-E	N

¹See page 115 for size of volunteer canola and herbicide rates.

²May carry over more than one cropping season. Follow labeled crop rotation restrictions. See pages 102-103.

³E = Excellent (90-99%), G = Good (80-90%), F = Fair (65-80%), P = Poor (40-65%), N = None.

⁴Except where resistant populations have developed.

Combination Herbicides (partial list) for Conventional and Herbicide Resistant Soybean:

Trade Name	Manufacturer	Applied at (Prod/A)...	Cost/A	Gives the equivalent product rates of:
Authority Assist	FMC	4 fl oz 6 fl oz	\$ 4.00 \$16.50	3.33 fl oz Spartan + 1.33 fl oz Pursuit 5 fl oz Spartan + 2 fl oz Pursuit
Authority First / Sonic	FMC	2.4 oz 3.2 oz	\$11.10 \$14.75	3 fl oz Spartan + 0.2 oz FirstRate 4 fl oz Spartan + 0.3 oz FirstRate
Authority MTZ	FMC	8 oz 12 oz	\$ 9.50 \$14.25	3.6 fl oz Spartan + 3.6 oz Sencor/metribuzin 4.33 fl oz Spartan + 4.33 oz Sencor/metribuzin
Boundary	Syngenta	1.2 pt	\$13.20	0.83 pt Dual Magnum + 4 oz Sencor/metribuzin
BroadAxe (Reg. pending)	FMC	17 fl oz 35 fl oz	\$ - \$ -	0.88 pt Dual Magnum + 3 fl oz Spartan 1.8 pt Dual Magnum + 6.12 fl oz Spartan
Extreme	BASF	1.5 pt 2.25 pt	\$ 5.25 \$14.00	2 fl oz Pursuit + 12 fl oz glyphosate-ipa (3 lb ae/gal) 3 fl oz Pursuit + 18 fl oz glyphosate-ipa (3 lb ae/gal)
Flexstar GT 3.5	Syngenta	2.68 pt	\$12.75	12.8 fl oz Flexstar + 2 pt glyphosate-ipa (3 lb ae/gal) (E of Hwy 281)
Gangster (co-pack)	Valent	1.8 oz	\$14.55	1.5 oz Valor + 0.3 oz FirstRate
Rage D-Tech*	FMC	8 -16 fl oz	\$2 - 4.50	0.5 -1 fl oz Aim + 0.5 -1 pt 2,4-D ester - apply at least 14 days prior to planting.
Sequence	Syngenta	1.5 pt 3 pt	\$ 9.40 \$18.80	24 fl oz glyphosate-ipa (3 lb ae/gal) + 0.8 pt Dual II Magnum 36 fl oz glyphosate-ipa (3 lb ae/gal) + 1.2 pt Dual II Magnum
Spartan Advance	FMC	24 fl oz	\$16.90	3.4 fl oz Spartan + 24 fl oz glyphosate-ipa (3 lb ae/gal)
Spartan Charge	FMC	4.5 fl oz	\$16.35	4.5 fl oz Spartan + 1 fl oz Aim
Verdict	BASF	5 fl oz	\$ 8.20	1 fl oz Sharpen + 4 fl oz Outlook


* Or generic equivalent

DRY EDIBLE BEAN


Herbicide	Product/A (ai/A)	Weeds	When to Apply	Remarks and Paragraphs
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Refer to page 6 for Fall or Spring Early Preplant Herbicides.

