

# 11. OTHER FIELD CROPS

**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 unfavorable 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. Please see product label for more information on registered weed species, product uses and precautions.

**TABLE 11–1. Canola, Flax, Hemp, Millet, Mustard, Peanut, Sorghum, Sunflower Herbicide Weed Control Ratings**

**LEGEND:** Numbers (0–9) = weed control ratings      – = insufficient information available to make a rating      ✓ = can be used on this crop      x = not indicated for use on this crop  
R = populations resistant to this herbicide exist in Ontario and won't be adequately controlled if present.

Trade Name	WSSA Group(s)	Crop							Annual Grasses							Annual Broadleaves							Perennials												
		canola	flax	hemp	mustard	peanuts	sorghum and millet	sunflowers	barnyard grass	crabgrass	fall panicum	foxtails	witchgrass	proso millet	wild oats	vol. corn	vol. cereals	buckwheat, wild	cocklebur	fleabane, Canada	lady's thumb	lamb's-quarters	wild mustard	nightshade, annual	pigweed	ragweed, common	ragweed, giant	velvetleaf	waterhemp	field bindweed	horsetail	milkweed	nutsedge	quackgrass	sow-thistle
<b>Soil Applied Grass Herbicides</b>																																			
EPTAM	8	x	✓	x	x	x	✓	9	9	9	9	9	7	8	–	–	4	2	0	7	7	5	7	7	5	3	5	–	–	–	–	8	5	–	–
DUAL II MAGNUM or KOMODO	15	x	x	x	x	✓	x	9	9	9	9	9	4	4	0	4	2	2	0	2	7	2	8	8	4	3	2	7	0	0	0	8	0	0	0
FRONTIER MAX	15	x	x	x	x	✓	x	9	9	9	9	9	4	4	0	4	2	2	0	2	7	2	8	8	4	3	2	7	0	0	0	8	0	0	0
TREFLAN, BONANZA, RIVAL or TRIFLUREX	3	✓	x	x	✓	x	✓	9	9	9	9	9	7	8	–	–	5	2	0	2	8	2	2	8	2	2	2	–	2	2	2	2	2	2	2
ZIDUA SC	15	x	x	x	x	x	✓	9	9	8	9	9	4	6	0	2	2	2	0	2	7	2	8	8	4	3	2	7	0	0	0	8	0	0	0
<b>Soil Applied Broadleaf Herbicides</b>																																			
AUTHORITY 480	14	x	✓	x	x	x	✓	–	–	–	–	–	–	–	–	–	9	–	–	–	9	–	9	9	4	–	–	6	–	–	–	–	–	–	
CALLISTO or MESTER	27	x	✓	x	x	x	✓	2	4	0	2	2	2	–	0	0	8	8	8	9	9	9	9	9	7	7	9	–	2	0	0	0	0	0	
<b>Soil Applied Grass and Broadleaf Herbicides</b>																																			
EDGE	3	x	x	✓	x	x	x	8	8	8	8	8	–	6	–	6	8	–	–	–	8	–	–	8	–	–	–	–	–	–	–	–	–	–	–

<sup>1</sup> Use only on crops planted with certified canola seed designated as “Roundup Ready” canola. See Table 3–2, *Glyphosate Products, Registered Uses and Rates Needed for a complete list of registered products.*

<sup>2</sup> Use only on crops planted with certified canola seed designated as “Liberty Link” canola.

<sup>3</sup> Use only on crops planted with certified canola seed designated as “Pursuit Tolerant” canola products.

<sup>4</sup> Various formulations available, see Table 3–1, *Herbicides Used in Ontario.* See label for specific uses and rates.

**TABLE 11–1. Canola, Flax, Millet, Mustard, Peanut, Sorghum, Sunflower Herbicide Weed Control Ratings (cont'd)**

**LEGEND:** Numbers (0–9) = weed control ratings      – = insufficient information available to make a rating      ✓ = can be used on this crop      x = not indicated for use on this crop  
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		canola	flax	hemp	mustard	peanuts	sorghum and millet	sunflowers	barnyard grass	crabgrass	fall panicum	foxtails	witchgrass	proso millet	wild oats	vol. corn	vol. cereals	buckwheat, wild	cocklebur	fleabane, Canada	lady's thumb	lamb's-quarters	wild mustard	nightshades, annual	pigweed	ragweed, common	ragweed, giant	velvetleaf	waterhemp	field bindweed	horsetail	milkweed	nutsedge	quackgrass	sow-thistle	thistle, Canada		
<b>Postemergence Grass Herbicides</b>																																						
ASSURE II, CONTENDER or YUMA GL	1	✓	✓	✓	x	x	x	x	9	8	9	9	9	9	9	9	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DUAL II MAGNUM	1	x	x	x	x	x	✓	x	7	7	-	7	-	-	-	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
POAST ULTRA	1	✓	✓	x	✓	x	x	✓	9	8	9	9	9	9	8	8	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SELECT or clethodim <sup>4</sup>	1	✓	✓	x	x	x	x	✓	9	8	9	9	9	9	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
VENTURE L	1	✓	x	x	x	✓	x	✓	9	8	9	8	9	8	9	9	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<b>Postemergence Broadleaf Herbicides</b>																																						
BASAGRAN	6	x	✓	x	x	x	✓	x	0	0	0	0	0	0	0	0	0	7	9	5	9	7	9	7	7	8	6	9	1	6	2	2	8	0	6	7		
BUCTRIL M or bromoxynil/MCPA <sup>4</sup>	6,4	x	✓	x	x	x	x	x	0	0	0	0	0	0	0	0	0	9	8	6	9	9	9	9	9	9	7	9	6	7	7	0	0	0	0	7	7	
LONTREL XC	4	✓	x	x	x	x	x	x	0	0	0	0	0	0	0	0	0	8	-	9	3	5	0	-	5	8	9	-	9	3	-	-	0	0	8	8		
MCPA <sup>4</sup>	4	x	✓	x	x	x	x	x	0	0	0	0	0	0	0	0	0	2	7	7	0	9	9	-	9	9	9	7	6	7	7	0	0	0	0	7	7	
MUSTER	2	✓	x	x	x	x	x	x	0	0	0	0	0	0	0	-	0	2	0	-	0	2	9	2	8	2	1	0	-	0	0	0	0	0	0	0		
PARDNER or bromoxynil <sup>4</sup>	6	x	x	x	x	x	✓	x	0	0	0	0	0	0	0	0	0	9	7	-	9	9	8	9	8 <sup>R</sup>	9	-	9	-	7	0	0	0	0	7	7		
PEAK + DICAMBA <sup>4</sup>	2	x	x	x	x	x	✓	x	0	0	0	0	0	0	0	0	-	9	6	9	9	9	9	9	9	9	7	9	5	-	-	-	-	-	7	7		

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<sup>2</sup> Use only on crops planted with certified canola seed designated as "Liberty Link" canola.

<sup>3</sup> Use only on crops planted with certified canola seed designated as "Pursuit Tolerant" canola products.

<sup>4</sup> Various formulations available, see Table 3–1, *Herbicides Used in Ontario*. See label for specific uses and rates.

