SUNFLOWER

	Product/A			
Herbicide	(ai/A)	Weeds	When to Apply	Remarks and Paragraphs

Refer to page 6 for Fall or Spring Early Preplant Herbicides. Refer to page 37 for additional herbicides to use in conventional or herbicide resistant sunflower.

Soil-Applied Herbicides

Eptam (EPTC)	2.5 to 3.5 pt (2 to 3 lb)	Grass and some broadleaf weeds.	PPI.	No wild mustard control. PPI immediately after application. A1-2 B1 F1-2 J1
Prowl Prowl H20 (pendimethalin)	2.4 to 3.6 pt 3.3EC 2.1 to 3 pt 3.8ACS (1 to 1.5 lb)		PPI.	Poor wild oat and no wild mustard control. Adjust rate for soil type. Refer to label for tank-mix options.
	3 to 3.6 pt 3.3EC 2.7 to 3 pt 3.8ACS (1.25 to 1.5 lb)		PRE - 30 days before to 1 day after seeding.	A1-2 B1 B6 E10 J1 X1 Y1 Y14. Pages: 104-105, 108-110. Apply PRE for no-till sunflower only.
Treflan / generic trifluralin	1 to 2 pt EC 5 to 10 lb 10G (0.5 to 1 lb)	Foxtail.	PPI.	PPI within 24 hours after application. Poor wild oat and no wild mustard control. Adjust rate for soil type.
Sonalan (ethalfluralin)	1.5 to 3 pt EC 5.5 to 11.5 lb 10G (0.55 to 1.15 lb)		PPI. Spring. Fall: From October 1 to December 31.	Use highest rate allowed for nightshade control. A1-2 B1 B6 E10 J1 X1 Y1 Y14. Pages: 102-103, 104-105, 108-110.
	7.5 to 11.5 lb 10G (0.75 to 1.15 lb)			For use in reduced or conservation tillage. Incorporate twice at 2 to 3 inches deep using a V-blade under- cutter or rotary hoe. For fall applications, incorporate once in the fall and once in the spring before seeding. A1-2 B1 B6 E10 J1 X1 Y1 Y14. Pages: 108-110.
Dual Magnum (S-metolachlor)	1 to 2 pt (0.95 to 1.9 lb)	Grass and some broadleaf weeds.	PPI or PRE.	No wild oat or wild mustard control. PPI improves consistency of control. Requires moisture for activation. A1-2 B1 E5 J1
Spartan (sulfentrazone)	3 to 8 fl oz F (1.5 to 4 oz)	Small-seeded broadleaf weeds including kochia, pigweed, lambsquarters, nightshade, and biennial wormwood.	EPP, shallow PPI, PRE or Fall.	Requires precipitation for activation. EPP applications up to 30 days prior to planting improves likelihood of activation by moisture. Adjust rate for soil type. Temporary sunflower injury may occur in coarse, low organic matter soils with pH greater than 7.8. May give 6 to 8 weeks residual weed control. A1-2 B1 E11 J1 J3 S1 S4-5 S7 Y14. Pages: 108-110.

POST-Applied Herbicides

Assert (imazamethabenz)	0.6 to 0.8 pt (0.19 to 0.25 lb)	Wild mustard.	POST. Sunflower: Less than 8 leaves or 15 inches tall. Mustard species including canola: Prior to bloom.	Add NIS at 0.25% v/v. Sunflower injury may occur when applied at high temperature and humidity. A5 J1-2 S1 X1 Y2. Pages: 102-103, 108-110.
Assure II / Targa (quizalofop)	7 to 10 fl oz (0.77 to 1.1 oz)	Annual grasses and quackgrass.	Refer to PHI. Grass: Refer to soybean section on page 26.	Add oil adjuvant at 1% v/v but not less than 1.25 pt Oil adjuvant at more than 1 qt/A is not needed.
Poast (sethoxydim)	0.5 to 1.5 pt (0.1 to 0.3 lb)	Annual grasses.		See Select Max label for detailed adjuvant recommendations. Refer to soybean section or label for tank-mix options,
Select / generic clethodim	4 to 8 fl oz (1 to 2 oz)	Annual grasses and quackgrass.		possible grass antagonism with broadleaf herbicides, and methods to avoid reduced grass control.
Select Max (clethodim)	9 to 32 fl oz (1.125 to 4 oz)			Allow a 70 day PHI. A3 A5-6 E2 J1 S2 S6 X1 Pages: 102-103, 104-105.