Soil-Applied Herbicides

Eptam (EPTC)	3.5 to 4.5 pt 15 to 20 lb G (3 to 4 lb)	Grass and some broadleaf weeds.	PPI.	PPI immediately after application. Consult label for rate range for specific tank mix. A1-2 B1 F1-2 S4
Prowl Prowl H2O (pendimethalin)	2.4 to 3.6 pt 3.3EC 2.1 to 3 pt 3.8ACS (1 to 1.5 lb)	Poor wild oat and no wild mustard control.	PPI. Fall or Spring.	PPI within 24 hours after application. Apply fall applications when soil temperature is less than 45 F. Adjust rate for soil type. Use EC formulation in spring and 10G formulation in fall. Refer to label for tank-mixtures. A1-2 B1 B6 E11 F1 S7 X1 Y1 Y14 Pages: 104-105, 108-110
Treflan / generic trifluralin	1 to 2 pt EC 5 to 10 lb 10G (0.5 to 1 lb)			
Sonalan (ethalfluralin)	1.5 to 4.5 pt EC (0.55 to 1.69 lb) 5.5 to 11.5 lb 10G (0.55 to 1.15 lb)			
Dual / generic metolachlor	1 to 2 pt (0.95 to 1.9 lb)	Grass and some broadleaf weeds.	Spring: PPI or PRE.	S-metolachlor may give greater weed control than generic metolachlor at equal product rates. Poor wild mustard and wild oat control. Adjust rate for soil type and OM. Shallow PPI improves consistency of weed control. PRE requires precipitation for herbicide activation. Outlook provides greater nightshade control. A1-2 B1 E6 F1 S4 Pages: 104-105
Outlook / generic dimethenamid	16 to 21 fl oz (0.75 to 1 lb)		PPI, PRE, or EPOST.	
Intrro (alachlor) RUP	4 to 6 pt (2 to 3 lb)		PPI.	
Spartan Charge (sulfentrazone & carfentrazone)	3.75 to 5.75 fl oz (1.28 oz to 2.25 oz & 0.16 to 0.25 oz)	Small-seeded broadleaf weeds.	PPI or PRE.	Do not use on coarse texture soils. Adjust rate for soil type. Rainfall required for activation. User assumes all risk of crop injury. A1 E12 F1 S1 S3-5 S7-8 X1 Y14 Pages: 102-103, 108-110
Permit (halosulfuron) 	0.5 to 0.67 oz DF (0.38 to 0.5 oz)	Most large-seeded broadleaf weeds including ragweed, and cocklebur.	PPI or PRE.	PRE requires precipitation for herbicide activation. Most effective herbicide on yellow nutsedge. A3 A5-6 F1 Y3 Pages: 102-103, 108-110

POST-Applied Herbicides

Permit (halosulfuron) 	0.5 to 0.67 oz DF (0.38 to 0.5 oz)	Most large-seeded broadleaf weeds including ragweed and cocklebur.	POST. Drybean: 1 st trifoliolate but prior to flowering.	Apply with NIS at 0.25 to 0.5% v/v. Refer to label when tank-mixing with other herbicides. Will not control ALS resistant weeds. Not all varieties have been tested for tolerance. A3 A5-6 F1 Y3 Pages: 102-103, 108-110
Pursuit (imazethapyr)	2 fl oz (0.5 oz ae)	Annual broadleaf weeds. No control of ALS-resistant kochia.	Weeds: 1 to 4 inches tall.	User assumes all risk of crop injury. Do not apply prior to or during adverse weather conditions. A3 A5-7 E7 F1 F4 S4-5 X1 Y2 Pages: 102-103, 108-110
Raptor (imazamox)	4 fl oz (0.5 oz ae)	Annual grass and broadleaf weeds. No control of ALS-resistant kochia.		Add NIS at 0.25% v/v or oil additive at 0.5 to 1% v/v plus 28% UAN at 2 qt/A (except during high humidity). A3 A5-7 E9 F1 S4 X1 Y2 Y17 Pages: 102-103, 108-110
Reflex (fomesafen)	0.75 pt (0.188 lb)	Annual broadleaf weeds including ragweed, kochia, and nightshade.		Add NIS at 0.125 to 0.25% v/v or oil adjuvant at 0.5 to 1% v/v. Allow a 30 day PHI. Oil adjuvant may increase risk of crop injury. Most active in hot and sunny conditions. Refer to label for risk of crop injury. Refer to E4 for improved broadleaf weed control. Allow a 45 day PHI. A3 E4 F1 F5 S3-5 Y11 Pages: 102-103, 108-110

Pages 102-103 = Herbicides resistance, Pages 104-105 = Generic and commercial names, Pages 108-110 = Crop rotation restrictions.