**TABLE 11–1. Canola, Flax, Millet, Mustard, Peanut, Sorghum, Sunflower Herbicide Weed Control Ratings (cont'd)**

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<b>Postemergence Grass and Broadleaf Herbicides – For Use With Herbicide Tolerant Canola Varieties</b>																																					
glyphosate <sup>1</sup>	9	✓ <sup>1</sup>	x	x	x	x	x	x	9	9	9	9	9	9	9	9	8	9	9 <sup>R</sup>	8	9	9	9	9	9 <sup>R</sup>	8 <sup>R</sup>	9	9 <sup>R</sup>	7/8	5	8	8	9	8	9		
LIBERTY <sup>2</sup>	10	✓ <sup>2</sup>	x	x	x	x	x	x	9	9	9	9	9	9	8	–	8	9	7	8	9	9	9	9	9	–	8	5	6	6	–	6	6	8	7		
<b>Postemergence Tank-Mixes</b>																																					
POAST ULTRA + BUCTRIL M <sup>4</sup>	1 +6.4	x	✓	x	x	x	x	x	9	8	9	9	9	9	8	8	7	9	8	6	9	9	9	9	8	9	7	9	6	7	7	–	–	6	7	7	
POAST ULTRA + LONTREL	1+4	✓	x	x	x	x	x	x	9	8	9	9	9	9	8	8	7	8	–	9	3	5	0	–	5	8	9	–	9	3	–	–	0	6	8	8	
POAST ULTRA + MCPA <sup>4</sup>	1+4	x	✓	x	x	x	x	x	9	8	9	9	9	9	8	8	7	2	7	7	0	9	9	–	9	9	9	7	6	7	8	0	0	6	7	7	
POAST ULTRA + MUSTER	1+2	✓	x	x	x	x	x	x	9	8	9	9	9	9	8	8	7	2	0	–	0	2	9	2	8	2	–	0	–	0	0	0	0	6	0	0	
SELECT (clethodim) <sup>4</sup> + BUCTRIL M <sup>4</sup>	1 +4,6	x	✓	x	x	x	x	x	9	8	9	9	9	9	–	–	–	9	8	6	9	9	9	9	8	9	7	9	6	7	7	–	–	7	7	7	
VENTURE + LONTREL	1+4	✓	x	x	x	x	x	x	9	8	9	8	9	8	9	9	9	8	–	9	3	5	0	–	5	8	9	–	9	3	–	–	0	9	8	8	
VENTURE + MUSTER	1+4	✓	x	x	x	x	x	x	9	8	9	8	9	8	9	9	9	2	0	–	0	2	9	2	8	2	–	0	–	0	0	0	0	9	0	0	

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<sup>4</sup> Various formulations available, see Table 3–1, *Herbicides Used in Ontario*. See label for specific uses and rates.

**Herbicide Treatments include:**

- Preplant (PP) – Also see Chapter 5 *Preplant & Postharvest Weed Control*, for details of products, rates and remarks.
- Preplant Incorporated (PPI) – Two incorporations at right angles operating at a depth of 10 cm using a double disk (7–10 km/h) or vibrating shank S-tine cultivator (10–13 km/h) are required unless otherwise stated. Cultivation-type equipment used for herbicide incorporation is known to spread perennial weeds to previously uninfested areas. Ensure machines are clean and/or treat fields with perennial weeds last.
- Preemergence (PRE) – Rainfall of 15–20 mm within 10 days after application is necessary to activate preemergence treatments. Shallow cultivation, rotary hoeing or harrowing will control weed escapes and improves herbicide activity in the absence of rainfall.
- Postemergence (POST) – Leaf stage of the weeds is critical for good weed control. Smaller weeds are usually more sensitive to herbicide injury. Apply according to leaf stages specified on the pesticide label. Crop stage is important to optimize crop safety. Adjuvants will frequently improve the weed control when used as directed. Weather or other conditions may influence the optimum rate of adjuvant, see the product label for more details. Always use appropriate drift management technology.

**TABLE 11–2.** Herbicide Treatment Rates for Field Crops

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.
<b>CANOLA – WINTER AND SPRING PLANTED</b>			
<b>Canola – Soil Applied Grass Herbicides</b>			
trifluralin (0.6–1.147 kg/ha)	TREFLAN EC (480 g/L)	1.25–2.4 L/ha (0.5–0.96 L/acre)	<ul style="list-style-type: none"> <li>• Apply PPI.</li> <li>• Strongly absorbed to soil particles, negligible leaching.</li> </ul>
	RIVAL (500 g/L)	1.2–2.3 L/ha (0.4–0.76 L/acre)	
	BONANZA 480 (480 g/L)	1.25–2.4 L/ha (0.5–0.96 L/acre)	
	TRIFLUREX 40 EC (412 g/L)	1.46–2.78 L/ha (0.58–1.1 L/acre)	
<b>Canola – Postemergence Grass Herbicides</b>			
quizalofop-p-ethyl (0.036–0.072 kg/ha) + oil concentrate (0.5% v/v)	ASSURE II (96 g/L) + SURE-MIX	0.375–0.75 L/ha (0.15–0.3 L/acre) + 5 L/1,000 L	<ul style="list-style-type: none"> <li>• Apply to annual grasses and volunteer cereals in the 2 leaf to tillering stage and to quackgrass in the 2–6 leaf stage of growth.</li> <li>• Canola is tolerant at all growth stages.</li> <li>• <b>Do NOT</b> apply to canola within 64 days of harvest.</li> </ul>
	CONTENDER (96 g/L) + CONTENDER MSO		
	YUMA GL (96 g/L) + XA OIL CONCENTRATE		
sethoxydim (0.15–0.2 kg/ha) + surfactant/solvent (1–2 L/ha)	POAST ULTRA (450 g/L) + MERGE	0.32–0.47 L/ha (0.13–0.19 L/acre) + 1–2 L/ha (0.4–0.8 L/acre)	<ul style="list-style-type: none"> <li>• Apply at 1–6 leaf stages of annual grasses.</li> <li>• Canola is tolerant at all growth stages.</li> </ul>
sethoxydim (0.5 kg/ha) + surfactant/solvent (1–2 L/ha)	POAST ULTRA (450 g/L) + MERGE	1.1 L/ha (0.45 L/acre) + 1–2 L/ha (0.4–0.8 L/acre)	<ul style="list-style-type: none"> <li>• Use this rate for quackgrass control.</li> <li>• Thorough preplant tillage will provide more uniform quackgrass emergence.</li> <li>• Apply to quackgrass in the 1–3 leaf stage of growth.</li> </ul>

