

5. PREPLANT & POSTHARVEST WEED CONTROL

TABLE 5-1. Herbicides Available for Preplant Site Preparation

LEGEND: ✓ = Registered for use as a preplant application prior to this crop. x = not indicated for use on this crop
 * = Numerous products exist, refer to Table 3-1. *Herbicides Used in Ontario* for a complete list of products.

CROP	2,4-D Ester	AIM	BLACKHAWK	dicamba*	CONQUER II	ELEVORE	ENLIST DUO	ERAGON LQ	EXPRESS SG	glyphosate*	PARDNER
Field Crops											
adzuki bean	x	✓	x	x	x	x	x	x	x	✓	x
alfalfa	x	x	x	x	x	x	x	x	✓	✓	x
barley	✓	✓	✓	x	✓	x	✓	✓	✓	✓	✓
canola	x	✓	x	x	✓	x	x	x	x	✓	✓
corn (conventional)	x	✓	✓	✓	✓	✓	✓	✓	x	✓	x
corn (Enlist Duo)	x	✓	✓	✓	✓	✓	✓	✓	x	✓	x
corn (Liberty Link)	x	✓	✓	✓	✓	✓	✓	✓	x	✓	x
Corn (Roundup Ready)	x	✓	✓	✓	✓	✓	✓	✓	x	✓	x
dry beans (Phaseolus spp.)	x	✓	x	x	x	x	x	x	✓	✓	x
flax	x	✓	x	x	x	x	x	x	x	✓	x
mustard	x	✓	x	x	x	x	x	x	x	✓	x
oats	x	✓	✓	✓	✓	x	x	✓	✓	✓	x
peas (field)	x	✓	x	x	x	x	x	x	✓	✓	x
rye	✓	✓	✓	x	✓	x	✓	x	x	✓	x
sorghum and millet	x	✓	x	x	x	x	x	x	x	✓	x
soybeans (conventional)	✓	✓	✓	x	x	✓	x	✓	✓	✓	x
soybeans (Enlist Duo)	✓	✓	✓	x	x	✓	✓	✓	✓	✓	x
soybeans (Liberty Link)	✓	✓	✓	x	x	✓	x	✓	✓	✓	x
soybeans (Roundup Ready)	✓	✓	✓	x	x	✓	x	✓	✓	✓	x
soybeans (Xtend)	✓	✓	✓	✓	x	x	x	✓	✓	✓	x
sunflower	x	✓	x	x	x	x	x	x	x	✓	x
wheat	✓	✓	✓	x	✓	x	✓	✓	✓	✓	✓

NOTES: Weed control ratings are given as 0–9 where 0 indicates no control and 9 indicates 90%–100% control under ideal conditions. Ratings are subjective values based on best available information and give general comparisons based on use as described in this guide. Under unfavourable conditions (e.g., too dry, too wet, too cold, or poor application) the herbicides may not be as effective as indicated. Ratings may vary with weed and crop stage and with the timing and rates of the product(s) being used. Always refer to the product label for more information on registered weed species, product uses and precautions.

TABLE 5–2. Preplant Herbicide Weed Control Ratings

LEGEND: Numbers (0–9) = weed control ratings ✓ = species is controlled if emerged x = species is NOT controlled – = insufficient information available to make a rating

