

8. CEREAL CROPS

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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 8–1. Herbicide Weed Control Ratings for Grassy Weeds in Cereal Crops

LEGEND: Numbers (0–9) = weed control ratings Crop tolerance ratings: E = Excellent, G = Good, F = Fair, P = Poor – = insufficient information available to make a rating
 ✓ = can be used on this crop x = not indicated for use on this crop

Trade Name	Crop Registrations										Annual and Perennial Grasses											Crop Tolerance	
	oats	spring barley	spring wheat	winter barley	winter rye	winter wheat	alfalfa (underseeded)	red clover (underseeded)	trefoil (underseeded)	forage grasses (underseeded)	barnyard grass	bluegrass species	crabgrass	downy brome	fall panicum	foxtail, giant	foxtail, green	foxtail, yellow	witchgrass	proso millet	quackgrass		wild oats
Soil Applied Grass Herbicides																							
TREFLAN, RIVAL or BONANZA	x	x	x	x	✓	✓	x	x	x	x	9	–	9	–	9	9	9	9	9	7	2	8	F
Postemergence Grass Herbicides																							
ACHIEVE LIQUID or BISON	x	✓	✓	x	✓	✓	✓	✓	✓	x	8	–	–	–	–	–	9	9	–	–	0	9	G
AXIAL BIA	x	✓	✓	✓	x	✓	x	x	x	x	9	–	–	–	–	–	9	9	–	9	0	9	G
BENGAL or VIGIL	x	x	✓	x	x	x	x	x	x	x	9	–	–	–	–	–	9	9	–	–	0	9	G
PUMA ADVANCE	x	✓	✓	x	x	x	x	x	x	x	9	–	–	–	–	–	9	9	–	–	0	9	G

¹ Various formulations are available, see Table 4–1. Herbicides Used in Ontario, page 30.

TABLE 8-2. Herbicide Weed Control Ratings for Cereals

LEGEND: Numbers (0-9) = weed control ratings Crop tolerance ratings: E = Excellent, G = Good, F = Fair, P = Poor - = insufficient information available to make a rating
 ✓ = can be used on this crop x = not indicated for use on this crop

Trade Name	Crop Registrations										Annual Broadleaf Weeds																	Perennial Weeds										Crop Tolerance					
	oats	spring barley	spring wheat	winter barley	winter rye	winter wheat	alfalfa (underseeded)	red clover (underseeded)	trefoil (underseeded)	forage grasses (underseeded)	atriplex, spreading	buckwheat, wild	canola, volunteer	cocklebur	chamomile, scentless	chickweed, common	cleavers	corn spurry	fleabane, Canada	hemnettle	lady's thumb	lamb's-quarters	lettuce, prickly	mustards	nightshades	pigweeds	ragweed, common	ragweed, giant	shepherd's purse	stinkweed	velvetleaf	violet, field	bindweed, field	carrot, wild	chickweed, mouse-eared	curled dock	dandelion		ground-ivy (creeping-charlie)	horsetail	sow-thistle	thistle, Canada	vetches
Soil Applied Broadleaf Herbicides																																											
ERAGON + glyphosate ¹ + MERGE	x	✓	✓	✓	x	✓	x	x	x	-	9	9	9	-	-	-	-	9	-	9	9	9	9	9	9	9	9	7/8	9	9	9	8	-	-	-	-	8	-	7	8	9	-	F
TREFLAN or RIVAL or BONANZA	x	x	x	✓	✓	✓	x	x	x	-	5	0	2	-	-	-	-	0	5	2	8	-	2	2	8	2	1	-	-	2	-	2	-	-	0	0	-	2	2	2	-	F	
Postemergence Broadleaf Herbicides																																											
2,4-D ¹	x	✓	✓	x	✓	✓	x	x	x	7	4	8	8	-	2	2	2	8	2	4	9	9	9	9	7	9	8	9	9	9	8	-	7	1	-	7	6	-	2	5	7	7	F
BANVEL II or ORACLE or HAWKEYE	✓	✓	✓	x	x	✓	x	x	✓	-	9	-	9	-	8	7	9	8	7	9	9	5	7	9	9	9	-	6	6	9	-	8	1	-	9	6	-	0	8	7	8	P	
BUCTRIL M or BADGE or MEXTROL or LOGIC M	✓	✓	✓	x	✓	✓	x	✓	✓	6	9	9	8	5	2	4	2	6	7	9	9	8	9	9	8	9	7	9	9	9	5	7	1	-	-	4	-	7	7	5	5	E	
DYVEL	✓	✓	✓	✓	x	✓	x	x	x	-	9	-	-	-	-	8	9	8	8	9	9	9	9	-	9	9	-	9	9	-	-	8	1	-	-	-	-	-	8	8	8	P	
EMBUTOX or CALIBER or COBUTOX	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	6	7	9	-	2	-	2	-	2	4	9	-	7	7	9	8	-	8	6	8	-	-	-	2	6	5	-	2	5	-	2	G	
ESTAPROP XT or DICHLORPROP-DX or TURBOPROP	x	✓	✓	x	x	✓	x	x	x	8	8	9	-	6	2	3	2	8	7	8	9	9	9	-	9	9	9	9	9	9	9	6	7	3	-	-	7	-	2	8	8	7	G
INFINITY	x	✓	✓	x	x	✓	x	x	x	7	9	9	-	6	9	8	-	9	9	9	9	8	9	9	9	9	7	9	9	9	5	-	2	-	-	7	-	-	8	7	5	E	
LONTREL	x	✓	✓	x	x	x	x	x	x	3	8	0	5	8	2	-	-	9	-	5	2	-	2	2	2	7	-	-	-	-	-	-	-	-	4	-	-	9	9	9	F		
MCPA ¹	✓	✓	✓	x	✓	✓	x	x	x	-	2	9	7	-	2	3	7	7	8	2	9	9	9	-	9	9	9	9	9	8	-	7	1	-	-	4	-	8	7	7	5	F	
MCPA SODIUM	✓	✓	✓	x	✓	✓	x	✓	x	-	2	9	7	-	2	-	7	7	8	2	9	-	9	-	9	8	-	9	9	8	-	-	-	-	-	-	-	-	-	-	-	-	G
MECOPROP or COMPITOX	✓	✓	✓	✓	x	✓	x	x	x	-	2	-	-	-	9	-	9	-	2	2	9	-	9	-	9	9	-	-	7	-	-	-	-	9	-	-	-	-	-	-	7	5	G

¹ Various formulations are available, see Table 4-1. Herbicides Used in Ontario, page 30.

² Indicates product sold as a co-pack under this trade name.

³ The rate of MCPA Ester included in REFINE M may not provide this level of control.