**TABLE 11–2. Herbicide Treatment Rates for Field Crops (cont'd)**

<b>ACTIVE INGREDIENT (rate)</b>	<b>TRADE NAME (Concentration)</b>	<b>PRODUCT RATE</b>	<b>PRECAUTIONS</b> For more information, see Chapter 3, Herbicides Used in Ontario and Chapter 4, Notes on Adjuvants.
<b>Canola – Postemergence Grass Herbicides (Cont'd)</b>			
clethodim (45-90 g/ha) + surfactant (0.5% v/v)	SELECT (240 g/L) + AMIGO  STATUE (240 g/L) + CARRIER  ANTLER (240 g/L) + X-ACT or ADAMA ADJUVANT 80  CLETHODIM 240 (240 g/L) + SURF-ACT  ARROW ALL-IN (120 g/L)	188–375 mL/ha (75-150 mL/acre)          380-760 mL/ha (152-304 mL/acre)	<ul style="list-style-type: none"> <li>• Canola is tolerant at all growth stages.</li> <li>• Apply to annual grasses and volunteer cereals in the 2–6 leaf stage of growth.</li> <li>• Suppression of quackgrass when applied at the higher dose.</li> <li>• Preharvest Interval (PHI) is 60 days.</li> <li>• ARROW ALL-IN has an adjuvant included in its formulation, therefore does not require the addition of an adjuvant that is required when using SELECT or STATUE.</li> </ul>
fluazifop-p-butyl (0.100 kg/ha)	VENTURE L (125 g/L)	0.8 L/ha (0.32 L/acre)	<ul style="list-style-type: none"> <li>• For the control of volunteer cereals.</li> <li>• Apply at the 2–5 leaf stage of volunteer cereals.</li> </ul>
fluazifop-p-butyl (0.125–0.175 kg/ha)	VENTURE L (125 g/L)	1.0–1.4 L/ha (0.4–0.57 L/acre)	<ul style="list-style-type: none"> <li>• Apply to annual grasses in the 2–5 leaf stage of growth and 3–5 leaf stage of quackgrass.</li> <li>• Use the 1.4 L/ha (0.57 L/acre) rate for a mixed stand of annual grasses and quackgrass.</li> <li>• <b>Do NOT</b> apply VENTURE to canola later than the 5 leaf stage of crop growth.</li> </ul>
<b>Canola – Postemergence Broadleaf Herbicides</b>			
clopyralid (0.15–0.2 kg/ha)	LONTREL XC (600 g/L)	0.25–0.33 L/ha (100-132 mL/acre)	<ul style="list-style-type: none"> <li>• Use <b>only</b> on the following cultivars: CYCLONE, EBONY, JEWEL, 46A65 and HYOLA 401.</li> <li>• Apply one postemergence application per season at the 2–6 leaf stage of canola.</li> <li>• Apply to Canada thistle at the rosette to pre-bud stage.</li> </ul>
ethametsulfuron-methyl (11 g/ha) + surfactant (0.2% v/v)	MUSTER (75 DF) + AGRAL 90	15 g/ha (6 g/acre) + 2 L/1,000 L	<ul style="list-style-type: none"> <li>• <b>Do NOT</b> apply MUSTER to Polish varieties of canola as crop injury may result.</li> <li>• Apply when the wild mustard in the cotyledon to 6 leaf stages, before the crop begins to bolt.</li> <li>• <b>Do NOT</b> apply to winter planted canola.</li> <li>• <b>Do NOT</b> plant to any crop except winter wheat in the year of treatment.</li> <li>• <b>Do NOT</b> feed or graze treated crop within 60 days of application.</li> </ul>
<b>Canola – Postemergence Grass and Broadleaf Herbicides</b>			
sethoxydim (0.15–0.2 kg/ha) + clopyralid (0.15–0.2 kg/ha) + surfactant/solvent (0.75–1 L/ha)	POAST ULTRA (450 g/L) + LONTREL XC (600 g/L) + MERGE	0.32–0.47 L/ha (0.13–0.19 L/acre) + 0.25–0.33 L/ha (100-132 mL/acre) + 0.75–1 L/ha (0.3–0.4 L/acre)	<ul style="list-style-type: none"> <li>• Apply when canola is between the 2–6 leaf stages.</li> <li>• LONTREL is used on the following cultivars <b>only</b>: CYCLONE, EBONY, JEWEL, 46A65 and HYOLA 401.</li> <li>• Add half the amount of water to tank, add the required amount of POAST ULTRA, and then add the required amount of LONTREL. Add MERGE last along with remaining amount of water to fill the tank.</li> </ul>
sethoxydim (0.15–0.2 kg/ha) + ethametsulfuron-methyl (11 g/ha) + surfactant/solvent (0.75–1 L/ha)	POAST ULTRA (450 g/L) + MUSTER (75 DF) + MERGE	0.32–0.47 L/ha (0.13–0.19 L/acre) + 15 g/ha (6 g/acre) + 0.75–1 L/ha (0.3–0.4 L/acre)	<ul style="list-style-type: none"> <li>• <b>Do NOT</b> apply to winter planted canola.</li> <li>• Apply when canola is between the 2 leaf stage and bolting.</li> <li>• Add MUSTER to the tank first and agitate. Once MUSTER is in suspension add the required amount of POAST ULTRA, followed by the correct amount of MERGE.</li> </ul>

**TABLE 11–2. Herbicide Treatment Rates for Field Crops (cont'd)**

<b>ACTIVE INGREDIENT (rate)</b>	<b>TRADE NAME (Concentration)</b>	<b>PRODUCT RATE</b>	<b>PRECAUTIONS</b> For more information, see Chapter 3, Herbicides Used in Ontario and Chapter 4, Notes on Adjuvants.
<b>Canola – Postemergence Grass and Broadleaf Herbicides (Cont'd)</b>			
sethoxydim (0.15–0.2 kg/ha) + ethametsulfuron-methyl (11 g/ha) + clopyralid (0.15 kg/ha) + surfactant/solvent (0.75–1 L/ha)	POAST ULTRA (450 g/L) + MUSTER (75 DF) + LONTREL XC (600 g/L) + MERGE	0.32–0.47 L/ha (0.13–0.19 L/acre) + 15 g/ha (6 g/acre) + 0.25 L/ha (100 mL/acre) + 0.75–1 L/ha (0.3–0.4 L/acre)	<ul style="list-style-type: none"> <li>• <b>Do NOT</b> apply to winter planted canola.</li> <li>• Apply when canola is between the 2 leaf stage and bolting.</li> <li>• Add MUSTER to the tank first and agitate. Once MUSTER is in suspension add the required amount of POAST ULTRA, followed by the correct amount of MERGE.</li> </ul>
fluazifop-p-butyl 0.125–0.175 kg/ha + clopyralid (0.15–0.2 kg/ha)	VENTURE L (125 g/L) + LONTREL XC (600 g/L)	1.0–1.4 L/ha (0.4–0.57 L/acre) + 0.25–0.33 L/ha (100–132 mL/acre)	<ul style="list-style-type: none"> <li>• <b>Do NOT</b> apply VENTURE to canola later than the 5 leaf stage of crop growth.</li> <li>• LONTREL is to be used <b>ONLY</b> on the following cultivars: CYCLONE, EBONY, JEWEL, 46A65 and HYOLA 401.</li> <li>• Add VENTURE to the tank first and agitate before adding LONTREL L.</li> </ul>
fluazifop-p-butyl (0.125–0.175 kg/ha) + ethametsulfuron-methyl (11 g/ha)	VENTURE L (125 g/L) + MUSTER (75 DF)	1.0–1.4 L/ha (0.4–0.57 L/acre) + 15 g/ha (6 g/acre)	<ul style="list-style-type: none"> <li>• <b>Do NOT</b> apply to winter planted canola.</li> <li>• <b>Do NOT</b> apply VENTURE to canola later than the 5 leaf stage of crop growth.</li> <li>• <b>Do NOT</b> apply MUSTER tank-mix to Polish varieties of canola as crop injury may result.</li> <li>• Add MUSTER to the tank-mix first and agitate before adding VENTURE.</li> </ul>
<b>Canola – Postemergence Grass and Broadleaf Herbicides (for use with herbicide tolerant varieties only)</b>			
glyphosate (0.297–0.45 kg/ha)	glyphosate (360 g/L)*	0.825–1.25 L/ha (0.33–0.5 L/acre)	<ul style="list-style-type: none"> <li>• For use only with pedigreed (certified) canola seed designated as “Roundup Ready” canola.</li> <li>• Apply up to the 6 leaf stage of the canola. A second application may be made for later flushes emerging after the initial application and for improved results on perennial weeds.</li> <li>• The higher rate should be used when weeds are larger, when weed pressure is high and for perennial weeds.</li> </ul> <p>* See Table 3–1. <i>Herbicides Used in Ontario</i>, for formulations available. See label for specific uses and rates.</p>
	glyphosate (480 g/L)*	0.62–0.94 L/ha (0.25–0.38 L/acre)	
	glyphosate (540 g/L)*	0.55–0.83 L/ha (0.22–0.33 L/acre)	
glufosinate ammonium (0.50 kg/ha)	LIBERTY 200 SN (200 g/L)	2.5 L/ha (1 L/acre)	<ul style="list-style-type: none"> <li>• LIBERTY 200 SN can be applied from the cotyledon to the early bolting stage of canola.</li> <li>• For use only with canola seed designated as “Liberty Link” canola.</li> <li>• Ammonium sulphate can be applied at 6 L/ha (2.4 L/acre) (liquid) or 3.3 kg/ha (1.3 kg/acre) (dry) for improved control of specific weeds.</li> <li>• <b>Do NOT</b> add oil or any other surfactants.</li> </ul>