Trade Name	WSSA group(s)	Annuals		Volunteer Crops				Glyphosate resistant				Perennials													
		annual grasses	annual broadleaves	alfalfa	canola	cereals	red clover	Canada fleabane	ragweed, common	ragweed, giant	waterhemp	bindweed, field	chickweed, mouse-eared	dandelion	goldenrod	ground-ivy (creeping charlie)	horsetail	mallow	milkweed	nutsedge	plantains	quackgrass	sow-thistle	thistle, Canada	vetches
Preplant Herbicides																									
2,4-D ESTER 700 ⁴	4	x	✓	9	8	0	6	6	8	9	8	–	3	6	–	–	–	–	–	0	8	0	8 ^{3,7}	8 ^{3,7}	8 ⁵
AIM EC	14	x	✓	0	8	0	0	0	–	–	8	–	–	–	–	–	–	8	–	0	–	0	–	–	–
BLACKHAWK	4,14	x	✓	9	8	0	6	6	8	9	8	–	–	6	–	–	–	8	–	0	8	0	7 ³	7 ³	–
CONQUER II	6,14	x	✓	–	8	–	–	6	9	7	8	6	9	6	–	–	–	7	–	–	–	–	6 ³	6 ³	6 ³
dicamba ⁴	4	x	✓	9	4	0	9	9	8	8	8	8 ⁵	–	–	–	–	–	–	–	0	–	0	8 ⁵	8 ⁵	8 ⁵
ELEVORE	4	x	✓	7	8	0	7	7	8	–	–	–	–	–	–	–	–	–	–	0	–	0	–	–	–
ENLIST DUO	4,9	✓	✓	9	8	9	6	6	8	9	8	8 ⁵	9	8	–	–	8	8 ⁵	8 ⁵	8 ⁵	8	9	8 ⁵	8 ⁵	8 ⁵
ERAGON LQ ¹	14	x	✓	3	8	1	3	8	8	6	4	✓ ¹	9	7 ²	–	–	✓ ³	–	✓ ¹	–	–	0	✓ ³	✓ ³	✓ ³
EXPRESS SG + glyphosate ⁴	2 + 9	✓	✓	–	9	9	–	–	–	–	–	–	9	8	–	–	–	–	–	–	–	8 ^{1,5}	8 ^{1,2,5}	8 ^{1,5}	–
glyphosate ⁴	9	✓	✓	9 ⁶	9 ⁶	9	8	0	0	0	0	8 ^{1,5}	9	8 ²	–	5	0	5	8 ^{1,5}	8 ^{1,2,5}	9	8 ^{1,5}	8 ^{1,2,5}	8 ^{1,5}	5
PARDNER	6	x	✓	0	8	0	0	6	8	6	–	–	–	–	–	–	–	–	–	0	–	0	–	–	–

¹ Optimum growth stages for best control of these weeds will not likely be attained prior to planting in early to mid spring.

² Use the 3.33 L/ha (1.34 L/acre) of glyphosate (540 g/L) for plants over 15 cm tall or across.

³ Top growth only, regrowth can be expected.

⁴ Numerous products exist. Refer to Table 3–1. *Herbicides Used in Ontario* for a complete list of products.

⁵ Repeated applications may be necessary.

⁶ Will not control glyphosate tolerant varieties.

⁷ The highest rate will be required to achieve this level of control.

TABLE 5–3. Specific Notes on Weeds Controlled and Product Rates Associated with Various Glyphosate Concentrations

LEGEND: * = Numerous products exist, refer to Table 3–1. *Herbicides Used in Ontario* for a complete list of products.

Glyphosate* Concentration	Product Rate/ha (/acre)	Weeds Controlled & Notes
360 g/L	0.75–3.5 L/ha (0.3–1.4 L/acre)	<ul style="list-style-type: none"> • For control of annual weeds. • Apply in 50–100 L/ha (20–40 L/acre) of water, or use surfactant with larger water volumes. • The highest rate is required for weeds over 15 cm in height. • For weeds smaller than 15 cm in height consult the product label for weed specific rates. • For actively growing weeds in the fall, or spring prior to emergence of any crop. • Allow 5–7 days translocation time after application before doing any tillage when conditions are good. If cool temperatures follow application, allow additional time for translocation to be completed before disturbing treated weeds. • Only weeds emerged at application time will be controlled.
450 g/L	0.6–2.8 L/ha (0.24–1.12 L/acre)	
480 g/L	0.55–2.6 L/ha (0.22–1.05 L/acre)	
500 g/L	0.55–2.5 L/ha (0.22–1 L/acre)	
540 g/L	0.5–2.3 L/ha (0.2–0.93 L/acre)	
360 g/L	2.5–7 L/ha (1–2.8 L/acre)	<ul style="list-style-type: none"> • For dandelions, quackgrass and other perennial weeds. • Apply when quackgrass has 3–4 new leaves. The low rate will provide a minimum of one season control while higher rates will provide longer term control of quackgrass. • For dandelions, apply the low rate when less than 15 cm in diameter and higher rates if greater than 15 cm in diameter.
450 g/L	2–5.6 L/ha (0.8–2.25 L/acre)	
480 g/L	1.88–5.25 L/ha (0.75–2.1 L/acre)	
500 g/L	1.8–5 L/ha (0.72–2 L/acre)	
540 g/L	1.67–4.68 L/ha (0.67–1.87 L/acre)	