Preharvest Herbicides

Roundup / generic glyphosate	Up to 0.75 lb ae See Remarks.	Preharvest weed control.	Backside of sunflower heads yellow and bracts turning brown at the shoulder. Seed moisture content under	Do not apply to sunflower grown for seed because reduced germination / vigor may occur. Use only registered formulations. Refer to label for adjuvant use. Add AMS fertilizer at 4 lb/100 gal, or more for hard water. Allow 7 days between application and harvest or livestock feeding. A3-7 B2 X1. Pages: 102-103, 104-105.
paraquat RUP	1.5 to 2 pt 2SL 1 to 1.35 pt 3SL (0.375 to 0.5 lb)	Desiccant.	35%.	Use on both confectionery and oilseed varieties. Add NIS at 0.25% v/v. Most active in hot and sunny conditions. Randomly sample 10 average heads for seed moisture. Allow a 7 day PHI. B8. Pages: 104-105.
Sharpen (saflufenacil)	1 to 2 fl oz (0.36 to 0.71 oz)			Do not apply to sunflower grown for seed because reduced germination / vigor may occur. Apply with MSO adjuvant at 1.25 pt/A. May be tank-mixed with glyphosate. Allow a 7 day PHI.

HERBICIDE RESISTANT SUNFLOWER

Refer to page 36 for additional herbicides to use in conventional or herbicide resistant sunflower.

Clearfield Sunflower

Herbicide	Product/A (ai/A)	Weeds	When to Apply	Remarks and Paragraphs
Beyond (imazamox)	4 fl oz (0.5 oz ae)	Annual broadleaf weeds including wild mustard and black nightshade. No ALS-resistant kochia control.	Sunflower: 2 to 8- leaf stage. Broadleaf weeds: Less than 3 inches tall. Grass weeds: Less	Apply only to Clearfield sunflower varieties. Add NIS at 0.25% v/v + UAN at 2.5% v/v. MSO and oil adjuvants are not prohibited but may increase activity and cause temporary crop injury. Refer to label for weeds controlled, adjuvant use, and tank-mix options. A3 A5-7 E9 J4 S3 S4 X1 Y1-2 Y17. Pages: 102-103, 108-110.

Express Sun Sunflower

Herbicide	Product/A (ai/A)	Weeds	When to Apply	Remarks and Paragraphs
Express SG (tribenuron)	0.25 to 0.5 oz SG (0.125 to 0.25 oz)	Annual broadleaf weeds including wild mustard. Control or suppression of Canada thistle. No grass or ALS- resistant kochia control.	stage but prior to bud formation. Broadleaf weeds:	Apply only to Express Sun sunflower varieties. MSO-type oil adjuvants at 1.25 pt/A enhanced weed control more than NIS or petroleum oil adjuvants. Apply with a registered POST grass herbicide. Sequential applications are allowed but observe a 14 day interval between applications and do not exceed 1 oz/A. Allow a 70 day PHI. A3 A5-7 J1 J5 S3 T2 X1 Y1-2. Pages: 102-103, 104-105.

SAFFLOWER

	Product/A			
Herbicide	(ai/A)	Weeds	When to Apply	Remarks and Paragraphs

Refer to page 6 for Fall or Spring Early Preplant Herbicides.