**TABLE 11-2. Herbicide Treatment Rates for Field Crops (cont'd)**

<b>ACTIVE INGREDIENT (rate)</b>	<b>TRADE NAME (Concentration)</b>	<b>PRODUCT RATE</b>	<b>PRECAUTIONS</b> For more information, see Chapter 3, Herbicides Used in Ontario and Chapter 4, Notes on Adjuvants.
<b>Canola – Postemergence Grass and Broadleaf Herbicides (for use with herbicide tolerant varieties only) (Cont'd)</b>			
glyphosate (0.45 kg/ha)	glyphosate (360 g/L)* + LONTREL XC (600 g/L)	1.25 L/ha (0.5 L/acre) + 170 mL/ha (68 mL/acre)	<ul style="list-style-type: none"> <li>• For use only with certified canola seed designated as “Roundup Ready” canola.</li> <li>• Provides season long top growth control of Canada thistle and control of wild buckwheat.</li> <li>• Apply when canola is in the 2–6 leaf stage.</li> <li>• Apply in 100 L/ha (40 L/acre) of water.</li> <li>• For more information on weed controlled and rates, refer to the LONTREL and appropriate glyphosate product labels.</li> </ul>
+ clopyralid (0.10 kg/ha)	glyphosate (480 g/L)* + LONTREL XC (600 g/L)	0.94 L/ha (0.38 L/acre) + 170 mL/ha (68 mL/acre)	
	glyphosate (540 g/L)* + LONTREL XC (600 g/L)	0.83 L/ha (0.33 L/acre) + 170 mL/ha (68 mL/acre)	
<b>Canola – Preharvest</b>			
glyphosate (0.9 kg/ha)	glyphosate (360 g/L)*	2.5 L/ha (1 L/acre)	<ul style="list-style-type: none"> <li>• Apply in 50–100 L/ha (20–40 L/acre) water when the crop is less than 30% grain moisture, when pods are green to yellow and seeds are yellow to brown and 7–14 days prior to harvest and use ground application only.</li> <li>• <b>Do NOT</b> apply to seed crops.</li> </ul>
	glyphosate (480 g/L)*	1.875 L/ha (0.75 L/acre)	
	glyphosate (540 g/L)*	1.67 L/ha (0.67 L/acre)	
<b>Canola – Harvest-Aid</b>			
saflufenacil (25.2–49.7 g/ha) + adjuvant	ERAGON LQ (342 g/L) + MERGE	73–146 mL/ha (29.5–59 mL/acre) + 1 L/ha (0.4 L/acre)	<ul style="list-style-type: none"> <li>• Apply when 80% of seeds have changed colour.</li> <li>• Apply in 200 L/ha (80 L/acre) of water.</li> <li>• Preharvest interval (PHI) is 3 days.</li> </ul>
saflufenacil (25.2–49.7 g/ha) + glyphosate (900 g/ha) + adjuvant	ERAGON LQ (342 g/L) + glyphosate (360 g/L) MERGE	73–146 mL/ha (29.5–59 mL/acre) + 2.5 L/ha (1 L/acre) + 1 L/ha (0.4 L/acre)	<ul style="list-style-type: none"> <li>• Apply when 80% of seeds have changed colour</li> <li>• Apply in 200 L/ha (80 L/acre) of water.</li> <li>• <b>Do NOT</b> apply to crops grown for seed.</li> <li>• Preharvest interval (PHI) is 3 days.</li> </ul>
diquat (0.3–0.408 kg/ha) + surfactant (0.1% v/v)	REGLONE DESICCANT (240 g/L) + AGRAL 90 BOLSTER DESICCANT (240 g/L) + AGRAL 90 ARMORY (240 g/L) + AGRAL 90 DESSICASH DESICCANT (240 g/L) + AGRAL 90	1.25–1.7 L/ha (0.5–0.68 L/acre) + 1 L/1,000	<ul style="list-style-type: none"> <li>• Apply when crop is 80%–90% seed turn (green to brown) stage.</li> <li>• Harvest no later than 14 days after herbicide application to avoid pod shatter.</li> <li>• Use higher rate for heavy canopy.</li> <li>• Use minimum of 225 L/ha spray volume.</li> <li>• <b>Drift</b> will injure adjacent crops or plants.</li> </ul>

**TABLE 11-2. Herbicide Treatment Rates for Field Crops (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.
<b>FLAX</b>			
<b>Preplant (PP) – See Chapter 5 Preplant &amp; Postharvest Weed Control, for details of products, rates and remarks.</b>			
<b>Flax – Soil Applied Broadleaf Herbicides</b>			
sulfentrazone (105–140 g/ha)	AUTHORITY (480 g/L)	219–292 mL/ha (88–117 mL/acre)	<ul style="list-style-type: none"> <li>• Apply PP or PRE but no later than 3 days after planting.</li> <li>• Some rotational cropping restrictions apply (see Table 3–3. <i>Herbicide Crop Rotation and Soil pH Restrictions: Field Crops</i>).</li> <li>• <b>Do NOT</b> apply to flax grown on coarse-textured (sandy) soils.</li> <li>• <b>Do NOT</b> apply to soils with organic matter greater than 6%.</li> <li>• <b>Do NOT</b> apply to soils with a pH greater than 7.8.</li> <li>• The highest use rate should be used when applied to soils with a pH of less than 7 and with organic matter greater than 3% but less than 6%.</li> </ul>
mesotrione (140 g/ha)	CALLISTO (480 g/L) MESTER 480 SC (480 g/L)	0.3 L/ha (0.12 L/acre)	<ul style="list-style-type: none"> <li>• Apply PRE.</li> <li>• If flax is emerged at time of application, severe injury will occur.</li> <li>• <b>Do NOT</b> graze treated immature crops or cut for forage or hay.</li> </ul>
<b>Flax – Postemergence Grass Herbicides</b>			
quazifop-p-ethyl (0.036–0.072 kg/ha) + oil concentrate (0.5% v/v)	ASSURE II (96 g/L) + SURE-MIX CONTENDER (96 g/L) + CONTENDER MSO YUMA GL (96 g/L) + XA OIL CONCENTRATE	0.375–0.75 L/ha (0.15–0.3 L/acre) + 5 L/1,000 L	<ul style="list-style-type: none"> <li>• Apply to emerged annual grasses and volunteer cereals in the 2 leaf to tillering stage and to quackgrass in the 2–6 leaf stage of growth.</li> <li>• Use the 0.375 L/ha (0.15 L/acre) rate for control of volunteer corn, volunteer cereals and green foxtail.</li> <li>• The 0.5 L/ha (0.2 L/acre) rate provides suppression of quackgrass and will also control barnyard grass.</li> <li>• Use the 0.75 L/ha (0.3 L/acre) rate for control of quackgrass.</li> <li>• <b>Do NOT</b> apply to flax within 82 days of harvest.</li> </ul>
sethoxydim (0.15–0.2 kg/ha) + oil concentrate (2 L/ha) or surfactant/solvent	POAST ULTRA (450 g/L) + ASSIST POAST ULTRA (450 g/L) + MERGE	0.32–0.47 L/ha (0.13–0.19 L/acre) + 2 L/ha (0.8 L/acre) 0.32–0.47 L/ha (0.13–0.19 L/acre) + 1 L/ha (0.4 L/acre)	<ul style="list-style-type: none"> <li>• Treat the 1–6 leaf stage of annual grass.</li> <li>• For annual grasses and volunteer cereals.</li> <li>• Use the higher rate when volunteer cereals are present.</li> <li>• Use MERGE for conditions or weeds requiring medium to high rates of POAST ULTRA.</li> <li>• Flax is tolerant at any stage of growth.</li> <li>• Apply using 110–200 L/ha of water (44–80 L/acre).</li> </ul>
sethoxydim (0.5 kg/ha) + surfactant/solvent (1–2 L/ha)	POAST ULTRA (450 g/L) + MERGE	1.1 L/ha (0.45 L/acre) + 1–2 L/ha (0.4–0.8 L/acre)	<ul style="list-style-type: none"> <li>• <b>Do NOT</b> use on low-linolenic varieties.</li> <li>• For quackgrass control. Thorough preplant tillage will ensure more uniform quackgrass emergence.</li> <li>• Apply using 100–200 L/ha of water (40–80 L/acre).</li> </ul>