DRY EDIBLE BEAN

Herbicide	Product/A (ai/A)	Weeds	When to Apply	Remarks and Paragraphs
Basagran / generic bentazon	0.5 to 2 pt applied 1 to 4 times. (0.25 to 1 lb)	Some broadleaf weeds and suppression of Canada thistle.	POST. Dry bean: After emergence. Broadleaf weeds: Small.	Non-residual, contact herbicide requiring thorough coverage. Most active in hot and sunny conditions. Add oil adjuvant at 1 to 2 pt/A. Allow a 30 day PHI. A3 E3 F1 F6
Rezult + MSO adjuvant (bentazon & sethoxydim)	1.6 + 1.6 pt or 0.8 + 0.8 pt 2X or 0.56 + 0.56 pt 3X or 0.4 + 0.4 pt 4X + 1.25 pt/A (1 + 0.2 lb or 0.5 + 0.1 lb or 0.38 + 0.075 lb or 0.25 + 0.05 lb)	Small grass and broadleaf weeds including pigweed, ragweed, kochia, lambsquarters, wild buckwheat, biennial wormwood and Canada thistle	First application: Weeds: 1 inch tall or less. Weeds must be small. Make consecutive applications 7 to 10 days later.	Refer to E3 for additional information. Add MSO adjuvant at 1.25 pt/A. Sequential applications at a 7 to 10 day intervals improves overall weed control. Tank-mix with Raptor, Reflex, and a POST grass herbicide for improved weed control - See NDSU Micro-rate below. Allow a 30 day PHI. A3 E1-3 F1 F6 S1 S3-5 S7-8 T2 X1
Assure II Targa (quizalofop)	7 to 12 fl oz (0.77 to 1.32 oz)	Annual grasses and quackgrass.	POST. Dry bean: Allow a 30 day PHI for Assure II/Targa, Poast, Select, and Select Max. Allow a 60 day PHI for Fusilade DX.	Add oil adjuvant at 1% v/v but not less than 1.25 pt/A. Oil adjuvant at more than 1 qt/A is not needed. See Select Max label for detailed adjuvant recommendations. Refer to label and soybean section for tank-mix options, possible grass antagonism with broadleaf herbicides, and methods to avoid reduced grass control. A3 A5-6 E1-2 S2 S6 X1 Pages: 102-103, 104-105
Fusilade DX (fluazifop)	5 to 12 fl oz 1.25 to 3 oz)			
Poast (sethoxydim)	0.5 to 1.5 pt (0.1 to 0.3 lb)	Annual grasses.		
Select / generic clethodim	4 to 8 fl oz (1 to 2 oz)	Annual grasses and quackgrass.	Grass: Refer to soybean section on page 26.	
Select Max (clethodim)	9 to 16 fl oz (1.125 to 2 oz)			

NDSU Dry Bean Micro-rate

Rezult B & Rezult G + Raptor + Reflex + Select/clethodim + MSO adjuvant	0.5 to 0.6 pt & 0.5 to 0.6 pt + 1 fl oz + 2 to 4 fl oz + 2 fl oz (optional) + 1.25 pt/A	Grass and broadleaf weeds, including kochia, pigweed, and nightshade. May not control wild buckwheat.	POST. Weeds. Small. Must be less than 1 to 2 inches tall.	User assumes all risk of inadequate weed control when using this reduced-rate treatment. Must be applied with MSO adjuvants at 1.25 pt/A. Select/clethodim can be excluded if grass infestation is low. Refer to E3, E6, and Rezult section above. A3 A5-7 E2-4 E9 F1 F4-6 S1-8 X1 Y2-3 Y11 Pages: 102-103, 104-105, 108-110
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Preharvest Application

Roundup / generic glyphosate	Up to 0.75 lb ae	Harvest aid/ Weed control.	After pods are yellow and leather texture. After seed is hard dough stage with 30% or less seed moisture.	Do not apply to dry bean grown for seed because reduced germination/vigor may occur. Use only labeled formulations. Non-selective, non-residual, translocated, foliar herbicide. Allow a 7 day PHI. A3-7 B1 X1 Pages: 102-103, 104-105
paraquat RUP	1.5 to 2 pt 2SL 1 to 1.3 pt 3SL (0.375 to 0.5 lb)	Dry bean and weed desiccant.	After 80% of pods are yellow/brown. After 60% (bush type beans) or 70% (vine type) of leaves have lost green color.	Contact herbicides requiring thorough coverage. Most active in hot and sunny conditions. Sequential applications may be needed. Apply Valor with paraquat + MSO adjuvant for weed desiccation. Apply Sharpen at 10 gpa for ground and 5 gpa for aerial application and with AMS at 8.5 to 17 lb/100 gal water or UAN at 1.25 to 2.5% v/v. Do not apply Sharpen on dry bean used for seed. Allow a 7 day PHI for paraquat. Allow a 3 day PHI for Aim. Allow a 5 day PHI for Valor. Allow a 2 day PHI for Sharpen. B4 B8 Pages: 102-103, 104-105, 108-110
Aim + MSO adjuvant (carfentrazone)	2 to 6 fl oz EC + 1 qt/A (0.53 to 1.5 oz)			
Valor + MSO adjuvant (flumioxazin)	1.5 to 2 fl oz + 1 qt/A (0.77 to 1.53 oz)			
Sharpen + MSO adjuvant (saflufenacil)	1 to 2 fl oz + 1 to 1.5 pt/A (0.36 to 0.72 oz)			