TABLE 8-2. Herbicide Weed Control Ratings for Cereals (cont'd)

LEGEND: Numbers (0-9) = weed control ratings Crop tolerance ratings: E = Excellent, G = Good, F = Fair, P = Poor -- = insufficient information available to make a rating
 ✓ = can be used on this crop x = not indicated for use on this crop

Trade Name	Crop Registrations										Annual Broadleaf Weeds															Perennial Weeds								Crop Tolerance											
	oats	spring barley	spring wheat	winter barley	winter rye	winter wheat	alfalfa (underseeded)	red clover (underseeded)	trefoil (underseeded)	forage grasses (underseeded)	atriplex, spreading	buckwheat, wild	canola, volunteer	cocklebur	chamomile, scentless	chickweed, common	cleavers	corn spurry	fleabane, Canada	hempenettle	lady's thumb	lamb's-quarters	lettuce, prickly	mustards	nightsades	pigweeds	ragweed, common	ragweed, giant	shepherd's purse	stinkweed	velvetleaf	violet, field	bindweed, field		carrot, wild	chickweed, mouse-eared	curled dock	dandelion	ground-ivy (creeping-charlie)	horsetail	sow-thistle	thistle, Canada	vetches		
Postemergence Broadleaf Herbicides (cont'd)																																													
PARDNER or BROMOTRIL or BROTEX or KORIL or BROMAX	✓	✓	✓	x	✓	✓	x	x	x	x	-	8	7	8	-	2	-	2	-	2	8	9	-	7	9	7	9	-	8	8	9	-	5	-	-	-	-	-	0	6	5	-	E		
PIXXARO	x	x	x	x	x	✓	x	x	x	x	-	9	9	9	8	8	8	-	8	8	7	9	9	9	-	9	9	9	9	-	9	-	-	-	-	-	-	-	-	-	-	7	8	E	
REFINE SG	✓	✓	✓	x	x	✓	x	x	x	x	-	9	9	-	7	9	6	9	4	9	9	9	8	8	-	9	2	-	9	9	8	7	2	8	-	-	5	-	-	8	7	5	E		
TARGET or TRACKER XP or SWORD	✓	✓	✓	✓	x	✓	x	x	x	x	-	9	9	-	-	2	8	9	8	8	8	9	9	9	-	9	9	-	9	9	-	-	8	5	-	-	4	-	-	8	8	-	P		
TROPHY ²	x	x	x	x	x	✓	x	x	x	x	8	7	9	9	-	-	9	-	8	8	7	9	8	9	-	9	9	-	9	9	-	8	-	-	-	-	5	9	-	8	8	8	G		
TROPOTOX PLUS or CLOVITOX PLUS or TOPSIDE	✓	✓	✓	✓	✓	✓	x	✓	x	✓	-	7	9	-	-	2	-	2	-	8	2	9	-	9	-	9	8	-	9	9	9	-	8	-	-	-	-	-	-	-	9	9	5	G	
Postemergence Broadleaf Herbicide Tank-Mixes																																													
BUCTRIL M or BADGE or LOGIC M or MEXTROL + MCPA ¹	✓	✓	✓	x	✓	✓	x	x	x	x	6	9	9	8	7	2	4	2	6	7	9	9	9	9	9	9	9	9	9	9	9	9	9	5	7	1	-	7	6	-	7	7	8	-	F
(EMBUTOX or CALIBER or COBUTOX) + MCPA	✓	✓	✓	✓	x	✓	✓	x	✓	x	-	6	9	9	-	2	-	2	-	2	4	9	-	9	7	9	8	-	8	6	8	-	-	-	2	6	5	-	2	5	-	2	G		
LONTREL + 2,4-D ¹ or MCPA ¹	x	✓	✓	x	x	x	x	x	x	x	7	8	8	8	2	2	3	2	9	2	7	9	9	9	7	9	9	9	9	9	9	9	8	-	7	-	-	7	6	-	2	9	9	9	F
PARDNER or BROMOTRIL or BROTEX or KORIL or BROMAX + 2,4-D ¹ or MCPA ¹	x	✓	✓	x	✓	✓	x	x	x	x	6	8	9	8	-	2	2	2	-	2	8	9	9	9	9	9	9	-	9	9	9	-	7	1	-	7	6	-	2	6	8	0	F		
PEAK 75WG + PARDNER	x	x	x	x	x	✓	x	x	x	x	-	9	9	9	-	9	-	-	6	-	9	9	8	9	9	9	9	7	8	8	7	-	-	8	-	-	5	-	-	8	-	6	E		
REFINE SG + 2,4-D ¹	x	✓	✓	x	x	✓	x	x	x	x	-	9	9	8	7	9	6	9	6	9	9	9	9	9	7	9	9	-	9	9	8	7	7	8	-	7	6	-	2	8	7	6	F		
REFINE M ^{2,3} /BOOST M ²	✓	✓	✓	x	x	✓	x	x	x	x	8 ³	9	9	8 ³	7	9	6	9	6 ³	9	9	9	9	9	7	9	9 ³	7 ³	9	9	8	7	7	8	-	7	6	-	2	8	7	6	G		

¹ Various formulations are available, see Table 4-1. Herbicides Used in Ontario, page 30.

² Indicates product sold as a co-pack under this trade name.

³ The rate of MCPA Ester included in REFINE M may not provide this level of control.

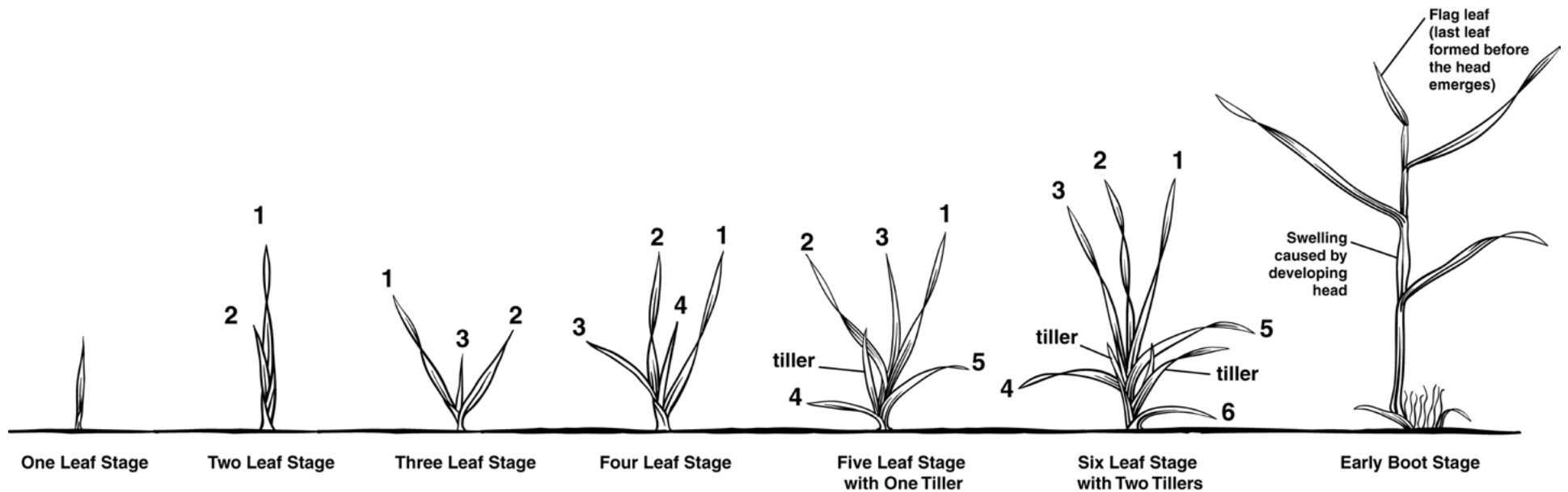


FIGURE 8-1. Cereal Crop Growth Stages.