**TABLE 11–2. Herbicide Treatment Rates for Field Crops (cont'd)**

<b>ACTIVE INGREDIENT (rate)</b>	<b>TRADE NAME (Concentration)</b>	<b>PRODUCT RATE</b>	<b>PRECAUTIONS</b> For more information, see Chapter 3, <i>Herbicides Used in Ontario</i> and Chapter 4, <i>Notes on Adjuvants</i> .
<b>Flax – Postemergence Grass Herbicides (cont'd)</b>			
clethodim (45-90 g/ha) + surfactant (0.5% v/v)	SELECT (240 g/L) + AMIGO STATUE (240 g/L) + CARRIER ANTLER (240 g/L) + X-ACT or ADAMA ADJUVANT 80 CLETHODIM 240 (240 g/L) + SURF-ACT ARROW ALL-IN (120 g/L)	188–375 mL/ha (75-150 mL/acre) + 5 L/1,000 L        380-760 mL/ha (152-304 mL/acre)	<ul style="list-style-type: none"> <li>• Apply when the annual grasses and volunteer cereals are in the 2–6 leaf stages.</li> <li>• Apply to quackgrass in the 2–5 leaf stages. Use the higher rate for control of quackgrass.</li> <li>• Flax is tolerant at any growth stage.</li> <li>• Preharvest Interval (PHI) is 60 days.</li> <li>• ARROW ALL-IN has an adjuvant included in its formulation, therefore does not require the addition of an adjuvant that is required when using SELECT or STATUE.</li> </ul>
fluzifop-p-butyl (0.075 kg/ha)	VENTURE L (125 g/L)	0.6 L/ha (0.24 L/acre)	<ul style="list-style-type: none"> <li>• Apply at 2–4 leaf stage of annual grasses.</li> </ul>
fluzifop-p-butyl (0.25 kg/ha)	VENTURE L (125 g/L)	2 L/ha 0.8 L/acre	<ul style="list-style-type: none"> <li>• Apply at 3–5 leaf stage of quackgrass.</li> </ul>
<b>Flax – Postemergence Broadleaf Herbicides</b>			
bentazon (0.84–1.08 kg/ha) + oil concentrate (2 L/ha)	BASAGRAN (480 g/L) + ASSIST BROADLOOM (480 g/L) + ASSIST BENTA SUPER (480 g/L) + ASSIST	1.75–2.25 L/ha (0.7–0.9 L/acre) + 2 L/ha (0.8 L/acre)	<ul style="list-style-type: none"> <li>• Apply when flax is 5 cm or higher and weeds are small and actively growing.</li> <li>• Top growth of nutsedge and Canada thistle is controlled and field bindweed may be suppressed. Two applications of 1.75 L/ha (0.7 L/acre) (0.84 kg active/ha), 10 days apart may be required.</li> <li>• A new flush of weeds may emerge after the first flush has been controlled.</li> <li>• Cool weather or drought may reduce control.</li> <li>• Reduce oil concentrate to 1 L/ha (0.4 L/acre) under abnormally hot and humid weather conditions or temporary crop injury may occur.</li> </ul>
bromoxynil/mcpa (0.56 kg/ha)	BUCTRIL M ((1:1) 560 g/L) BADGE ((1:1) 450 g/L) LOGIC M ((1:1) 450 g/L) MEXTROL ((1:1) 450 g/L) BROMOXYNIL-MCPA 225-225	1 L/ha (0.4 L/acre) 1.25 L/ha (0.5 L/acre)	<ul style="list-style-type: none"> <li>• Apply when the flax is 5–10 cm high before weeds have developed beyond the 4 leaf stage.</li> <li>• <b>Do NOT</b> use if the daytime temperature is over 29°C.</li> </ul>
MCPA (0.5 kg/ha)	MCPA AMINE (500 g/L)*	1 L/ha (0.4 L/acre)	<ul style="list-style-type: none"> <li>• Flax may be treated when 5 cm tall to bud stage.</li> <li>• Best weed control is obtained if the application is made when the weeds are small (approx. 5 cm tall).</li> </ul> <p>* See Table 3–1. <i>Herbicides Used in Ontario</i>, for formulations available. See label for specific uses and rates.</p>

**TABLE 11–2. Herbicide Treatment Rates for Field Crops (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.
<b>Flax – Postemergence Tank-mixes</b>			
sethoxydim (0.15–0.2 kg/ha) + bromoxynil/ mcpa (0.56 kg/ha) + surfactant/solvent (1 L/ha)	POAST ULTRA (450 g/L) + BUCTRIL M ((1:1) 560 g/L) + MERGE	0.32–0.47 L/ha (0.13–0.19 L/acre) + 1 L/ha (0.4 L/acre) + 1 L/ha (0.4 L/acre)	<ul style="list-style-type: none"> <li>• Apply when flax is 5–10 cm high before weeds have developed beyond the 4 leaf stage.</li> <li>• <b>Do NOT</b> use if the daytime temperature is over 29°C.</li> <li>• Apply using 100–200 L/ha of water (40–80 L/acre).</li> </ul>
	POAST ULTRA (450 g/L) + BADGE ((1:1) 450 g/L) + MERGE	0.32–0.47 L/ha (0.13–0.19 L/acre) + 1.25 L/ha (0.5 L/acre) + 1 L/ha (0.4 L/acre)	
	POAST ULTRA (450 g/L) + LOGIC M ((1:1) 450 g/L) + MERGE		
	POAST ULTRA (450 g/L) + MEXTROL ((1:1) 450 g/L) + MERGE		
	POAST ULTRA (450 g/L) + BROMOXYNIL-MCPA 225-225 + MERGE		
sethoxydim (0.15–0.2 kg/ha) + MCPA (0.42–0.55 kg/ha) + surfactant/solvent (1 L/ha)	POAST ULTRA (450 g/L) + MCPA AMINE (500 g/L)* + MERGE	0.32–0.47 L/ha (0.13–0.19 L/acre) + 0.84–1.1 L/ha (0.34–0.44 L/acre) + 1 L/ha (0.4 L/acre)	<ul style="list-style-type: none"> <li>• Flax may be treated when 5 cm tall to bud stage.</li> <li>• Best weed control is obtained if the application is made when the weeds are small (approximately 5 cm tall).</li> <li>• Apply using 100–200 L/ha of water (40–80 L/acre).</li> </ul>
* See Table 3–1. <i>Herbicides Used in Ontario</i> , for formulations available. See label for specific uses and rates.			
clethodim (0.045 kg/ha) + bromoxynil/mcpa (0.56 kg/ha) + surfactant (0.5% v/v)	SELECT (240 g/L) + BUCTRIL M ((1:1) 560 g/L) + AMIGO	0.19 L/ha (0.076 L/acre) + 1 L/ha (0.4 L/acre) + 5 L/1,000 L	<ul style="list-style-type: none"> <li>• Apply when flax is 5–10 cm high and weeds are in the seedling stage for best results.</li> <li>• <b>Do NOT</b> use if daytime temperature is over 25°C.</li> </ul>
	SELECT (240 g/L) + BADGE ((1:1) 450 g/L) + AMIGO	0.19 L/ha (0.076 L/acre) + 1.25 L/ha (0.5 L/acre) + 5 L/1,000 L	
	SELECT (240 g/L) + LOGIC M ((1:1) 450 g/L) + AMIGO		
	SELECT (240 g/L) + MEXTROL ((1:1) 450 g/L) + AMIGO		
	SELECT (240 g/L) + BROMOXYNIL-MCPA 225-225 + AMIGO		

**TABLE 11–2. Herbicide Treatment Rates for Field Crops (cont'd)**

<b>ACTIVE INGREDIENT (rate)</b>	<b>TRADE NAME (Concentration)</b>	<b>PRODUCT RATE</b>	<b>PRECAUTIONS</b> For more information, see Chapter 3, Herbicides Used in Ontario and Chapter 4, Notes on Adjuvants.
<b>Flax – Preharvest</b>			
glyphosate (0.9 kg/ha)	glyphosate (360 g/L)*	2.5 L/ha (1 L/acre)	<ul style="list-style-type: none"> <li>Apply in 50–100 L/ha (20–40 L/acre) water when the crop is less than 30% grain moisture, when the majority of bolls are brown (75%–80%) and 7–14 days prior to harvest.</li> <li><b>Do NOT</b> apply to seed crops.</li> </ul> <p>* See Table 3–1. <i>Herbicides Used in Ontario</i>, for formulations available. See label for specific uses and rates.</p>
	glyphosate (480 g/L)*	1.875 L/ha (0.75 L/acre)	
	glyphosate (540 g/L)*	1.67 L/ha (0.67 L/acre)	
diquat (0.3–0.408 kg/ha) + non-ionic surfactant (0.1% v/v)	REGLONE DESICCANT (240 g/L) + AGRAL 90	1.25–1.7 L/ha (0.5–0.68 L/acre) + 1 L/1,000 L	<ul style="list-style-type: none"> <li>Apply when the crop is at 75% boll turn stage.</li> <li><b>Do NOT</b> apply to immature crop.</li> <li>This application reduces dry down time and eliminates the need for swathing.</li> </ul>
	BOLSTER DESICCANT (240 g/L) + AGRAL 90		
	ARMORY (240 g/L) + AGRAL 90		
	DESSICASH DESICCANT (240 g/L) + AGRAL 90		