Soil-Applied Herbicides

Eptam (EPTC)	3.5 pt EC 15 lb 20G (3 lb)	Grass and some broadleaf weeds.	PPI.	Refer to narrative A1 for application information. Poor wild mustard control. A1-2 B1 S4
Treflan / generic trifluralin	1 to 2 pt EC 5 to 10 lb 10G (0.5 to 1 lb)		PPI. Fall or spring.	Poor wild oat and no wild mustard control. Adjust rate for soil type. Use highest rate allowed for nightshade control.
Sonalan (ethalfluralin)	1.5 to 3 pt EC 5.5 to 11.5 lb 10G (0.55 to 1.15 lb)		PPI. Fall or Spring.	A1-2 B1 B6 E10 S7 X1 Y1 Y14. Pages: 104-105, 108-110.
Dual / generic S/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. Poor wild oat and wild mustard control. Shallow PPI gives more consistent weed control. A1-2 B1 E5 S4 Pages: 104-105.

POST-Applied Herbicides

Poast (sethoxydim)	0.5 to 1.5 pt (0.1 to 0.3 lb)	Annual grasses.	Safflower: 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 soybean section or label for tank-mix options, possible grass antagonism with broadleaf herbicides,
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)			1 5

Preharvest Herbicides

Roundup / generic glyphosate	Up to 2.25 lb ae See Remarks .	Preharvest weed control.	turns white, at least 20 days after end of flowering on secondary branches.	Do not apply to sunflower grown for seed because reduced germination / vigor may occur. Use only registered formulations. Add AMS fertilizer at 4 lb/100 gal, or more for hard water. Refer to label for adjuvant use. Allow 7 days between application and harvest or livestock feeding. A3-7 B2 X1. Pages: 102-103, 104-105.
Drexel Defol (sodium chlorate)	1 gal 6SL (6 lb)	Desiccant.	maturity and 7 day	Contact herbicide requiring thorough coverage. Apply aerially at 5 to 10 gpa or by ground at 20 to 30 gpa. Most active in hot and sunny conditions.

					FLAX
	Product/A				
Herbicide	(ai/A)	Weeds	When to Apply	Remarks and Paragraphs	

Refer to page 6 for Fall or Spring Early Preplant Herbicides.

Soil-Applied Herbicides

Treflan / generic trifluralin	1 to 2 pt 5 to 10 lb 10G (0.5 to 1 lb)	Grass and some broadleaf weeds.	PPI. Fall.	Adjust rate for soil texture. Deep incorporate within 24 hours after application. A1-2 B1 B6 E10 K1-2 S7 X1 Y14. Pages: 104-105, 108-110.
Callisto (mesotrione)	3 to 6 fl oz (1.5 to 3 oz)	Most broadleaf weeds.	PRE.	For emerged weeds at application add oil adjuvant at 1.25 pt/A + UAN at 2.5% v/v or AMS at 8.5 lb/100 gallons water. POST application may injure or kill flax. A3 A5-6 D7 K1 X1 Y9. Pages: 108-110.
Spartan (sulfentrazone) Section 18 or Section 3 (Fed.) Registration Pending	3 to 8 fl oz F (1.5 to 4 oz)	Small-seeded broadleaf weeds including kochia, pigweed, lambsquarters, nightshade, and biennial wormwood.	EPP, shallow PPI, PRE or Fall.	Requires precipitation for activation. EPP applications up to 30 days prior to planting improves likelihood of activation by moisture. Adjust rate for soil type. May give 6 to 8 weeks residual weed control. Refer to label for application information. A1-2 B1 E11 K1 S1 S3-5 S7 Y14. Pages: 108-110.