Cereals

Apply all treatments in 100–200 L/ha (40–80 L/acre) of water except where otherwise noted.

Crop rotation is a valuable technique used to prevent the build up of weed populations associated with small grain production. Wild oats can increase in population and severely limit production on fields where small grains are grown continuously. Some weeds (e.g., proso millet) will be well controlled by cereal competition.

Blind harrowing with a light harrow, before emergence of cereals, can help to control small germinating weeds. A light harrow can also be used in cereals up to the 3 leaf stage, or a weeder harrow (L shaped flexible tines) at the 4 leaf stage to provide better control of small annual broadleaf weeds. The timing of these harrowing operations is critical. The weeds must be small and the soil surface must be dry and easily worked.

Weeds must be emerged from the soil surface and in early stages of growth to be killed by the rates of the herbicides used on cereal grains. Weeds that are growing during early periods of cereal growth (up to 5 leaf stage) have the greatest effect on the cereal yield.

The growth stage for maximum safety varies with the cereal and the herbicide. Check the label for appropriate timing. When counting the leaves on cereal plants, some confusion can occur if tiller leaves are present. These leaves are not counted. Figure 8-1. *Cereal Crop Growth Stages*, on this page, is useful for identifying the cereal leaf stages that are mentioned in this chapter.

Cereal grains have an advantage in that they do not make use of the full growing season. This is particularly true of the winter cereals where preplant cultivation and postharvest cultivation can be used to stimulate germination of weed seeds and reduce perennial weed populations.

Herbicide Application Timings

- **Preplant (PP)** – Also see Chapter 6 *Preplant & Postharvest Weed Control*, page 91, for details of products, rates and remarks.
- **Preplant Incorporated (PPI)**
- **Preemergence (PRE)**

Postemergence (POST) – Leaf stage of the weeds is critical for good weed control. Smaller weeds are usually more sensitive to herbicides. Apply according to labelled leaf stages. 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.

Postemergence Grass Herbicides (cont'd)

TABLE 8-3. Herbicide Treatment Rates for Cereals

ACTIVE INGREDIENT (rate)	TRADE NAME (concentration)	PRODUCT RATE	PRECAUTIONS For more information, see Chapter 4, Herbicides Used in Ontario, page 27 and Chapter 5, Notes on Adjuvants, page 81.
Soil Applied Grass and Broadleaf Herbicides			
saflufenacil (25–50 g/ha) + glyphosate (900 g/ha) + adjuvant (0.5% v/v)	ERAGON (70% SG) + glyphosate (360 g/L)* + MERGE	36–71 g/ha (14.5–29 g/acre) + 2.5 L/ha (1 L/acre) + 1 L/ha (0.4 L/acre)	<ul style="list-style-type: none"> • Apply PP and PRE. • This treatment will provide suppression of secondary germination (flushes) of lamb's-quarters, red root pigweed, stinkweed, wild buckwheat and wild mustard. Use higher rate for longer residual activity.
	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)	
trifluralin (0.383–0.546 kg/ha)	TREFLAN (480 g/L)	0.8–1.14 L/ha (0.32–0.46 L/acre)	<ul style="list-style-type: none"> • For use only on winter wheat and fall rye. • For loose silky bentgrass control in the fall. • Apply as soon as possible after planting. • Incorporate shallowly into the soil surface with drag harrows. • Seed the crop approximately 5 cm deep to separate the germinating seed from the chemical.
	RIVAL DF (60 DF)	0.64–0.91 kg/ha (0.26–0.36 kg/acre)	
	BONANZA 480 (480 g/L)	0.8–1.14 L/ha (0.38–0.55 L/acre)	
Postemergence Grass Herbicides			
tralkoxydim (0.2 kg/ha) + adjuvant (0.5% v/v)	ACHIEVE LIQUID (400 g/L) + TURBOCHARGE	0.5 L/ha (0.2 L/acre) + 5 L/1,000 L (5 L/1,000 L)	<ul style="list-style-type: none"> • Do NOT use on tame oats, winter barley and fall rye. • Apply at 1–6 leaf stage of wild oats. • Apply in 50–100 L/ha of water. • Herbicides not listed on the label may be applied separately 7 days after application of ACHIEVE LIQUID or BISON. • Wild oat control will be reduced if REFINE SG is applied before ACHIEVE LIQUID or BISON. • Do NOT tank-mix REFINE SG or REFINE M with ACHIEVE LIQUID or BISON. • Do NOT feed or graze underseeded forage in year of treatment. • Mature straw may be fed to livestock. One application per year.
	BISON (400 g/L) + ADDIT ADJUVANT		
Pinoxaden (60 g/ha)	AXIAL BIA (50 g/L)	1200 mL/ha (480 mL/acre)	<ul style="list-style-type: none"> • For use on barley, spring and winter wheat. • Apply from the 1 leaf to flag leaf stage of cereals when labelled weeds are in the 1–6 leaf stage of growth. • There are no crop rotation restrictions the year following AXIAL BIA application. • For fields treated with AXIAL BIA, no crop may be seeded until the following year. • When tank-mixing with a broadleaf herbicide, always add the broadleaf herbicide to the spray tank first; followed by AXIAL BIA. • AXIAL BIA can be tank-mixed with either REFINE SG at 30 g/ha (12 g/acre), INFINITY at 0.83 L/ha (0.33 L/acre) or BUCTRIL M at 1 L/ha (0.4 L/acre). • Do NOT add any adjuvants, chemical additives or fertilizers to mixtures with AXIAL BIA. • Observe a minimum interval to harvest of 60 days after treatment for grain and straw and of 30 days after treatment for hay. • Observe a minimum of 7 days before grazing livestock.