## INDUSTRIAL HEMP GROWN FOR FIBRE PRODUCTION

### Site Preparation Before Planting – See Chapter 5 Preplant & Postharvest Weed Control.

#### Industrial Hemp – Soil applied Grass and Broadleaf Herbicides

ethafluralin (0.85-1.1 kg/ha)	EDGE (5%)	Medium soils: 17 kg/ha (6.8 kg/acre) Heavy soils: 22 kg/ha (8.8 kg/acre)	<ul style="list-style-type: none"> <li>Apply prior to weed emergence and at least 10 days prior to seeding. Emerged weeds should be destroyed by cultivation or via a burn-down with glyphosate.</li> <li>Do not apply to soils with less than 2% organic matter or greater than 15% organic matter.</li> <li>Apply to a soil surface free of large clods and incorporate in the same operation if possible. The first incorporation must be done within 24 hours of application.</li> <li>Incorporate into the soil in two different directions. An even uniform layer of Edge Granular Herbicide treated soil is required to obtain optimum control of germinating weed seeds. Use a tandem disc, discer or field (vibra-shank type) cultivator set to work 8 to 10 cm deep for the first incorporation. The second incorporation should be a discing or cultivation in a cross direction also at 8 to 10 cm deep. Operate disc implements at 7 to 10 km/hr and cultivators at 10 to 13 km/hr. Failure to operate implements at recommended speeds and depths may result in erratic weed control due to poor distribution of herbicide in the soil.</li> <li>NOTE: For more effective weed control, it is recommended that the second incorporation be delayed at least 3 days following the first incorporation. This allows time for greater release of the herbicide onto soil particles and assures more uniform distribution.</li> <li>Since not all hemp varieties have been tested for tolerance to Edge, first use of this herbicide should be limited to a small area of each variety to confirm tolerance prior to adoption as a general field practice. Consult your seed supplier for information on the tolerance of specific varieties of hemp to Edge Herbicide.</li> </ul>
	EDGE MICOACTIV (10%)	Medium soils: 8.5 kg/ha (2.72 kg/acre) Heavy soils: 11 kg/ha (4.4 kg/acre)	

**TABLE 11–2. Herbicide Treatment Rates for Field Crops (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.
<b>Industrial Hemp – Postemergence Grass Herbicides</b>			
quiazalofop-p-ethyl (0.036–0.07 kg/ha) + oil concentrate (0.5% v/v)	ASSURE II (96 g/L) + SURE-MIX	0.38–0.75 L/ha (0.15–0.3 L/acre) + 5 L/1,000 L	<ul style="list-style-type: none"> <li>• Make one application per year. Apply to emerged annual grasses and volunteer cereals when the crop is at the 2–6 crop leaf stage (6–25 cm in height).</li> <li>• Use the 0.38 L/ha (0.15 L/acre) rate of ASSURE II for control of volunteer corn, volunteer cereals and green foxtail.</li> <li>• The 0.5 L/ha (0.2 L/acre) rate of ASSURE II will suppress quackgrass and also control barnyard grass.</li> <li>• Use the 0.75 L/ha (0.3 L/acre) rate of ASSURE II for control of quackgrass.</li> <li>• Use a minimum of 100 litres of water/ha with a spray pressure of 210–275 kPa.</li> </ul>
	CONTENDER (96 g/L) + CONTENDER MSO		
	YUMA GL (96 g/L) + XA OIL CONCENTRATE		
<b>MUSTARD</b>			
<b>Preplant (PP) – See Chapter 5 Preplant &amp; Postharvest Weed Control, for details of products, rates and remarks.</b>			
<b>Mustard – Soil Applied Grass and Broadleaf Herbicides</b>			
trifluralin (0.6–1.147 kg/ha)	TREFLAN EC (480 g/L)	1.25–2.4 L/ha (0.5–0.96 L/acre)	<ul style="list-style-type: none"> <li>• Apply PPI.</li> <li>• Strongly absorbed to soil particles, negligible leaching.</li> <li>• <b>Do NOT</b> use on sandy soils.</li> <li>• Can be applied immediately prior to, or up to 3 weeks before planting.</li> </ul>
	RIVAL (500 g/L)	1.2–2.3 L/ha (0.4–0.76 L/acre)	
	BONANZA 400 (400 g/L)	1.5–2.75 L/ha (0.6–1.1 L/acre)	
	TRIFLUREX 40 EC (412 g/L)	1.46–2.78 L/ha (0.58–1.1 L/acre)	
<b>Mustard – Postemergence Grass Herbicides</b>			
clethodim (45–90 g/ha) + surfactant (0.5% v/v)	SELECT (240 g/L) + AMIGO	188–375 mL/ha (75–150 mL/acre) + 5 L/1,000 L	<ul style="list-style-type: none"> <li>• Apply when the annual grasses and volunteer cereals are in the 2–6 leaf stages.</li> <li>• Apply to quackgrass in the 2–5 leaf stages. Use the higher rate for control of quackgrass.</li> <li>• Preharvest Interval (PHI) is 60 days.</li> <li>• ARROW ALL-IN has an adjuvant included in its formulation, therefore does not require the addition of an adjuvant that is required when using SELECT or STATUE.</li> </ul>
	STATUE (240 g/L) + CARRIER		
	ANTLER (240 g/L) + X-ACT or ADAMA ADJUVANT 80		
	CLETHODIM 240 (240 g/L) + SURF-ACT		
	ARROW ALL-IN (120 g/L)		
	sethoxydim (0.15–0.2 kg/ha) + oil concentrate (2 L/ha)		
sethoxydim (0.15–0.2 kg/ha) + surfactant/solvent (1 L/ha)		POAST ULTRA (450 g/L) + MERGE	0.32–0.47 L/ha (0.13–0.19 L/acre) + 1 L/ha (0.4 L/acre)
sethoxydim (0.5 kg/ha) + surfactant/solvent	POAST ULTRA (450 g/L) + MERGE	1.1 L/ha (0.45 L/acre) + 1–2 L/ha (0.4–0.8 L/acre)	<ul style="list-style-type: none"> <li>• For quackgrass control. Thorough preplant tillage will ensure more uniform quackgrass emergence.</li> <li>• Apply using 100–200 L/ha of water (40–80 L/acre).</li> </ul>