POST-Applied Herbicides

Buctril / generic bromoxynil	1 pt (0.25 lb)	Small broadleaf weeds.		Most active in hot and sunny conditions. Poor wild mustard control. Good buckwheat control. Flax injury is possible. K1
МСРА	0.5 pt 4EC/SL (0.25 lb ae)			Use MCPA ester on hard-to-kill weeds. Early application is less injurious to flax. K1
Bronate / generic bromoxynil & MCPA	0.9 pt 4EC 11.4 fl oz 5EC (0.23 & 0.23 lb ae)			Apply to small weeds prior to bud stage of flax. Risk of flax injury is greatest in hot and humid weather. K1. Pages: 102-103, 104-105.
Curtail M / generic clopyralid & MCPA	1.33 to 1.75 pt (1.1 to 1.5 & 6.25 to 8.25 oz ae)	Broadleaf weeds including Canada thistle and perennial sowthistle.	6-inches tall.	Apply after most thistle shoots have emerged. Allow a 72 day PHI. K1 C7 T2. Pages: 102-103, 104-105, 108-110.
Assure II Targa (quizalofop)	8 to 10 fl oz (0.88 to 1.1 oz)	Annual grasses and quackgrass.	POST. Flax: 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
Poast (sethoxydim)	0.5 to 1.5 pt (0.1 to 0.3 lb)	Annual grasses.	soybean section on	recommendations. May be tank-mixed with bromoxynil or MCPA ester for broad-spectrum weed control. Refer to soybean section or label for tank-mix options,
Select / generic clethodim	4 to 8 fl oz (1 to 2 oz)	Annual grasses and quackgrass.	page 26.	possible grass antagonism with broadleaf herbicides, and methods to avoid reduced grass control. Allow a 75 day PHI for Poast and a 60 day PHI for Select. Refer to label for PHI of Assure II/Targa.
Select Max (clethodim)	9 to 16 fl oz (1.125 to 2 oz)			Select may injure flax when applied during bloom. A3 A5-6 E2 S2 S6 X1. Pages: 102-103, 104-105.

Preharvest Herbicides

Roundup / generic glyphosate	Up to 0.75 ae See Remarks.	weeds including Canada thistle and	mature. Seed contains 30%	Use only registered formulations. Allow a 7 day PHI. Do not apply to flax grown for seed because reduced germination / vigor may occur. A3-7 B2 X1. Pages: 102-103, 104-105.
Drexel Defol (sodium chlorate)	1 gal 6SL (6 lb)			Contact herbicide requiring thorough coverage. Do not graze or feed treated straw. Allow a 7 day PHI.

CANOLA, RAPESEED, AND CRAMBE

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

Refer to page 41 for additional herbicides to use in conventional or herbicide resistant canola.

Soil-Applied Herbicides

Treflan / generic trifluralin	1 to 2 pt 5 to 10 lb 10G (0.5 to 1 lb)	Grass and some broadleaf weeds.	PPI. Spring or Fall.	Use only 1 to 1.5 pt/A on tame mustard varieties. Adjust rate for soil type. Use only registered formulations on crambe. A1-2 B1 B6 E10 S7 Y1 Y14. Pages: 104-105, 108-110.
Sonalan (ethalfluralin)	1.5 to 2.5 pt 5.5 to 9.5 lb 10G (0.55 to 0.95 lb)	Grass and some broadleaf weeds. May suppress kochia.	PPI. Fall or Spring.	Adjust rate for soil type. Poor wild oat and no wild mustard control. May result in reduced crop stand or early injury. May provide greater broadleaf weed control than Treflan/trifluralin. A1-2 B1 B6 E10 S7 Y1 Y14. Pages: 108-110.

POST-Applied Herbicides

Stinger / generic clopyralid	4 to 8 fl oz (1.5 to 3 oz ae)	Broadleaf weeds including Canada thistle and perennial sowthistle.	POST. Crop: 2- to 6- leaves. Annual weeds: Small. Thistle: 4 to 6 inches tall.	Apply after most thistle shoots have emerged. Allow a 7 day PHI and to graze crambe for livestock forage. Allow a 50 day PHI. Refer to label for other precautions. A3 L2 T2. Pages: 102-103, 104-105, 108-110.		
Assure II Targa (quizalofop)	7 to 10 fl oz (0.77 to 1.1 oz)	and quackgrass. 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		
Poast (sethoxydim)	1 to 1.5 pt (0.2 to 0.3 lb)		Grass weeds: Refer to soybean	recommendations. Avoid drift to small grain and desirable grass species. Clethodim may injure canola when applied during		
Select / generic clethodim	4 to 5 fl oz (1 to 1.25 oz)			bloom. Allow a 60 day PHI for Assure II and Poast. Allow a 70 day PHI for Select/clethodim.		
Select Max (clethodim)	9 to 16 fl oz (1.125 to 2 oz)			A3 A5-6 E2 S2 S6 X1. Pages: 102-103, 104-105.		