TABLE 8–3. Herbicide Treatment Rates for Cereals (cont'd)

ACTIVE INGREDIENT (rate)	TRADE NAME (concentration)	PRODUCT RATE	PRECAUTIONS For more information, see Chapter 4, Herbicides Used in Ontario, page 27 and Chapter 5, Notes on Adjuvants, page 81.
Postemergence Grass Herbicides (cont'd)			
fenoxaprop-p-ethyl/ safener (92.4 g/L)	BENGAL (120 g/L)	0.77 L/ha (0.31 L/acre)	<ul style="list-style-type: none"> • For use ONLY on spring wheat. • Use for control of wild oats and other grassy weeds. • Apply at the 1–6 leaf stage of spring wheat. • BENGAL and VIGIL contain a safener that enhances the cereal crops ability to metabolize fenoxaprop-p-ethyl. Other products containing fenoxaprop-p-ethyl and that do not contain this special safener (e.g., EXCEL SUPER) will cause unacceptable levels of crop injury.
	VIGIL (120 g/L)		
fenoxaprop-p-ethyl/ safener (91.8. g/ha)	PUMA ADVANCE (90 g/L)	1.02 L/ha (0.412 L/acre)	<ul style="list-style-type: none"> • For use ONLY on spring wheat and spring barley. • Use for control of wild oats and other grassy weeds. • Apply at the 1–6 leaf stage of spring wheat. • PUMA ADVANCE contains a safener that enhances the cereal crops ability to metabolize fenoxaprop-p-ethyl. Other products containing fenoxaprop-p-ethyl and that do not contain this special safener (e.g., EXCEL SUPER) will cause unacceptable levels of crop injury.
Postemergence Broadleaf Herbicides			
2,4-D (0.35–0.85 kg/ha)	2,4-D (470 g/L)*	0.75–1.8 L/ha (0.3–0.7 L/acre)	<ul style="list-style-type: none"> • Do NOT use on oats, winter barley and cereals underseeded with legumes. • Apply when spring cereals are in the 3–5 leaf stage of growth.
	2,4-D (564 g/L)*	0.62–1.4 L/ha (0.25–0.56 L/acre)	
	2,4-D (660 g/L)*	0.53–1.29 L/ha (0.21–0.52 L/acre)	
<p>For Winter Cereals:</p> <ul style="list-style-type: none"> • Do NOT apply to seedling winter cereals in the fall. • For control of winter annuals apply early before flower buds appear on the weeds. 			
<p>* Numerous products exist, refer to Table 4–1. Herbicides Used in Ontario, page 30 for a complete list of available products.</p>			
dicamba (0.11–0.139 kg/ha)	BANVEL II (480 g/L)	0.23–0.29 L/ha (0.09–0.12 L/acre)	<ul style="list-style-type: none"> • Do NOT use on winter barley, fall rye and cereals underseeded with legumes. • Control is best when weeds are in the 2–3 leaf stage or rosettes less than 5 cm diameter. Use the higher rates on older weeds. • Do NOT apply when night time air temperatures are below 10°C prior to and after application. • Apply to spring wheat and barley when they are in the 2–5 leaf stage. • Apply to winter wheat in the spring when the crop is 15–25 cm tall before the shot blade stage. • Underseeded seedling grasses should be at the 2–4 leaf stage.
	ORACLE (480 g/L)		
	HAWKEYE (480 g/L)		
bromoxynil/MCPA (0.56 kg/ha)	BUCTRIL M (560 g/L)	1 L/ha (0.4 L/acre)	<ul style="list-style-type: none"> • Apply when weeds are in the 2–6 leaf stage and cereals are in the 2 to early flag leaf stage. For control of winter annual weeds, apply before flower buds appear. • Best results are obtained with applications at the 2–5 leaf cereal stage since thorough spray coverage of weed foliage is required for optimum weed control.
	BADGE (450 g/L)	1.25 L/ha (0.5 L/acre)	
	MEXTROL (450 g/L)		
	LOGIC M (450 g/L)		
<p>Underseeded Red Clover (Winter Wheat Only):</p> <ul style="list-style-type: none"> • Do NOT use on fall rye or spring cereals underseeded with red clover. • Apply in the spring when the red clover is in the 1st–3rd trifoliate stage and when the winter wheat provides a protective canopy over the clover. • Do NOT apply in less than 200 L/ha water (80 L/acre). • Do NOT apply if clover is under stress, and avoid overlaps as injury may result. 			

TABLE 8–3. Herbicide Treatment Rates for Cereals (cont'd)

ACTIVE INGREDIENT (rate)	TRADE NAME (concentration)	PRODUCT RATE	PRECAUTIONS For more information, see Chapter 4, Herbicides Used in Ontario, page 27 and Chapter 5, Notes on Adjuvants, page 81.
Postemergence Broadleaf Herbicides (cont'd)			
dicamba/MCPA (0.525 kg/ha)	DYVEL (420 g/L)	1.25 L/ha (0.5 L/acre)	<ul style="list-style-type: none"> • Do NOT use on fall rye, winter barley and cereals underseeded with legumes. • Apply when spring cereals are in the 2–5 leaf stage. • Hempnettle, corn spurry and cow cockle are controlled best when small. • Apply to winter wheat in the spring when weeds have emerged and the crop is 15–25 cm tall before the flag leaf stage. • Do NOT apply when night time air temperatures are below 10°C prior to and after application.
2,4-DB (1.1–1.4 kg/ha)	EMBUTOX (625 g/L)	1.75–2.25 L/ha (0.7–0.9 L/acre)	<ul style="list-style-type: none"> • Apply 2,4-DB at the 5 leaf to early flag stage of cereals. • Oats may be damaged if treated before the 5 leaf stage. • Apply when the legumes are in the 1–4 trifoliate stage. • Use ONLY if cereals are underseeded to alfalfa, bird's foot trefoil, alsike, red or ladino clover and grasses. Red clover may be damaged by 2,4-DB. • Apply in 150–200 L/ha (60–80 L/acre) water. • Wild mustard plants are not controlled if sprayed when they are beyond the 4 leaf stage.
	CALIBER 625 (625 g/L)		
	COBUTOX 625 (625 g/L)		
dichlorprop/2,4-D (740 g/ha)	ESTAPROP XT (610 g/L)	1.2 L/ha (0.48 L/acre)	<ul style="list-style-type: none"> • Do NOT use on oats, winter barley and fall rye. • Do NOT use on spring barley or wheat underseeded with legumes. • Apply to emerged weeds at the 4 leaf to early flag leaf stage of spring cereals. <p>For Winter Wheat:</p> <ul style="list-style-type: none"> • Apply in early spring to emerged weeds. • May be used up to the early flag leaf stage. • Do NOT use if underseeded with legumes.
	DICHLORPROP DX (610 g/L)		
dichlorprop/2,4-D (1.017 kg/ha)	ESTAPROP PLUS (582 g/L)	1.75 L/ha (0.7 L/acre)	<ul style="list-style-type: none"> • Do NOT use on oats, winter barley and fall rye. • Do NOT use on spring barley or wheat underseeded with legumes. • Apply to emerged weeds at the 4 leaf to early flag leaf stage of spring cereals. <p>For Winter Wheat:</p> <ul style="list-style-type: none"> • Apply in early spring to emerged weeds. • May be used up to the early flag leaf stage. • Do NOT use if underseeded with legumes.
	DICHLORPROP D (582 g/L)		
	TURBOPROP (582 g/L)		
pyrasulfotole/bromoxynil (213 g/ha)	INFINITY	0.83 L/ha (0.33 L/acre)	<ul style="list-style-type: none"> • Do NOT use on oats, winter barley, fall rye or cereals underseeded with legumes. • Apply postemergence and prior to flag leaf emergence. • The addition of ammonium sulphate at 1 L/ha (0.4 L/acre) is required for the control of cleavers at the 4–6 whorl growth stage. • Do NOT graze the treated crops or cut for forage or hay within 25 days of application. • Do NOT harvest spring barley for grain or straw within 45 days of application. • Do NOT harvest wheat for grain or straw within 50 days of application.
clopyralid (0.15–0.2 kg/ha)	LONTREL 360 (360 g/L)	0.42–0.56 L/ha (0.17–0.22 L/acre)	<ul style="list-style-type: none"> • Do NOT use on oats, winter cereals or cereals underseeded with forage crops. • Apply when wheat or barley are at the 3 leaf to flag leaf emergence stages. • For the control of Canada thistle and perennial sow-thistle (top growth only).