**TABLE 11–2. Herbicide Treatment Rates for Field Crops (cont'd)**

<b>ACTIVE INGREDIENT (rate)</b>	<b>TRADE NAME (Concentration)</b>	<b>PRODUCT RATE</b>	<b>PRECAUTIONS</b> For more information, see Chapter 3, Herbicides Used in Ontario and Chapter 4, Notes on Adjuvants.
<b>Mustard – Preharvest</b>			
diquat (0.3–0.408 kg/ha) + surfactant (0.1% v/v)	REGLONE DESICCANT (240 g/L) + AGRAL 90	1.25–1.7 L/ha (0.5–0.68 L/acre) + 1 L/1,000 L	<ul style="list-style-type: none"> <li>• Apply when crop is 60%–75% seed turn (green to brown) stage.</li> <li>• Harvest no later than 14 days after herbicide application to avoid pod shatter.</li> <li>• Use higher rate for heavy canopy.</li> <li>• Use minimum of 225 L/ha spray volume.</li> <li>• Drift will injure adjacent crops or plants.</li> </ul>
	BOLSTER DESICCANT (240 g/L) + AGRAL 90		
	ARMORY (240 g/L) + AGRAL 90		
	DESSICASH DESICCANT (240 g/L) + AGRAL 90		
<b>PEANUTS</b>			
<b>Preplant (PP) – See Chapter 5 Preplant &amp; Postharvest Weed Control for details of products, rates and remarks.</b>			
<b>Peanuts – Preemergence Grass Herbicides</b>			
dimethenamid (544–619 g/ha)	FRONTIER MAX (720 g/L)	756–860 mL/ha (302–344 mL/acre)	<ul style="list-style-type: none"> <li>• Apply PPI at 860 mL/ha (344 mL/acre) or PRE at 756–860 mL/ha (302–344 mL/acre).</li> <li>• Peanuts should be seeded at least 4 cm deep or crop injury may occur.</li> <li>• DO NOT apply FRONTIER MAX herbicide if peanuts have emerged.</li> <li>• <b>Do NOT</b> apply within 80 days of harvest.</li> </ul>
s-metolachlor/benoxacor (1,050–1,418 g/ha)	DUAL II MAGNUM (915 g/L)	1.15–1.55 L/ha (0.46–0.62 L/acre)	<ul style="list-style-type: none"> <li>• Use the higher rate of DUAL II MAGNUM for heavier weed infestations.</li> <li>• For optimum yellow nutsedge control, apply DUAL II MAGNUM as a pre-plant incorporated application.</li> <li>• <b>Do NOT</b> graze of feed peanut forage or fodder to livestock for 30 days following application.</li> <li>• <b>Do NOT</b> harvest crop within 90 days of application.</li> <li>• Application of DUAL II MAGNUM may result in injury to the peanut crop which may include stand loss, delayed maturity and loss of yield.</li> </ul>
<b>Peanuts – Postemergence Broadleaf Herbicides</b>			
bentazon (1.08 kg/ha) + oil concentrate (2 L/ha)	BASAGRAN (480 g/L) + ASSIST	2.25 L/ha (0.9 L/acre) + 2 L/ha (0.8 L/acre)	<ul style="list-style-type: none"> <li>• Apply when peanuts are in the unifoliolate to 4th trifoliolate leaf stage and when weeds are small and actively growing.</li> <li>• Many annual broadleaf weeds including velvetleaf (15 cm/up to 6 leaf), smartweed (20 cm/up to 10 leaf) and cocklebur (30 cm/up to 10 leaf) are controlled.</li> <li>• Top growth of Canada thistle and yellow nutsedge is controlled and field bindweed may be suppressed but 2 applications of BASAGRAN at 1.75 L/ha (0.7 L/acre) 10 days apart may be required.</li> <li>• A new flush of weeds may emerge after the first flush has been controlled.</li> <li>• Temporary crop injury may occur under abnormally cool or hot, humid conditions. Reduce rate of oil concentrate to 1 L/ha (0.4 L/acre) when those conditions occur. Cool weather or drought may delay or reduce control.</li> </ul>
	BROADLOOM (480 g/L) + ASSIST		
	BENTA SUPER (480 g/L) + ASSIST		
<b>Peanuts – Postemergence Grass Herbicides</b>			
fluazifop-p-butyl (0.100 kg/ha)	VENTURE L (125 g/L)	0.8 L/ha (0.32 L/acre)	<ul style="list-style-type: none"> <li>• For the control of volunteer cereals.</li> <li>• Apply at the 2–5 leaf stage of volunteer cereals.</li> <li>• Pre Harvest Interval – 40 days</li> <li>• <b>ONLY</b> one application per season</li> </ul>

**TABLE 11–2. Herbicide Treatment Rates for Field Crops (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.
<b>Peanuts – Postemergence Grass Herbicides (cont'd)</b>			
fluzafop-p-butyl (0.125–0.175 kg/ha)	VENTURE L (125 g/L)	1.0–1.4 L/ha (0.4–0.57 L/acre)	<ul style="list-style-type: none"> <li>• Apply to annual grasses in the 2–5 leaf stage of growth and 3–5 leaf stage of quackgrass.</li> <li>• Use the 1.4 L/ha (0.57 L/acre) rate for a mixed stand of annual grasses and quackgrass.</li> <li>• Pre Harvest Interval – 40 days</li> <li>• ONLY one application per season</li> </ul>
<b>SORGHUM AND MILLET (GRAIN)</b>			
<b>Preplant (PP) – See Chapter 5 Preplant &amp; Postharvest Weed Control, page 91, for details of products, rates and remarks.</b>			
<b>Sorghum and Millet (Grain) – Soil Applied Broadleaf Herbicides</b>			
mesotrione (140 g/ha)	CALLISTO (480 g/L)	0.3 L/ha (0.12 L/acre)	<ul style="list-style-type: none"> <li>• Apply 7–14 days prior to sorghum and pearl millet planting.</li> <li>• Application to emerged sorghum or pearl millet can result in severe crop injury.</li> <li>• Apply up to the 2-leaf stage of weeds.</li> <li>• <b>Do NOT</b> apply to pearl millet or sorghum grown in coarse textured soils or to sudangrass, or sorghum-sudangrass hybrids.</li> </ul>
	MESTER 480 SC (480 g/L)		
<b>Sorghum and Millet (Grain) – Postemergence Broadleaf Herbicides</b>			
bentazon (0.84–1.08 kg/ha)	BASAGRAN FORTÉ (480 g/L)	1.75–2.25 L/ha (0.7–0.9 L/acre)	<ul style="list-style-type: none"> <li>• Apply when the crop is at the 3–6 leaf stage.</li> <li>• Annual weeds should be targeted at the 4–6 leaf stage.</li> <li>• A new flush of weeds may emerge after the first flush has been controlled.</li> <li>• Cool weather or drought may reduce control.</li> <li>• Reduce oil concentrate to 1 L/ha (0.4 L/acre) under abnormally hot and humid weather conditions or temporary crop injury may occur.</li> <li>• <b>Do NOT</b> apply within 100 days of harvest.</li> </ul>
bromoxynil (0.28 kg/ha)	PARDNER (280 g/L)	1 L/ha (0.4 L/acre)	<ul style="list-style-type: none"> <li>• Apply when the crop is at or beyond the 4 leaf stage and less than 20 cm in height.</li> <li>• One application per year.</li> <li>• <b>Do NOT</b> apply within 100 days of harvest.</li> </ul>
	BROMOXYNIL (240 g/L)*	1.2 L/ha (0.48 L/acre)	
	BROMOXYNIL (480 g/L)*	0.6 L/ha (0.24 L/acre)	
prosulfuron (10 g/ha) + non-ionic surfactant (0.2% v/v)	PEAK (75 WG) + AGRAL 90	13.3 g/ha (5.3 g/acre) + 2 L/1,000 L	<ul style="list-style-type: none"> <li>• Apply when the crop is between 3–5 leaf stage.</li> <li>• Best results when applied to actively growing weeds in the 1–6 leaf stage.</li> <li>• <b>Do NOT</b> apply by air.</li> <li>• Make <b>ONLY</b> one application per year.</li> </ul>
<b>Sorghum and Millet (Grain) – Postemergence Grass Herbicides</b>			
s-metolachlor/benoxacor (572 g/ha)	DUAL II MAGNUM (915 g/L)	625 mL/ha (253 mL/acre)	<ul style="list-style-type: none"> <li>• Apply after crop emergence but before weed emergence (typically the 1–3 leaf stage of sorghum). A stale seedbed will minimize the amount of weeds emerged at time of application.</li> <li>• For use in pearl millet that is intended for <b>ANIMAL FEED ONLY</b>. <b>Do NOT</b> apply to grain millet that is intended for <b>HUMAN CONSUMPTION</b>.</li> <li>• <b>Do NOT</b> harvest pearl millet for forage within 45 days of application.</li> <li>• <b>Do NOT</b> harvest pearl millet for grain within 130 days of application.</li> <li>• Application of DUAL II MAGNUM will result in injury to the pearl millet crop which may include stand loss, delayed maturity and loss of yield.</li> <li>• Millet should be seeded at least 2.5 cm deep or crop injury may result.</li> </ul>