Pages 102-103 = Herbicides resistance, Pages 104-105 = Generic and commercial names, Pages 108-110 = Crop rotation restrictions.

FIELD PEA

Herbicide	Product/A (ai/A)	Weeds	When to Apply	Remarks and Paragraphs
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Refer to page 6 for Fall or Spring Early Preplant Herbicides.

Soil-Applied Herbicides

Far-Go (triallate)	1.25 qt EC (1.25 lb)	Wild oat.	PPI.	PPI immediately after application. A two pass incorporation is recommended. A1-2 B1 C11 G1
Prowl Prowl H2O (pendimethalin)	1.75 to 3.6 pt EC 1.5 to 3 pt ACS (0.72 to 1.5 lb)	Grass and some broadleaf weeds.	PPI. Fall or Spring.	Fall apply when soil temperature is less than 45 F. Adjust rate for soil type. Poor wild oat and no wild mustard control. Some pea varieties may be injured. A1-2 B1 B6 E11 G1 S7 Y14 Pages: 104-105, 108-110
Treflan / generic trifluralin	1 to 1.5 pt 5 to 7.5 lb 10G (0.5 to 0.75 lb)			
Sonalan (ethalfluralin)	1.5 to 2 pt 5.5 to 7.5 lb 10G (0.55 to 0.75 lb)			
Dual / generic metolachlor	1 to 2 pt (0.95 to 1.9 lb)			
Sharpen (saflufenacil)	1 to 2 fl oz (0.36 to 0.72 oz)	Small-seeded broadleaf weeds including kochia, pigweed species, lambsquarters, and nightshade.	Fall, EPP, shallow PPI, and PRE.	PRE requires precipitation for herbicide activation. Provides burndown control of emerged broadleaf weeds including winter-annual species. Refer to label for tank-mix options. A1 B1-2 B9 S1 S3-5 S7-8 X1 Pages: 102-103.
Spartan (sulfentrazone)	2.25 to 8 fl oz F (1.125 to 4 oz)			Adjust rates for soil type and OM. PRE requires precipitation for herbicide activation. Refer to label for rate structure. Commercial mixture with Aim available as Spartan Charge. A1-2 B1 E12 G1 S1 S3-5 S7 Y14 Pages: 102-103, 108-110
Metribuzin / generics	0.25 to 0.5 lb DF 0.38 to 0.75 pt 4F (0.19 to 0.38 lb)	Suppression of lambsquarters, henbit, mustard, and chickweed.	PRE.	Use only registered formulations. Adjust rate for soil type. Apply PRE at 10 gpa and POST at 20 gpa. Refer to label for application and environment information, and special precautions that may affect weed control and crop safety. Allow a 50 day PHI. E10 G1 S7 Y4 Y13 Pages: 104-105, 108-110
	0.167 to 0.33 lb DF 0.25 to 0.5 pt 4F (0.125 to 0.25 lb)		POST. Weeds: Small.	

POST-Applied Herbicides

Thistrol (MCPB)	2 to 6 pt (0.5 to 1.5 lb ae)	Broadleaf weeds: Small.	POST. Pea: 3 nodes until prior to flowering.	Slight, temporary injury may occur. Do not apply when temperature exceeds 90 F or when peas are stressed. Suppresses Canada thistle. G1 G3
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Pages 102-103 = Herbicides resistance, Pages 104-105 = Generic and commercial names, Pages 108-110 = Crop rotation restrictions.