TABLE 8–3. Herbicide Treatment Rates for Cereals (cont'd)

ACTIVE INGREDIENT (rate)	TRADE NAME (concentration)	PRODUCT RATE	PRECAUTIONS For more information, see Chapter 4, Herbicides Used in Ontario, page 27 and Chapter 5, Notes on Adjuvants, page 81.
Postemergence Broadleaf Herbicides (cont'd)			
MCPA (0.35–0.85 kg/ha)	MCPA (500 g/L)*	0.7–1.7 L/ha (0.28–0.68 L/acre)	<ul style="list-style-type: none"> • Do NOT use on cereals underseeded with forage crops. • Apply when the crop is in the 2–5 leaf stage of growth. • For hempnettle control, use the high rate of MCPA.
	MCPA (600 g/L)*	0.58–1.4 L/ha (0.23–0.56 L/acre)	
MCPA (0.3–0.45 kg/ha)	MCPA SODIUM 300 (300 g/L)*	1–1.5 L/ha (0.4–0.6 L/acre)	<ul style="list-style-type: none"> • For use on cereals underseeded to red clover. • Treat at an early stage of clover development when it is covered by a canopy of crop. • Apply in the spring when crop growth commences until early flag leaf stage. • Apply in 180–240 L/ha water (72–96 L/acre). • The lower rate may not kill ragweed. <p>* Numerous products exist, refer to Table 4–1. Herbicides Used in Ontario, page 30 for a complete list of available products.</p>
mecoprop-P (0.83–1.05 kg/ha)	MECOPROP (150 g/L)	5.5–7 L/ha (2.2–2.8 L/acre)	<ul style="list-style-type: none"> • Do NOT use on fall rye and cereals underseeded with forage crops. • Use from the 3 leaf stage to early flag leaf when cereals are 10–15 cm tall. • Apply when weeds are in the 2–4 leaf stage. • Use the higher rate for more mature weeds.
	COMPITOX (150 g/L)		
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"> • Apply when the weeds are in the 1–4 leaf stage and cereals are in the 2 to early flag leaf stage. Use the higher rate when weeds are past the 4 leaf stage. • Spring Cereals: Best results are in the 2–5 leaf cereal stage since thorough coverage of weed foliage is required for optimum weed control. • Winter Wheat: More effective on winter annuals when applied as a fall treatment.
	BROMOTRIL (240 g/L)	1.2–1.4 L/ha (0.48–0.56 L/acre)	
	BROTEX 240 (240 g/L)		
	KORIL (235 g/L)		
	BROMAX (480 g/L)	0.6 – 0.7 L/ha (0.24 – 0.28 L/acre)	
	BROTEX 480 (480 g/L)		
halauxifen/fluroxypyr (82 g/ha) + MCPA (372 g/ha)	PIXXARO (sold as co-pack)	308 mL/ha (124 mL/acre)	<ul style="list-style-type: none"> • Apply to actively growing winter wheat from the 3 leaf stage to just prior to flag leaf emergence. • Extreme growing conditions such as drought or near freezing temperature prior to at or following application may reduce weed control and increase the risk of crop injury at all stages of growth. • If foliage is wet at the time of application control may be decreased. • Only weeds which are emerged at the time of application will be affected.
	PIXXARO A (16.25/250 g/L) + MCPA Ester 600 (600 g/L)	620 mL/ha (250 mL/acre)	
thifensulfuron–methyl/ tribenuron–methyl (15 g/ha) + non ionic surfactant (0.2% v/v)	REFINE SG (50%) + non ionic surfactant	30 g/ha (12 g/acre) + 2 L/1,000 L	<ul style="list-style-type: none"> • Do NOT use on winter barley, fall rye and cereals underseeded with forage crops. • Apply when the cereal crop is in the 2 leaf to flag leaf stage. • Winter Wheat: Apply once either in the fall or spring. • Apply to young actively growing weeds that are less than 10 cm tall or across. • Canada thistle, sow-thistle and round-leaved mallow are suppressed.

TABLE 8–3. Herbicide Treatment Rates for Cereals (cont'd)