**TABLE 11–2. Herbicide Treatment Rates for Field Crops (cont'd)**

<b>ACTIVE INGREDIENT (rate)</b>	<b>TRADE NAME (Concentration)</b>	<b>PRODUCT RATE</b>	<b>PRECAUTIONS</b> For more information, see Chapter 3, Herbicides Used in Ontario and Chapter 4, Notes on Adjuvants.
<b>SUNFLOWERS</b>			
<ul style="list-style-type: none"> <li>• Cultural control of weeds in sunflowers can be used successfully, but only if weeds are also controlled in other crops in the rotation. There are several tillage options in the sunflower crop.</li> <li>• Preplant tillage can control 1 or 2 flushes of early germinating weeds. Plant sunflowers immediately after the last tillage operation.</li> <li>• A rotary hoe set to cultivate shallow can be effective in removing annual weeds that are just emerging. It is not very useful for controlling well-rooted seedlings.</li> <li>• Spring tooth harrows can be used to control small weeds when sunflowers are in the 4–6 leaf stages. There will be some damage to sunflowers and larger weeds will not be well controlled.</li> <li>• One or 2 cultivations with a row crop cultivator are the most common form of cultural control. Sunflowers have to be big enough to withstand burial. Lateral roots on sunflowers are shallow, so avoid cultivating too deep or too close to plants.</li> </ul>			
<b>Sunflowers – Soil Applied Grass Herbicides</b>			
EPTC (3.4 kg/ha)	EPTAM (800 g/L)	4.25 L/ha (1.7 L/acre)	<ul style="list-style-type: none"> <li>• Apply PPI.</li> <li>• <b>Do NOT</b> use on light sandy soils with less than 3% organic matter.</li> </ul>
trifluralin (0.6–1.155 kg/ha)	TREFLAN EC (480 g/L)	1.25–2.4 L/ha (0.5–0.96 L/acre)	<ul style="list-style-type: none"> <li>• Apply PPI.</li> </ul>
	RIVAL (500 g/L)	1.2–2.3 L/ha (0.48–0.92 L/acre)	
	BONANZA 480 (480 g/L)	1.25–2.4 L/ha (0.5–0.96 L/acre)	
	TRIFLUREX 40 EC (412 g/L)	1.46–2.78 L/ha (0.58–1.1 L/acre)	
pyoxasulfone (60–120 g/ha)	ZIDUA SC (500 g/L)	120–240 mL/ha (48–96 mL/acre)	<ul style="list-style-type: none"> <li>• Can be applied as a pre-plant surface or pre-emergence treatment to sunflowers.</li> <li>• <b>Do NOT</b> apply ZIDUA SC if sunflowers have emerged.</li> <li>• ZIDUA SC must be applied and activated prior to weed seedling emergence.</li> <li>• ZIDUA SC can be tank-mixed with glyphosate to control weeds that are emerged at the time of application.</li> </ul>
<b>Sunflower – Soil Applied Broadleaf Herbicides</b>			
sulfentrazone (105–140 g/ha)	AUTHORITY (480 g/L)	219–292 mL/ha (88–117 mL/acre)	<ul style="list-style-type: none"> <li>• Apply PP or PRE but no later than 3 days after planting.</li> <li>• Some rotational cropping restrictions apply (see Table 3–3. <i>Herbicide Crop Rotation and Soil pH Restrictions: Field Crops</i>).</li> <li>• <b>Do NOT</b> apply to flax grown on coarse-textured (sandy) soils.</li> <li>• <b>Do NOT</b> apply to soils with organic matter greater than 6%.</li> <li>• <b>Do NOT</b> apply to soils with a pH greater than 7.8.</li> <li>• The highest use rate should be used when applied to soils with a pH of less than 7 and with organic matter greater than 3% but less than 6%.</li> </ul>
<b>Sunflowers – Postemergence Grass Herbicides</b>			
sethoxydim (0.15–0.2 kg/ha) + oil concentrate (2 L/ha)	POAST ULTRA (450 g/L) + ASSIST	0.32–0.47 L/ha (0.13–0.19 L/acre) + 2 L/ha (0.8 L/acre)	<ul style="list-style-type: none"> <li>• Treat the 1–6 leaf stage of annual grass.</li> <li>• For annual grasses and volunteer cereals.</li> <li>• Use the higher rate when volunteer cereals are present.</li> <li>• Use MERGE for conditions or weeds requiring medium to high rates of POAST ULTRA.</li> <li>• Apply using 110–200 L/ha of water (44–80 L/acre).</li> </ul>
sethoxydim (0.15–0.2 kg/ha) + surfactant/solvent (1 L/ha)	POAST ULTRA (450 g/L) + MERGE	0.32–0.47 L/ha (0.13–0.19 L/acre) + 1 L/ha (0.4 L/acre)	
sethoxydim (0.5 kg/ha) + surfactant/solvent	POAST ULTRA (450 g/L) + MERGE	1.1 L/ha (0.45 L/acre) + 1–2 L/ha (0.4–0.8 L/acre)	

**TABLE 11-2. Herbicide Treatment Rates for Field Crops (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.
<b>Sunflowers – Postemergence Grass Herbicides (cont'd)</b>			
clethodim (45-90 g/ha)  + surfactant (0.5% v/v)	SELECT (240 g/L) + AMIGO	188-375 mL/ha (75-150 mL/acre)  + 5 L/1,000 L	<ul style="list-style-type: none"> <li>• Apply when the annual grasses and volunteer cereals are in the 2–6 leaf stages.</li> <li>• Apply to quackgrass in the 2–5 leaf stages. Use the higher rate for control of quackgrass.</li> <li>• Allow 72 days between application and harvest.</li> <li>• ARROW ALL-IN has an adjuvant included in its formulation, therefore does not require the addition of an adjuvant that is required when using SELECT or STATUE.</li> </ul>
	STATUE (240 g/L) + CARRIER		
	ANTLER (240 g/L) + X-ACT or ADAMA ADJUVANT 80		
	CLETHODIM 240 (240 g/L) + SURF-ACT		
	ARROW ALL-IN (120 g/L)		
fluazifop-p-butyl (0.075 kg/ha)	VENTURE L (125 g/L)	0.6 kg/ha (0.24 L/acre)	<ul style="list-style-type: none"> <li>• This rate is for control of volunteer corn only.</li> <li>• Apply at 2–5 leaf stage of the volunteer corn.</li> </ul>
fluazifop-p-butyl (0.125–0.18 kg/ha)	VENTURE L (125 g/L)	1.0–1.4 L/ha (0.4–0.57 L/acre)	<ul style="list-style-type: none"> <li>• Apply at 2–4 leaf stage of annual grasses and at 3–5 leaf stage quackgrass.</li> </ul>
<b>Sunflowers – Harvest-Aid</b>			
diquat (0.3 kg/ha)  + surfactant (0.1% v/v)	REGLONE DESICCANT (240 g/L) + AGRAL 90	1.25 L/ha (0.5 L/acre)  + 1 L/1,000 L	<ul style="list-style-type: none"> <li>• REGLONE may be used to reduce the period of time from maturity to harvest, to speed up harvesting, and decrease seed moisture at harvest.</li> <li>• Spray when seeds reach maturity (20–50% seed moisture).</li> <li>• Combine 15–20 days after spraying.</li> <li>• Beware of drift to adjacent crops or plants.</li> <li>• See Chapter 3, Herbicides Used in Ontario, for comments on aerial application.</li> </ul>
	BOLSTER DESICCANT (240 g/L) + AGRAL 90		
	ARMORY (240 g/L) + AGRAL 90		
	DESSICASH DESICCANT (240 g/L) + AGRAL 90		
<b>TOBACCO</b>			
<b>Tobacco – Post Transplant Herbicides</b>			
Apply in 150–300 L/ha (60–120 L/acre) water.			
napropamide (1.125–2.25 kg/ha)	DEVIRINOL DF (50 DF)	2.25–4.5 kg/ha (0.9–1.8 kg/acre)	<ul style="list-style-type: none"> <li>• Apply immediately following transplanting in a 25–30 cm band over the transplants.</li> <li>• Use lower rates on lighter soils.</li> <li>• For best results, lightly incorporate or apply irrigation if rainfall does not occur within 2 days of application.</li> <li>• After harvest, soil should be worked at right angles to the rows to prevent injury to succeeding crops. Small grains may be seeded in the fall to prevent soil erosion. These grains may be stunted but not otherwise affected.</li> </ul>
	DEVIRINOL DF-XT (50 DF-XT)		
fluazifop-p-butyl (0.075–0.125 kg/ha)	VENTURE L (125 g/L)	0.6–1 L/ha (0.24–0.4 L/acre)	<ul style="list-style-type: none"> <li>• May be applied up to 45 days to harvest.</li> </ul>