Herbicide	Product/A (ai/A)	Weeds	When to Apply	Remarks and Paragraphs
Basagran / generic bentazon	0.5 to 2 pt applied 1 to 4 times (0.25 to 1 lb)	Some broadleaf weeds and suppression of Canada thistle.	POST. Dry pea: At least 3 pair of leaves or 4 nodes. Broadleaf weeds: Small.	Non-residual, contact herbicide requiring thorough coverage. Most active in hot and sunny conditions. Add oil adjuvant at 1 to 2 pt/A. Allow a 30 day PHI. A3 A7 E3 F6 G1-2
Rezult + MSO adjuvant (bentazon & sethoxydim)	1.6 + 1.6 pt or 0.8 + 0.8 pt 2X or 0.56 + 0.56 pt 3X or 0.4 + 0.4 pt 4X + 1.25 pt/A (1 + 0.2 lb or 0.5 + 0.1 lb or 0.38 + 0.075 lb or 0.25 + 0.05 lb)	Small grass and broadleaf weeds including pigweed, ragweed, kochia, lambsquarters, wild buckwheat, biennial wormwood and Canada thistle	First application: Weeds: 1 inch tall or less. Weeds must be small. Make consecutive applications 7 to 10 days later.	Refer to E3 for additional information. Add MSO adjuvants at 1.25 pt/A. Sequential applications at a 7 to 10 day intervals improves overall weed control. Tank-mix with Raptor and a POST grass herbicide for improved weed control - See NDSU Micro-rate in dry bean section. Allow 30 day PHI. A3 A7 E1-3 F6 G1 S1-8 T2
Pursuit (imazethapyr)	2 fl oz (0.5 oz ae)	Annual broadleaf weeds. No control of ALS-resistant kochia.	POST. Pea: At least 3 inches tall but prior to 5 nodes and prior to flowering.	User assumes all risk of crop injury. Add NIS at 0.25% v/v. Do not apply during adverse weather conditions or when stress conditions are predicted within one week of application. Allow a 60 day PHI. Refer to label for application information and weed size. Risk of Raptor carryover is less than Pursuit. Basagran or Rezult antagonizes Raptor and reduces risk of injury to field pea. A3 A7 E3 E9 F4 G1 S4 X1 Y2 Pages: 102-103, 108-110
Raptor + Basagran or Result (imazamox + bentazon/ sethoxydim)	4 fl oz + 6 to 16 fl oz (0.5 oz ae + 3 to 8 oz bentazon)	Annual grass and broadleaf weeds.	Weeds: 2 to 6 inches tall.	
Assure II Targa (quizalofop)	7 to 12 fl oz (0.77 to 1.32 oz)	Annual grasses and quackgrass.	POST. Pea: Refer to PHI.	Add oil adjuvant at 1% v/v but not less than 1.25 pt/A. Oil adjuvant at more than 1 qt/A is not needed. Refer to soybean section for information on broadleaf herbicide tank-mix antagonism and methods to avoid reduced grass control. Clethodim may injure pea when applied prior to or during bloom. Refer to label for tank-mix options. Allow a 60 day PHI for Assure II.
Poast (sethoxydim)	0.5 to 1.5 pt (0.1 to 0.3 lb)	Annual grasses.	Grass: Refer to soybean section on page 26.	Allow a 30 day PHI for clethodim and Poast. A5-6 E2 X1 Pages: 102-103, 104-105
Select / generic clethodim	4 to 8 fl oz (1 to 2 oz)	Annual grasses and quackgrass.		
Select Max (clethodim)	9 to 16 fl oz (1.125 to 2 oz)			

Preharvest Herbicides

Roundup / generic glyphosate	Up to 2.25 lb ae.	Emerged grass and broadleaf weeds. (0.75 ae)	Weed control and harvest aid. Pea: 30% or less seed moisture.	Use only registered formulations. Add AMS at 4 lb/100 gal, or more for hard water. Refer to label for adjuvant use. For spot treatment use a 2% solution, on perennial broadleaf weeds at or beyond the bud stage. Crop will be killed in treated areas. Allow a 7 day PHI for broadcast and 14 day PHI for spot treatment. Do not apply on field pea grown for seed because reduced germination/vigor may occur. A4-6 B2 X1 Pages: 102-103, 104-105
		Perennial weeds. (1.5 ae)	Spot treatment.	
Aim (carfentrazone) + MSO adjuvant	2 to 6 fl oz EC (0.53 to 1.5 oz) + 1 qt	Desiccant.	Harvest aid and desiccant for all pea varieties.	Non-residual, contact herbicides requiring thorough coverage. Most active in hot and sunny conditions. Add NIS at 0.25% v/v. Allow 7 days for PHI and before grazing. Refer to label for application information and weed size. B4 B8 Pages: 104-105
paraquat RUP	1.5 to 2 pt 2SL 1 to 1.3 pt 3SL (0.37 to 0.5 lb)			