ACTIVE INGREDIENT (rate)	TRADE NAME (concentration)	PRODUCT RATE	PRECAUTIONS For more information, see Chapter 4, Herbicides Used in Ontario, page 27 and Chapter 5, Notes on Adjuvants, page 81.
Postemergence Broadleaf Herbicides (cont'd)			
dicamba/MCPA/ mecoprop (0.4–0.6 kg/ha)	TARGET (400 g/L)	1–1.5 L/ha (0.4–0.6 L/acre)	<ul style="list-style-type: none"> • Do NOT use on rye and cereals underseeded with forage crops. • Use when spring wheat or oats are in the 2–5 leaf stage or spring barley in the 2–4 leaf stage. • Winter Cereals: Apply in spring before the crop is more than 30 cm high (top leaf extended). • Apply when weeds are in the 2–3 leaf stage. • Use the high rate if weeds are beyond the 3 leaf stage. • Do NOT apply when night time air temperatures are below 10°C prior to and after application.
	TRACKER XP (400 g/L)		
	SWORD (400 g/L)		
fluroxypyr (108 g/ha) + MCPA (560 g/ha)	TROPHY (sold as a co-pack): TROPHY A (180 g/L) + TROPHY B (500 g/L)	0.6 L/ha (0.24 L/acre) + 1.12 L/ha (0.45 L/acre)	<ul style="list-style-type: none"> • For use only on winter wheat. • Apply from the 3-tiller until the early flag leaf stage of winter wheat. • Do NOT apply to winter wheat underseeded to red clover. • Do NOT apply within 60 days of harvest and only once per year.
MCPB/MCPA (1.1–1.7 kg/ha)	TROPOTOX PLUS (400 g/L)	2.75–4.25 L/ha (1.1–1.7 L/acre)	<ul style="list-style-type: none"> • Apply MCPB/MCPA from the 2 leaf stage to flag leaf stage of spring cereals. • Winter Cereals: Apply in the spring when the crop is in the 2 leaf to flag leaf stage. • Use ONLY if cereals are underseeded to red, alsike, ladino or white Dutch clover and grasses. • Apply when legumes are in the unifoliolate to the 4th trifoliolate leaf stage. • Apply in 150–200 L/ha (60–80 L/acre) water.
	CLOVITOX PLUS (400 g/L)		
	TOPSIDE (400 g/L)		
Postemergence Tank-Mixes			
tralkoxydim (0.2 kg/ha) + bromoxynil/MCPA (0.56 kg/ha) + adjuvant (0.5% v/v)	ACHIEVE LIQUID (400 g/L) + BUCTRIL M (560 g/L) + adjuvant	0.5 L/ha (0.2 L/acre) + 1 L/ha (0.4 L/acre) + 5 L/1,000 L	<ul style="list-style-type: none"> • Do NOT use on oats, winter barley or fall rye. • Apply when the wild oats are in the 1–6 leaf stage, broadleaf weeds in the 1–4 leaf stage and when the cereals are in the 2 to early flag leaf stage. • Refer also to precautions for ACHIEVE LIQUID and BISON, page 117 and BUCTRIL M, BADGE, MEXTROL and LOGIC M on page 118. • The TURBOCHARGE adjuvant must be used with ACHIEVE LIQUID and ADDIT ADJUVANT is sold with BISON.
	BISON (400 g/L) + BUCTRIL M (560 g/L) + adjuvant	0.5 L/ha (0.2 L/acre) + 1.25 L/ha (0.5 L/acre) + 5 L/1,000 L	
	ACHIEVE LIQUID (400 g/L) + bromoxynil/MCPA (450 g/L)* + adjuvant		
	BISON (400 g/L) + bromoxynil/MCPA (450 g/L)* + adjuvant		
* Numerous products exist, refer to Table 4–1. Herbicides Used in Ontario, page 30 for a complete list of available products.			

TABLE 8–3. Herbicide Treatment Rates for Cereals (cont'd)

ACTIVE INGREDIENT (rate)	TRADE NAME (concentration)	PRODUCT RATE	PRECAUTIONS For more information, see Chapter 4, Herbicides Used in Ontario, page 27 and Chapter 5, Notes on Adjuvants, page 81.
Postemergence Tank-Mixes (cont'd)			
tralkoxydim (0.2 kg/ha) + bromoxynil (0.28–0.336 kg/ha) + adjuvant (0.5% v/v)	ACHIEVE LIQUID (400 g/L) + PARDNER (280 g/L) + adjuvant	0.5 L/ha (0.2 L/acre) + 1–1.12 L/ha (0.4–0.48 L/acre) + 5 L/1,000 L	<ul style="list-style-type: none"> • Do NOT use on oats, winter barley or fall rye. • Apply when the wild oats are in the 1–6 leaf stage, broadleaf weeds in the 1–4 leaf stage and when the cereals are in the 2 leaf to early flag leaf stage. • Refer also to precautions for ACHIEVE LIQUID and BISON, page 117 and PARDNER, BROMOTRIL, BROTEX and KORIL on page 120. • The TURBOCHARGE adjuvant must be used with ACHIEVE LIQUID and ADDIT ADJUVANT is sold with BISON.
	BISON (400 g/L) + PARDNER (280 g/L) + adjuvant	0.5 L/ha (0.2 L/acre) + 1.2–1.4 L/ha (0.48–0.56 L/acre) + 5 L/1,000 L	
	ACHIEVE LIQUID (400 g/L) + bromoxynil (240 g/L) + adjuvant	0.5 L/ha (0.2 L/acre) + 1.2–1.4 L/ha (0.48–0.56 L/acre) + 5 L/1,000 L	
	BISON (400 g/L) + bromoxynil (240 g/L) + adjuvant	0.77 L/ha (0.31 L/acre) + 1 L/ha (0.4 L/acre)	
fenoxaprop-p-ethyl/ SAFENER (92.4 g/L) + bromoxynil/MCPA (0.56 kg/ha)	BENGAL (120 g/L) + BUCTRIL M (560 g/L)	0.77 L/ha (0.31 L/acre) + 1 L/ha (0.4 L/acre)	<ul style="list-style-type: none"> • For use ONLY on spring wheat. • Use for control of wild oats, grassy and broadleaf weeds. • Apply at the 1–6 leaf stage of spring wheat. • BENGAL and VIGIL contain a safener that enhances the cereal crops ability to metabolize fenoxaprop-p-ethyl. Other products containing fenoxaprop-p-ethyl and that do not contain this special safener (e.g., EXCEL SUPER) will cause unacceptable levels of crop injury.
	VIGIL (120 g/L) + BUCTRIL M (560 g/L)	0.77 L/ha (0.31 L/acre) + 1.25 L/ha (0.5 L/acre)	
	BENGAL (120 g/L) + bromoxynil (450 g/L)	0.77 L/ha (0.31 L/acre) + 1.25 L/ha (0.5 L/acre)	
	VIGIL (120 g/L) + bromoxynil (450 g/L)	1 L/ha (0.4 L/acre) + 0.55 L/ha (0.22 L/acre)	
bromoxynil/MCPA (0.56 kg/ha) + MCPA (0.28 kg/ha)	BUCTRIL M (560 g/L) + MCPA AMINE (500 g/L)	1 L/ha (0.4 L/acre) + 0.55 L/ha (0.22 L/acre)	<ul style="list-style-type: none"> • Do NOT use on cereals underseeded with forage crops (including red clover). • Add MCPA for improved control of hempnettle (up to the 4 leaf stage) and volunteer canola (up to the 8 leaf stage). • Add MCPA to the spray tank first, followed by either BUCTRIL M, MEXTROL, BADGE or LOGIC M.
	BADGE (450 g/L) + MCPA AMINE (500 g/L)	1.25 L/ha (0.5 L/acre) + 0.55 L/ha (0.22 L/acre)	
	MEXTROL (450 g/L) + MCPA AMINE (500 g/L)	1.25 L/ha (0.5 L/acre) + 0.55 L/ha (0.22 L/acre)	
	LOGIC M (450 g/L) + MCPA AMINE (500 g/L)	1.25 L/ha (0.5 L/acre) + 0.55 L/ha (0.22 L/acre)	

TABLE 8–3. Herbicide Treatment Rates for Cereals (cont'd)