TABLE 5–4. Herbicide Treatment Rates for Preplant Weed Control

ACTIVE INGREDIENT (rate)	TRADE NAME (Concentration)	PRODUCT RATE	PRECAUTIONS For more information, see Chapter 3, Herbicides Used in Ontario and Chapter 4, Notes on Adjuvants.
Preplant – Site Preparation Prior To Crop Emergence			
2,4-D (528 g/ha)	2,4-D ESTER 700 (660 g/L)	soybean: 0.8 L/ha (0.32 L/acre) cereals: 0.8–1.1 L/ha (0.32–0.44 L/acre)	<ul style="list-style-type: none"> • SOYBEANS: Apply a minimum of 7 days before planting soybean. • Apply to emerged giant ragweed. This treatment will not provide residual control of giant ragweed. • Do NOT use in sandy soils with less than 1% organic matter. Plant soybean seeds as deep as possible, but not less than 2.5 cm (1 in.). Adjust planter to ensure adequate coverage of planted seed. • University of Guelph research has demonstrated that the addition of metribuzin at 412.5 g a.i./ha improves the consistency of glyphosate resistant Canada fleabane control in soybean. • CEREALS (wheat, barley, rye): <ul style="list-style-type: none"> • Prior to seeding or after seeding but prior to crop emergence: • When weeds are less than 8 cm tall and actively growing, use the 0.8 L/ha (0.32 L/acre) rate. • If weeds are larger than 8 cm, or for harder-to-control weeds, use the 1.1 L/ha (0.44 L/acre) rate.
carfentrazone-ethyl (8.9–28 g/ha) + non-ionic surfactant (0.25% v/v)	AIM EC (240 g/L) + AGRAL 90 AIM EC (240 g/L) + AG-SURF	37–117 mL/ha (5–47 mL/acre) + 2.5 L/1,000 L	<ul style="list-style-type: none"> • Apply to actively growing weed up to 10 cm tall. • Coverage of the weeds is essential for good control.
carfentrazone-ethyl (8.9–28 g/ha) + surfactant/solvent (0.1 % v/v)	AIM EC (240 g/L) + MERGE	37–117 mL/ha (5–47 mL/acre) + 1 L/1,000 L	
pyraflufen-ethyl I (6.71 g/ha) /2,4-D ester (520 g/ha)	BLACKHAWK	1.1 L/ha (440 mL/acre)	<ul style="list-style-type: none"> • CEREALS: Can be applied prior to or after planting, but before crop emergence. EXCEPTION: oats, where BLACKHAWK must be applied a minimum of 7 days before planting. • SOYBEANS: Apply a maximum of 3 days after planting soybean. • For best results apply to emerged, young, actively growing weeds that are less than 10 cm tall or across. Thorough coverage of target weeds is essential. • Tank-mix with glyphosate to control a broader spectrum of emerged weeds. • Do NOT graze or cut treated crops for forage or hay until 30 days after application. • University of Guelph research has demonstrated that the addition of metribuzin at 412.5 g a.i./ha improves the consistency of glyphosate resistant Canada fleabane control in soybean
pyraflufen-ethyl (9 g/ha) /bromoxynil (280 g/ha)	CONQUER II (15/467 g/L)	0.6 L/ha (240 mL/acre)	<ul style="list-style-type: none"> • Can be applied prior to or after planting but prior to the emergence of barley, canola, corn, oats, rye, triticale and wheat. • Apply when weeds are in the seedling stage, actively growing and less than 5 cm tall or across. CONQUER II will only control susceptible weeds that are emerged at the time of application. • Tank-mix with glyphosate to control a broader spectrum of emerged weeds.
dicamba (0.288-0.6 kg/ha)	ENGENIA (600 g/L) FEXIPAN (350 g/L) XTENDIMAX (350 g/L)	0.48–1 L/ha (190–400 mL/acre) 0.82–1.71 L/ha (330–0.69L/acre)	<ul style="list-style-type: none"> • Dicamba + glyphosate may be applied to emerged annual grass and annual broadleaf weeds in reduced tillage systems prior to seeding of field corn and Roundup Ready 2 Xtend soybean varieties. • Do not apply prior to seeding sweet corn. For field corn, apply to medium to fine textured soils containing more than 2.5% organic matter. Do NOT use on sandy or sandy loam soil.