Pages 102-103 = Herbicides resistance, Pages 104-105 = Generic and commercial names, Pages 108-110 = Crop rotation restrictions.

CHICKPEA/GARBANZO BEAN AND LENTIL

Herbicide	Product/A (ai/A)	Weeds	When to Apply	Remarks and Paragraphs
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Refer to page 6 for Fall or Spring Early Preplant Herbicides.

Soil-Applied Herbicides

Far-Go (triallate) 	1.25 qt EC (1.25 lb)	Wild oat.	PPI.	PPI immediately after application. A two pass incorporation is recommended. A1-2 B1 C11 H1-2
Prowl Prowl H2O (pendimethalin)	1.75 to 3.6pt 3.3EC 1.5 to 3 pt 3.8ASC (0.72 to 1.5 lb)	Grass and some broadleaf weeds.	PPI. Fall or Spring.	Adjust rate for soil type. Poor wild oat and no wild mustard control. Apply in fall when soil temperature is less than 45 F. A1-2 B1 B6 E11 Y1 Y14 Pages: 102-103, 108-110
Treflan / generic trifluralin	1 to 2 pt 5 to 10 lb 10G (0.5 to 1 lb)		PPI. Fall or Spring. See Remarks for use in Lentil.	Lentil: Tolerance is marginal and injury may occur under stress conditions. Apply at 1 to 1.5 pt or 5 to 7.5 lb 10G. Refer to label for additional information. A1-2 B1 B6 E11 Y1 Y14 Pages: 104-105, 108-110
Sonalan (ethalfluralin)	1.5 to 2 pt 5.5 to 7.5 lb 10G (0.55 to 0.75 lb)		Lentil: Fall-apply Sonalan 10G just prior to snow cover into stubble on fields that have been direct-seeded with 30% or less soil disturbance for 2 to 3 years. Incorporate once using minimum soil disturbance with a rotary hoe or heavy harrow. Refer to label. A1-2 B1 B6 E11 Y1 Y14 Pages: 104-105, 108-110	
Dual / generic metolachlor	1 to 2 pt (0.95 to 1.9 lb)		PPI or PRE.	S-metolachlor may give greater weed control than generic metolachlor at equal product rates. Shallow PPI improves consistency of weed control. A1-2 B1 E6 F3 H1-2 Pages: 104-105
Outlook / generic dimethenamid	16 to 21 fl oz (0.75 to 1 lb)		Shallow PPI, PRE, or EPOST to third leaf lentil.	Poor wild oat and wild mustard control. Adjust rate for soil type and OM. Shallow incorporation improves consistency of weed control. Refer to label for tank-mix options. A1-2 B1 E6 F3 H1-2
Sharpen (saflufenacil) Chickpea Only	1 to 2 fl oz (0.36 to 0.72 oz)	Broadleaf weeds including winter- annual species.	Fall, EPP, shallow PPI, and PRE.	Do not apply to lentil. PRE requires precipitation to activate herbicide. Provides burndown control of emerged broadleaf weeds. Refer to label for tank-mix options. Commercial mixture with Aim available as Spartan Charge. A1 B1-2 B9 S1 S3-5 S7-8 X1
Spartan (sulfentrazone) Chickpea Only	2.25 to 8 fl oz F (1.125 to 4 oz)	Small-seeded broadleaf weeds including kochia, pigweed species, lambsquarters, nightshade, and b. wormwood.		Do not apply to lentil. Adjust rate for soil type and OM. Do not use on sandy soil with < 1% OM. PRE requires precipitation to activate herbicide. Refer to label for tank-mix options, application information, rate structure, and crop rotation restrictions. A1-2 B1 E12 H1-2 S1 S3-5 S7 Y14 Pages: 108-110
Metribuzin / generics Lentil Only	0.33 to 0.5 lb DF 0.5 0.75 pt 4F (0.25 to 0.38 lb) 0.167 to 0.33 lb DF 0.25 to 0.5 pt 4F (0.125 to 0.25 lb)	Suppression of lambsquarters, henbit, chickweed and mustard.	PRE. POST. Weeds: Small.	Adjust rates for soil type. Refer to label for application and environment information and special precautions that may affect weed control and crop safety. Allow a 75 day PHI. E10 H1-2 Y4 Y13 Pages: 104-105, 108-110