ACTIVE INGREDIENT (rate)	TRADE NAME (concentration)	PRODUCT RATE	PRECAUTIONS For more information, see Chapter 4, Herbicides Used in Ontario, page 27 and Chapter 5, Notes on Adjuvants, page 81.
Postemergence Tank-Mixes (cont'd)			
2,4-DB (0.8 kg/ha) + MCPA (35 g/ha)	EMBUTOX (625 g/L) + MCPA AMINE (500 g/L) CALIBER 625 (625 g/L) + MCPA AMINE (500 g/L) COBUTOX 625 (625 g/L) + MCPA AMINE (500 g/L)	1.25 L/ha (0.5 L/acre) + 70 mL/ha (28 mL/acre)	<ul style="list-style-type: none"> • Apply when the legumes are in the 1–4 leaf stage. • Use if cereals are underseeded only to alfalfa, bird's foot trefoil, alsike or ladino clover and grasses. • The addition of MCPA gives better control of common mustard than 2,4-DB alone. • Apply in 150–200 L/ha (60–80 L/acre) water.
pyrasulfotole/ bromoxynil (213 g/ha) + tralkoxydim (0.2 kg/ha) + adjuvant (0.5% v/v)	INFINITY + ACHIEVE LIQUID (400 g/L) + adjuvant INFINITY + BISON (400 g/L) + adjuvant	0.83 L/ha (0.33 L/acre) + 0.5 L/ha (0.2 L/acre) + 5 L/1,000 L	<ul style="list-style-type: none"> • Do NOT use on oats, winter barley, fall rye or cereals underseeded with legumes. • Apply postemergence and prior to flag leaf emergence. • The addition of ammonium sulphate at 1 L/ha (0.4 L/acre) is required for the control of cleavers at the 4–6 whorl growth stage. • Do NOT graze the treated crops or cut for forage or hay within 25 days of application. • Do NOT harvest wheat or spring barley for grain or straw within 45 days of application. • The TURBOCHARGE adjuvant must be used with ACHIEVE LIQUID and ADDIT ADJUVANT is sold with BISON.
clopyralid (0.1–0.25 kg/ha) + 2,4-D (0.35–0.85 kg/ha)	LONTREL 360 (360 g/L) + 2,4-D (470 g/L)*	0.28–0.69 L/ha (0.11–0.28 L/acre) + 0.75–1.81 L/ha (0.3–0.72 L/acre)	<ul style="list-style-type: none"> • For use ONLY on spring barley and spring wheat. • LONTREL is not registered for use on oats in Eastern Canada. • Do NOT use products containing 2,4-D on oats due to the probability of crop injury. • In combination with 2,4-D or MCPA, the lower rate of LONTREL 360 will provide control of Canada thistle for 6–8 weeks and the higher rate of LONTREL 360 will provide season long control of Canada thistle.
clopyralid (0.1–0.25 kg/ha) + MCPA (0.35–0.85 kg/ha)	LONTREL 360 (360 g/L) + MCPA AMINE (500 g/L)*	0.28–0.69 L/ha (0.11–0.28 L/acre) + 0.7–1.7 L/ha (0.28–0.68 L/acre)	<p>* Numerous products exist, refer to Table 4–1. Herbicides Used in Ontario, page 30 for a complete list of available products.</p>
bromoxynil (0.28 kg/ha) + 2,4-D (0.28 kg/ha)	PARDNER (280 g/L) + 2,4-D (470 g/L)* bromoxynil (240 g/L) + 2,4-D (470 g/L)* bromoxynil (480 g/L)* + 2,4-D (470 g/L)*	1–1.2 L/ha (0.4–0.48 L/acre) + 0.6 L/ha (0.24 L/acre) 1.2–1.4 L/ha (0.48–0.56 L/acre) + 0.6 L/ha (0.24 L/acre) 0.6 – 0.7 L/ha (0.24 – 0.28 L/acre) + 0.6 L/ha (0.24 L/acre)	<ul style="list-style-type: none"> • Do NOT use on winter barley and fall rye. • Do NOT use on cereals underseeded with forage crops. • Do NOT use the 2,4-D tank mix on oats. • Apply to cereals in the spring from the 4 leaf to early flag leaf stage. • Include 2,4-D or the lower rate of MCPA if mustards are present. • Use the higher rate of MCPA if hempnettle is present.
bromoxynil (0.28 kg/ha) + MCPA (0.28–0.55 kg/ha)	PARDNER (280 g/L) + MCPA AMINE (500 g/L)* bromoxynil (240 g/L) + MCPA AMINE (500 g/L)* bromoxynil (480 g/L)* + MCPA AMINE (500 g/L)*	1–1.2 L/ha (0.4–0.48 L/acre) + 0.55–1.1 L/ha (0.22–0.44 L/acre) 1.2–1.4 L/ha (0.48–0.56 L/acre) + 0.55–1.1 L/ha (0.22–0.44 L/acre) 0.6 – 0.7 L/ha (0.24 – 0.28 L/acre) + 0.55–1.1 L/ha (0.22–0.44 L/acre)	<p>* Numerous products exist, refer to Table 4–1. Herbicides Used in Ontario, page 30 for a complete list of available products.</p>

TABLE 8–3. Herbicide Treatment Rates for Cereals (cont'd)

ACTIVE INGREDIENT (rate)	TRADE NAME (concentration)	PRODUCT RATE	PRECAUTIONS For more information, see Chapter 4, Herbicides Used in Ontario, page 27 and Chapter 5, Notes on Adjuvants, page 81.
Postemergence Tank-Mixes (cont'd)			
prosulfuron (10 g/ha) + bromoxynil (140 g/ha) + non-ionic surfactant (0.2% v/v)	PEAK 75 WG + PARDNER (280 g/L) + non-ionic surfactant	13.3 g/ha (5.3 g/acre) + 0.5 L/ha (0.2 L/acre) + 2 L/1,000 L	<ul style="list-style-type: none"> For use ONLY on winter wheat. Apply POST up until stem elongation of winter wheat. Do NOT apply to winter wheat underseeded to red clover or other legumes.
fenoxaprop-p-ethyl/ safener (91.8 g/ha) + bromoxynil/MCPA (0.56 kg/ha)	PUMA ADVANCE (90 g/L) + BUCTRIL M (560 g/L)	1.02 L/ha (0.412 L/acre) + 1 L/ha (0.4 L/acre)	<ul style="list-style-type: none"> For use ONLY on spring wheat. Refer to precautions for PUMA ADVANCE, page 118 and BUCTRIL M, page 118.
fenoxaprop-p-ethyl/ safener (91.8 g/ha) + pyrasulfotole/ bromoxynil (213 g/ha)	PUMA ADVANCE (90 g/L) + INFINITY	1.02 L/ha (0.412 L/acre) + 0.83 L/ha (0.33 L/acre)	<ul style="list-style-type: none"> Refer to precautions for PUMA ADVANCE, page 118 and INFINITY, page 119. For use ONLY on spring wheat.
fenoxaprop-p-ethyl/ safener (91.8 g/ha) + MCPA (420 g/ha)	PUMA ADVANCE (90 g/L) + MCPA 500	1.02 L/ha (0.412 L/acre) + 0.84 L/ha (0.336 L/acre)	<ul style="list-style-type: none"> Refer to precautions for PUMA ADVANCE, page 118 and MCPA, page 120. For use ONLY on spring wheat.
fenoxaprop-p-ethyl/ safener (91.8 g/ha) + thifensulfuron-methyl/ tribenuron-methyl (15 g/ha) + MCPA* (420 g/ha)	PUMA ADVANCE (90 g/L) + REFINE M (sold as a co-pack): [REFINE SG (50%) + MCPA (500 g/L)*]	1.02 L/ha (0.412 L/acre) + [30 g/ha (12 g/acre) + 0.84 L/ha (0.336 L/acre)]	<ul style="list-style-type: none"> Refer to precautions for PUMA ADVANCE, page 118 and REFINE M, below. For use ONLY on spring wheat. NOTE: If using PUMA 120 SUPER, apply at a rate of 770 mL/ha (312 mL/acre). <p>* Numerous products exist, refer to Table 4–1. Herbicides Used in Ontario, page 30 for a complete list of available products.</p>
thifensulfuron-methyl/ tribenuron-methyl (15 g/ha) + 2,4-D* (0.42–0.55 kg/ha) + non ionic surfactant (0.2% v/v)	REFINE SG (50%) + 2,4-D (470 g/L)* + non ionic surfactant	30 g/ha (12 g/acre) + 0.84–1.1 L/ha (0.34–0.45 L/acre) + 2 L/1,000 L	<ul style="list-style-type: none"> Do NOT use on winter barley, fall rye and cereals underseeded with forage crops. Do NOT apply 2,4-D tank-mix on oats. Apply tank-mixes from the full 3 leaf stage to the early flag leaf stage of the crop.
	REFINE SG (50%) + 2,4-D (564 g/L)* + non ionic surfactant	30 g/ha (12 g/acre) + 0.7–0.9 L/ha (0.28–0.36 L/acre) + 2 L/1,000 L	<p>* Numerous products exist, refer to Table 4–1. Herbicides Used in Ontario, page 30 for a complete list of available products.</p>
	REFINE SG (50%) + 2,4-D (660 g/L)* + non ionic surfactant	30 g/ha (12 g/acre) + 0.6–0.8 L/ha (0.24–0.32 L/acre) + 2 L/1,000 L	