TABLE 5-4. Herbicide Treatment Rates for Preplant Weed Control (cont'd)

ACTIVE INGREDIENT (rate)	TRADE NAME (Concentration)	PRODUCT RATE	PRECAUTIONS For more information, see Chapter 3, Herbicides Used in Ontario and Chapter 4, Notes on Adjuvants.
Preplant – Site Preparation Prior To Crop Emergence (cont'd)			
halauxifen (5 g/ha)	ELEVORE (68.5 g/L) + methylated seed oil	73 mL/ha (29 mL/acre) 5–10 L/1,000 L	<ul style="list-style-type: none"> • Apply a minimum of 7 days before planting corn and soybeans and when weeds are actively growing at the 1–8 leaf stage. Plant to a minimum of 4 cm deep. • Applications made to very coarse-textured soils, low in organic matter (<3%) , or in fields with poor soil conditions may increase the risk of crop injury. • Use the higher rate of methylated seed oil when weed populations are high or environmental conditions are unfavourable. • ELEVORE only controls weeds emerged at the time of application. University of Guelph research has demonstrated that the addition of metribuzin at 412.5 g a.i./ha improves the consistency of glyphosate resistant Canada fleabane control in soybean.
2,4-D choline/ glyphosate (2,4-D: 427–640 g/ha) (glyphosate: 449–673 g/ha)	ENLIST DUO (194/204 g/L)	2.2–3.3 L/ha (0.88–1.32 L/acre)	<ul style="list-style-type: none"> • Apply before or after planting but before emergence of wheat, barley, rye and field corn. • Can be applied before and after the emergence of Enlist E3 soybean varieties only. • The low rate controls sensitive weeds up to 8 cm in height. • The high rate controls sensitive weeds up to 15 cm in height. • University of Guelph research has demonstrated that the addition of metribuzin at 412.5 g a.i./ha improves the consistency of glyphosate resistant Canada fleabane control in soybean.
saflufenacil (25.2–49.7– 101.1 g/ha) + glyphosate (0.9 kg/ha) + MERGE (1 L/ha)	ERAGON LQ + glyphosate (540 g/L) + MERGE	73–145–295 mL/ha (29.5–58–118 mL/acre) +1.67 L/ha (0.67 L/acre) + 1 L/ha (0.4 L/acre)	<ul style="list-style-type: none"> • SOYBEANS: Do NOT apply more than the 73 mL/ha (29.5 mL/acre) of ERAGON LQ. Apply as a surface application up to 21 days before planting. University of Guelph research has demonstrated that the addition of metribuzin at 412.5 g a.i./ha improves the consistency of glyphosate resistant Canada fleabane control in soybean. • CEREALS: Do NOT apply more than the 145 mL/ha (58 mL/acre) of ERAGON LQ. • CORN: Apply between 145 mL/ha (58 mL/acre) and 295 mL/ha (118 mL/acre) of ERAGON LQ. Apply before crop emergence. The low rate will only provide limited residual weed control.
tribenuron-methyl (7.5 g/ha) + glyphosate (450 g/ha)	EXPRESS SG (50%) + glyphosate (540 g/L)*	15 g/ha (6 g/acre) + 0.83 L/ha (0.33 L/acre)	<ul style="list-style-type: none"> • Apply as a PP burndown a minimum of 1 day prior to planting. • Apply in a total spray volume of 55–110 L/ha (22–44 L/acre). • EXPRESS SG will not provide residual weed control, but will enhance control of certain broadleaf weeds, allowing for a lower rate of glyphosate to be used. <p>* Numerous products exist, refer to Table 3-1. <i>Herbicides Used in Ontario</i> for a complete list of products.</p>
glyphosate (0.27–4.32 kg/ha)	glyphosate*	Refer to Table 5-3.	<ul style="list-style-type: none"> • For specific information on product rate and notes for annual and perennial weed control, refer to Table 5-3. <i>Specific Notes on Weeds Controlled and Product Rates Associated with Various Glyphosate Concentrations.</i> <p>* Numerous products exist, refer to Table 3-1. <i>Herbicides Used in Ontario</i> for a complete list of products.</p>