TAME MUSTARD

Treflan / generic trifluralin	1.5 pt 7 lb 10G (0.5 to 1 lb)	Grass and some broadleaf weeds.	PPI. Spring or Fall.	Adjust rate according to soil type. A1-2 B1 B6 E10 S7 Y1 Y14. Pages: 104-105, 108-110.
Select / generic clethodim	4 to 6 fl oz (1 to 1.5 oz)	Annual grasses and quackgrass.	POST. Crop: Prior to bolting.	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
Select Max (clethodim)	9 to 16 fl oz (1.125 to 2 oz)		Grass weeds: Refer to soybean section on page 26.	recommendations. Allow a 70 day PHI. Avoid drift to small grain and desirable grass species. A3 A5-6 E2 S2 S6 X1. Pages: 102-103, 104-105.

HERBICIDE-RESISTANT CANOLA

Refer to page 40 for additional herbicides to use in conventional or herbicides resistant canola.

Clearfield Canola

Herbicide	Product/A (ai/A)	Weeds	When to Apply	Remarks and Paragraphs
Beyond (imazamox)	4 fl oz (0.5 oz ae)	Annual grass and broadleaf weeds.	POST. Canola: Prior to bloom. Grass and broadleaf weeds: Small. Will not control ALS- resistant kochia.	Apply only to Clearfield canola varieties. Add NIS at 0.25% v/v + UAN at 1 to 2 qt/A. Apply with Stinger for Canada thistle control. Refer to label for weeds controlled and application information. Allow a 60 day PHI. A5-6 D12 X1 Y2. Pages: 102-103, 108-110.

LibertyLink Canola

Herbicide	Product/A (ai/A)	Weeds	When to Apply	Remarks and	Paragraph	าร	
Ignite 280 (glufosinate)	22 fl oz (0.4 lb)	Annual broadleaf weeds and control or suppression of grasses.	POST. Canola: Cotyledon up to early bolting stage.	Apply only to LibertyLink canola varieties. Apply with a registered POST grass herbicide. Refer to label for tank-mix information. Add AMS fertilizer at 3 lb/A.			
			Broadleaf weeds: Up to 3 inches tall. Grass weeds: See Remarks. Allow a 65 day PHI.	Growth stage o Grass weed Green foxtail Yellow foxtail Wild oat* Barnyardgrass Proso millet Vol. wheat* Vol. barley* Vol. corn	# leaves 1 to 6 1 to 4 1 to 4		plication: all # tillers 2 or less prior to tillering 1 or less 1 or less 1 or less 1 or less
				* = A second ap	ontact her t active in 7 X1.	bicide req	uiring thorough

Roundup Ready Canola

Herbicide	Product/A (ai/A)	Weeds	When to Apply	Remarks and Paragraphs
Roundup / generic glyphosate	Maximum single application = 0.56 lb ae Maximum in-crop = 0.75 lb ae See Remarks.	Annual and perennial grass and broadleaf weeds.	(5- to 6-leaf). Do not apply after	Apply only to Roundup Ready canola varieties. Maximum - Maximum - Maximum - Maximum - Maximum - Maximum - Maximum - Ib ae/gal lb ai/gal single appl. 3 4 $=$ $1.5 pt$ $2 pt$ $4/4.17$ $5.4/5.1$ $=$ $1.12 pt$ $1.5 pt$ 4.5 5.5 $=$ $1 pt$ $1.33 pt$ 5 6.1 $=$ $15 fl oz$ $1.25 pt$ Add AMS fertilizer at 4 lb/100 gal, or more for hard water. Sprayer overlap may result in yellowing, delayed flowering, and growth reduction. Allow a minimum interval of 10 days between

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