Pages 102-103 = Herbicides resistance, Pages 104-105 = Generic and commercial names, Pages 108-110 = Crop rotation restrictions.

CHICKPEA/GARBANZO BEAN AND LENTIL

Herbicide	Product/A (ai/A)	Weeds	When to Apply	Remarks and Paragraphs
POST-Applied Grass Herbicides				
Assure II Targa (quizalofop)	7 to 12 fl oz (0.77 to 1.32 oz)	Annual grasses and quackgrass.	POST. Crop: Refer to PHI.	Add oil adjuvant at 1% v/v but not less than 1.25 pt/A. Oil adjuvant at more than 1 qt/A is not needed. See Select Max label for detailed adjuvant recommendations. Refer to section in soybean for information on broadleaf herbicide tank-mix antagonism and method to avoid reduced grass control. Allow a 60 day PHI for Assure II. Allow a 50 day PHI for Poast. Allow a 30 day PHI for Select/clethodim. A5-6 E2 X1 Pages: 102-103, 104-105
Poast (sethoxydim)	0.5 to 1.5 pt (0.1 to 0.3 lb)	Annual grasses.	Grass: Refer to soybean section on page 26.	
Select / generic clethodim	4 to 8 fl oz (1 to 2 oz)	Annual grasses and quackgrass.		
Select Max (clethodim)	9 to 16 fl oz (1.125 to 2 oz)			

Preharvest Herbicides

Roundup / generic glyphosate	Up to 2.25 lb ae	Emerged grass and broadleaf weeds.	Harvest aid and desiccant.	Use only registered formulations. Apply with AMS at 4 lb/100 gal, or more for hard water. Allow a 7 day PHI for broadcast and 14 day PHI for spot treatment. Refer to label for adjuvant use. Do not apply on field pea grown for seed because reduced germination/vigor may occur. For spot treatment: Use a 2% solution, apply to perennial broadleaf weeds at or beyond the bud stage, and crop will be killed in treated areas. A4-6 B2 X1 Pages: 102-103, 104-105
		Perennial weeds.	Spot treatment.	
paraquat RUP	1.5 to 2 pt 2SL 1 to 1.3 pt 3SL (0.37 to 0.5 lb)	Desiccant.	POST. Allow a 7 day PHI.	Non-residual, contact herbicide requiring thorough coverage. Most active in hot and sunny conditions. Apply when at least 80% of the pods are mostly ripe with no more than 40% (bush type beans) or 30% (vine type) of the leaves still green. B8 Pages: 104-105
Valor + MSO adjuvant (flumioxazin) Chickpea Only	1.5 to 2 fl oz + 1 qt/A (0.77 to 1.53 oz)		POST. Allow a 5 day PHI.	

Pages 102-103 = Herbicides resistance, Pages 104-105 = Generic and commercial names, Pages 108-110 = Crop rotation restrictions.

Clearfield Lentil

Herbicide	Product/A (ai/A)	Weeds	When to Apply	Remarks and Paragraphs
Beyond (imazamox)	4 to 6 fl oz SG (0.5 to 0.75 oz)	Annual grass and broadleaf weeds including wild oat, foxtail, Japanese and downy brome and Persian dandel.	POST. Lentil: 2 to 6 leaf stage. Weeds: Small and actively growing.	Apply only to Clearfield lentil varieties. Add NIS at 0.25% v/v or oil adjuvant at 1 to 2 pt/A + 28% UAN at 2.5% v/v. MSO adjuvants enhance weed control more than petroleum oil or NIS. Refer to label for weed size and application information. A5-6 D1 D12 X1 Pages: 102-103, 108-110