TABLE 5–4. Herbicide Treatment Rates for Preplant Weed Control (cont'd)

ACTIVE INGREDIENT (rate)	TRADE NAME (Concentration)	PRODUCT RATE	PRECAUTIONS For more information, see Chapter 3, Herbicides Used in Ontario and Chapter 4, Notes on Adjuvants.
Preplant – Site Preparation Prior To Crop Emergence (cont'd)			
bromoxynil (288 – 336 g/ha)	PARDNER (280 g/L)	1–1.2 L/ha (0.4–0.48 L/acre)	<ul style="list-style-type: none"> • Application can be made up to one day prior to seeding. DO NOT apply after seeding or crop emergence. • Apply at 1.0–1.25 L/ha (0.4–0.5 L/acre) tank-mixed with glyphosate (540 g/L) at 0.83–3.3 L/ha (0.33–1.32 L/acre). Under adverse growing conditions or heavy weed populations use of the higher recommended rate will improve control. PARDNER should be added to the spray tank first, then add glyphosate. Refer to the glyphosate label for the appropriate glyphosate use rate, precautions, mixing instructions and other use instructions.

NOTES: Weed control ratings are given as 0–9 where 0 indicates no control and 9 indicates 90%–100% control under ideal conditions. Ratings are subjective values based on best available information and give general comparisons based on use as described in this guide. Under unfavourable conditions (e.g., too dry, too wet, too cold, or poor application) the herbicides may not be as effective as indicated. Ratings may vary with weed and crop stage and with the timing and rates of the product(s) being used. Always refer to the product label for more information on registered weed species, product uses and precautions.

TABLE 5–5. Postharvest Weed Control Ratings

LEGEND: – = insufficient information available to make a rating

* = Various products available, see Table 3–1. *Herbicides Used in Ontario*

** = Use higher rates for weeds larger than 15 cm tall or across.

Treatment	WSSA GROUP	Grasses				Perennial Broadleaf Weeds											
		bluegrass, annual	quackgrass	volunteer wheat	wire stem muhly	alfalfa	bindweed, field	chickweed, mouse-eared	coltsfoot	clover, red	dandelion	hemp dogbane	milkweed	ground cherry	thistle, Canada	sow-thistle	vetch
Postharvest Herbicides																	
glyphosate*	9	9	9	9	9	8	9	9	8	8	8/9**	8	8	7	9	9	5
2,4-D*	4	0	0	0	0	9	7	2	–	5	7	–	0	–	6	7	7
BLACKHAWK	4, 14	0	0	0	0	9	7	2	–	5	7	–	0	–	7	7	7
ENGENIA, FEXAPAN or XTENDIMAX	4	0	0	0	0	9	8	9	7	9	8	8	7	6	8	9	8
DISTINCT 70WG	19, 4	0	0	0	0	–	8	9	7	9	8	8	7	6	8	9	8
LONTREL XC or PYRALID	4	0	0	0	0	9	–	–	–	9	–	–	–	–	9	9	9
ZIDUA	15	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 5–6. Specific Notes on Weeds Controlled and Product Rates Associated with Various Glyphosate Concentrations**LEGEND:** * = Numerous products exist, refer to Table 3–1. *Herbicides Used in Ontario* for a complete list of products.