TABLE 8–3. Herbicide Treatment Rates for Cereals (cont'd)

ACTIVE INGREDIENT (rate)	TRADE NAME (concentration)	PRODUCT RATE	PRECAUTIONS For more information, see Chapter 4, Herbicides Used in Ontario, page 27 and Chapter 5, Notes on Adjuvants, page 81.
Postemergence Tank-Mixes (cont'd)			
thifensulfuron-methyl/ tribenuron-methyl (15 g/ha) + MCPA* (285 g/ha)	REFINE M (sold as a co-pack): REFINE SG (50%) + MCPA ESTER (600 g/L)* + non ionic surfactant	30 g/ha (12 g/acre) + 475 mL/ha (190 mL/acre) + 2 L/1,000 L (2 L/1,000 L)	<ul style="list-style-type: none"> • Do NOT use on winter barley, fall rye and cereals underseeded with forage crops. • Apply tank-mixes from the full 3 leaf stage to the early flag leaf stage of the crop. <p>* Numerous products exist, refer to Table 4–1. Herbicides Used in Ontario, page 30 for a complete list of available products.</p>
+ non ionic surfactant (0.2% v/v)	BOOST M (sold as co-pack) BOOST (75%) + MCPA ESTER (600 g/L)* + non ionic surfactant	20 g/ha (8 g/acre) + 925 mL/ha (375 mL/acre) + 2 L/1,000 L	
Preharvest			
carfentrazone-ethyl (17.5–28 g/ha) + non-ionic surfactant (0.25% v/v)	AIM EC (240 g/L) + non-ionic surfactant	73–117 mL/ha (30–47 mL/acre) + 2.5 L/1,000 L (2.5 L/1,000 L)	<ul style="list-style-type: none"> • Apply to actively growing weeds, up to 10 cm. • Coverage of weed and crop foliage is essential for control. • Do NOT harvest within 3 days of application.
carfentrazone-ethyl (17.5–28 g/ha) + MERGE (0.1% v/v)	AIM EC (240 g/L) + MERGE	73–117 mL/ha (30–47 mL/acre) + 10 L/1,000 L	
Saflufenacil (25.2 – 49.7 g/ha) + adjuvant (1 L/ha)	ERAGON LQ (342 g/L) + MERGE	73–146 mL/ha (29.5 - 59 mL/ac) +1 L/ha (0.4 L/ac)	<ul style="list-style-type: none"> • Apply at hard dough stage when crop is at 30% grain moisture or less • Apply in 200 L/ha (80 L/ac) of water. • Preharvest interval (PHI) is 3 days. <p>• For use only on wheat (durum, spring, winter), barley (spring, winter, malting), and triticale</p>
Saflufenacil (25.2 – 49.7 g/ha) + glyphosate (900 g/ha) + adjuvant (1 L/ha)	ERAGON LQ (342 g/L) +GLYPHOSATE (360 g/L)* + MERGE	73–146 mL/ha (29.5 - 59 mL/ac) + 2.5 L/ha (1 L/ac) +1 L/ha (0.4 L/ac)	<ul style="list-style-type: none"> • Apply at hard dough stage when crop is at 30% grain moisture or less • Apply in 200 L/ha (80 L/ac) of water. • Do NOT apply to crops grown for seed. • Refer to preharvest precautions for glyphosate, page 125. <p>• For use only on wheat (durum, spring, winter), barley (spring, winter, malting), and triticale</p>
glyphosate (0.9 kg/ha)	glyphosate (360 g/L)* other glyphosate products	2.5 L/ha (1 L/acre) See Table 4–2.	<ul style="list-style-type: none"> • Apply in 50–100 L/ha (20–40 L/acre) water when crop is at 30% grain moisture or less. • Apply at least 7 days prior to harvest and use ground application only. • Do NOT apply to seed crops. <p>* Numerous products exist, refer to Table 4–1. Herbicides Used in Ontario, page 30 for a complete list of available products.</p>

COVER CROPS: Cover crops can suppress weed growth and reduce the amount of weed seeds returned to the soil. Typically, cover crops that are planted after cereal harvest provided the most benefit in reducing the amount of weed seeds produced and returned to the soil. A comparison of cover crops and their ability suppress weed growth can be found in Table 8–4.

TABLE 8–4. Relative ranking of cover crops and their ability to suppress weeds.

Adapted from the Midwest Cover Crops Council Cover Crop Decision Tool.

Rye, Winter cereal	Excellent
Triticale, Winter	Excellent
Buckwheat*	Excellent
Mustard, Oriental*	Excellent
Radish, Oilseed*	Excellent
Barley (spring or winter)	Very Good
Oats	Very Good
Triticale, Spring	Very Good
Red clover	Very Good
Ryegrass, Annual	Good
Peas, Field	Good
Source: mccc.dev.amr.msu.edu	
* Do not allow these cover crops to go to seed otherwise they will produce weedy volunteers in the next season.	