Glyphosate* Concentration	Product Rate/ha (/acre)	Weeds Controlled & Notes
360 g/L	0.75–3.5 L/ha (0.3–1.4 L/acre)	<ul style="list-style-type: none"> • For control of annual weeds. • Apply in 50–100 L/ha (20–40 L/acre) of water, or use surfactant with larger water volumes. • The highest rate is required for weeds over 15 cm in height. • For weeds smaller than 15 cm in height consult the product label for weed specific rates. • For actively growing weeds in the fall, or spring prior to emergence of any crop. • Allow 5–7 days translocation time after application before doing any tillage when conditions are good. If cool temperatures follow application, allow additional time for translocation to be completed before disturbing treated weeds. • Only weeds emerged at application time will be controlled.
450 g/L	0.6–2.8 L/ha (0.24–1.12 L/acre)	
480 g/L	0.55–2.6 L/ha (0.22–1.05 L/acre)	
500 g/L	0.55–0.2.5 L/ha (0.22–1 L/acre)	
540 g/L	0.5–2.3 L/ha (0.2–0.93 L/acre)	
360 g/L	2.5–7 L/ha (1–2.8 L/acre)	<ul style="list-style-type: none"> • For dandelions and quackgrass. • Apply when quackgrass has 3–4 new leaves. • The low rate will provide a minimum of one season control while higher rates will provide longer term control of quackgrass. • For dandelions, apply the low rate if smaller than 15 cm in diameter and higher rates if greater than 15 cm in diameter.
450 g/L	2–5.6 L/ha (0.8–2.25 L/acre)	
480 g/L	1.88–5.25 L/ha (0.75–2.1 L/acre)	
500 g/L	1.8–5 L/ha (0.72–2 L/acre)	
540 g/L	1.67–4.68 L/ha (0.67–1.87 L/acre)	
360 g/L	7–12 L/ha (2.8–4.8 L/acre)	<ul style="list-style-type: none"> • For perennial broadleaf weeds. • Canada thistle and sow-thistle should be at least in early bud, milkweed at bud, bindweed at full flower and dogbane past full bloom for best results. • For undisturbed perennials (such as in sod or non-crop areas) use the highest rate and repeat when the plants re-grow to the optimum growth stages mentioned above.
450 g/L	5.6–9.6 L/ha (2.25–3.85 L/acre)	
480 g/L	5.25–9 L/ha (2.1–3.6 L/acre)	
500 g/L	5–8.75 L/ha (2–3.5 L/acre)	
540 g/L	4.68–8 L/ha (1.87–3.2 L/acre)	

TABLE 5–7. Herbicide Treatment Rates for Postharvest Weed Control

ACTIVE INGREDIENT (rate)	TRADE NAME (Concentration)	PRODUCT RATE	PRECAUTIONS For more information, see Chapter 3, Herbicides Used in Ontario and Chapter 4, Notes on Adjuvants.
Postharvest Grass and Broadleaf Herbicides			
glyphosate (0.27–4.32 kg/ha)	glyphosate*	See Table 5–6.	<ul style="list-style-type: none"> For specific information on product rate and notes for annual and perennial weed control, refer to Table 5–6. <i>Specific Notes on Weeds Controlled and Product Rates Associated with Various Glyphosate Concentrations.</i> * Numerous products exist, refer to Table 3–1. <i>Herbicides Used in Ontario</i> for a complete list of products.
Postharvest Broadleaf Herbicides			
2,4-D (0.85–1.655 kg/ha)	2,4-D ESTER 600* (564 g/L)	1.5–2.9 L/ha (0.6–1.16 L/acre)	<ul style="list-style-type: none"> Apply in the fall at the time of rapid growth. Use the higher rate for legumes and perennial weeds. For best results apply to actively growing vegetation at least 2 weeks before a killing frost. Do NOT apply before fall wheat or barley. * Numerous products exist, refer to Table 3–1. <i>Herbicides Used in Ontario</i> for a complete list of products.
	2,4-D ESTER 700* (660 g/L)	1.29–2.5 L/ha (0.52–1.0 L/acre)	
pyraflufen-ethyl (6.1 g/L) (6.71 g/ha) /2,4-D ester (473 g/L) (520 g/ha)	BLACKHAWK	1.1 L/ha (440 mL/acre)	<ul style="list-style-type: none"> For best results apply to emerged, young, actively growing weeds that are less than 10 cm tall or across. Thorough coverage of target weeds is essential. Tank-mix with glyphosate to control a broader spectrum of emerged weeds. Do NOT graze or cut treated crops for forage or hay until 30 days after application.
dicamba (0.6 kg/ha)	ENGENIA (600 g/L)	1 L/ha (0.4 L/acre)	<ul style="list-style-type: none"> Apply in the fall to actively growing vegetation at least 2 weeks prior to a killing frost. Do NOT apply before fall seeded crops. Only cereals, soybeans, field corn, sweet corn or white beans may be grown in the year after application.
	FEXAPAN (350 g/L)	1.71 L/ha (0.68 L/acre)	
	XTENDIMAX (350 g/L)		
clopyralid (150 g/ha)	LONTREL XC (600 g/L)	250 mL/ha (100 mL/acre)	<ul style="list-style-type: none"> For the control of Canada thistle, scentless chamomile, common groundsel, wild buckwheat, volunteer alfalfa and perennial sow-thistle. Legume crop species (alfalfa, dry beans, soybeans etc.) are very sensitive to LONTREL XC carryover. Soybeans can be planted 10 months after application of LONTREL XC. Refer to Table 3–4 for more information.
	PYRALID (300 g/L)	500 mL/ha (200 mL/acre)	

TABLE 5–7. Herbicide Treatment Rates for Postharvest Weed Control (cont'd)

ACTIVE INGREDIENT (rate)	TRADE NAME (Concentration)	PRODUCT RATE	PRECAUTIONS For more information, see Chapter 3, Herbicides Used in Ontario and Chapter 4, Notes on Adjuvants.
Postharvest Tank-mixes			
dicamba (0.6 kg/ha) + glyphosate (0.6 kg/ha) + non-ionic surfactant (0.35 L/ha)	ENGENIA (600 g/L) + glyphosate (540 g/L)* + non-ionic surfactant	1 L/ha (0.4 L/acre) + 1.11 L/ha (0.44 L/acre) + 0.35 L/ha (0.14 L/acre)	<ul style="list-style-type: none"> • Apply to actively growing vegetation at least 2 weeks prior to a killing frost. • For the control of red clover, volunteer cereals and annual broadleaf weeds. • Do NOT apply before fall seeded crops. <hr/> <p>* Numerous products exist, refer to Table 3–1. <i>Herbicides Used in Ontario</i> for a complete list of products.</p>
	FEXAPAN (350 g/L) + glyphosate (540 g/L)* + non-ionic surfactant	1.71 L/ha (0.68 L/acre) + 1.11 L/ha (0.44 L/acre) + 0.35 L/ha (0.14 L/acre)	
	XTENDIMAX (350 g/L) + glyphosate (540 g/L)* + non-ionic surfactant		
diflufenzopyr/dicamba (100–200 g/ha) + glyphosate (900 g/ha) + surfactant/solvent	DISTINCT (70 WG) + glyphosate (540 g/L) + MERGE	143–285 g/ha (58–115 L/acre) + 1.34 L/ha (0.67 L/acre) + 0.5 L/ha (0.2 L/acre)	<ul style="list-style-type: none"> • Apply to actively growing vegetation at least 2 weeks prior to a killing frost. • For the control of red clover, volunteer cereals and annual broadleaf weeds. • Do NOT apply before fall seeded crops.
	DISTINCT (70 WG) + glyphosate (540 g/L) + a non-ionic surfactant	143–285 g/ha (58–115 L/acre) + 1.34 L/ha (0.67 L/acre) + 0.25% v/v	
pyroxasulfone (60- 120 g/ha) + glyphosate (0.9 kg/ha)	ZIDUA SC (500 g/L) + glyphosate (540 g/L)	120–240 mL/ha (48–96 L/acre) + 1.34 L/ha (0.67 L/acre)	<ul style="list-style-type: none"> • ZIDUA SC will provide residual control of annual bluegrass and should be tank-mixed with glyphosate to control any emerged weeds after harvest. • Use the higher rate for a longer period of residual weed control or when there are heavy populations of annual bluegrass in the field.
pyroxasulfone (60- 120 g/ha) + dicamba (0.6 kg/ha) + glyphosate (0.6 kg/ha)	ZIDUA SC (500 g/L) + ENGENIA (600 g/L) + glyphosate (540 g/L)	120–240 mL/ha (48–96 L/acre) + 1 L/ha (0.4 L/acre) + 1.11 L/ha (0.44 L/acre)	<ul style="list-style-type: none"> • ZIDUA SC will provide residual control of annual bluegrass and should be tank-mixed with glyphosate to control any emerged weeds after harvest. • The addition of dicamba will improve control of tough to control perennial legume species such as alfalfa, red clover or tufted vetch. • Use the higher rate of ZIDUA SC for a longer period of residual weed control or when there are heavy populations of annual bluegrass in the field.

TABLE 5–7. Herbicide Treatment Rates for Postharvest Weed Control (cont'd)

ACTIVE INGREDIENT (rate)	TRADE NAME (Concentration)	PRODUCT RATE	PRECAUTIONS For more information, see Chapter 3, Herbicides Used in Ontario and Chapter 4, Notes on Adjuvants.
Spot Treatments with Hand-Held Equipment			
glyphosate (0.36–0.72 kg/100 L)	glyphosate (360 g/L)*	1 L/2 L/100 L	<ul style="list-style-type: none"> • For actively growing weeds. Direct spray to avoid desirable vegetation. • Allow 5–7 days translocation time after application before doing any mowing or tillage when conditions are good. If cool temperatures follow application, allow additional time for translocation to be completed before disturbing treated weeds. • Canada thistle and sow-thistle should be at least in early bud, milkweed at bud, bindweed at full flower, and dogbane past full bloom, and quackgrass with 3–4 new leaves for best results. <hr/> <p>* Numerous products exist, refer to Table 3–1. <i>Herbicides Used in Ontario</i> for a complete list of products.</p>
	glyphosate (450 g/L)*	0.8–1.6 L/100 L	
	glyphosate (480 g/L)*	0.75–1.5 L/100 L	
	glyphosate (500 g/L)*	0.72–1.44 L/100 L	
	glyphosate (540 g/L)*	0.67–1.34 L/100 L	
Wick Wiper and Roller Application			
glyphosate (0.36 kg/2 L water)	glyphosate (360 g/L)*	1 L/2 L water	<ul style="list-style-type: none"> • Wick wiper applications for use on soybeans, white beans, apple, cherry, peach, pear, plum, grape, strawberries and cranberries. • Apply to weeds that extend above the crop sufficiently to allow good contact with the application equipment. • Do NOT contact the crop with the equipment or allow the chemical solution to drip from the applicator onto the crop. • A 33% herbicide mixture (1 L/2 L of water) provides good control of most weeds. <hr/> <p>* Numerous products exist, refer to Table 3–1. <i>Herbicides Used in Ontario</i> for a complete list of products.</p>
	or glyphosate (450 g/L)*	0.8 L/2 L water	
	or glyphosate (480 g/L)*	0.75 L/2 L water	
	or glyphosate (500 g/L)*	0.72 L/2 L water	
	or glyphosate (540 g/L)*	0.67 L/2 L water	