

TABLE 8–1. Conventional Corn (Field, Seed and Sweet) Herbicide Weed Control Ratings (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
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 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					Crop Tolerance					
		seed corn	sweet corn	field corn	barnyard grass	smooth crabgrass	large crabgrass	fall panicum	foxtail, giant	foxtail, green	foxtail, yellow	witchgrass	proso millet	buckwheat, wild	cocklebur	corn spurry	fleabane, Canada	lady's thumb	lamb's-quarters	mustards	nights Shades	pigweeds	ragweed, common	ragweed, giant	velvetleaf	waterhemp	bindweed, field		horsetail	nutsedge	quackgrass	sow-thistle	thistle, Canada
Soil Applied Broadleaf Herbicides (Preemergence timing only)																																	
AATREX	5	✓	✓	✓	2	2	2	2	2	2	2	2	2	9	5	9	5	9	9 ^R	9	9	9 ^R	9 ^R	6	5	5	2	0	0	2	2	0	E
BROADSTRIKE RC	2	x	x	✓	0	0	0	0	0	2	0	0	0	–	7	–	5 ^R	8	9 ^R	8	7 ^R	9 ^R	8 ^R	7 ^R	9	–	–	8	–	–	–	–	G
CALLISTO or MESTER + AATREX	27+5	✓	✓	✓	2	0	8 ⁴	0	2	2	2	2	2	8	7	–	9	9	9	9	9	9	8	8	9	8	2	0	0	0	0	0	E
dicamba (ENGENIA, FEXAPAN or XTENDIMAX)	4	x	x	✓	0	0	0	0	0	0	0	0	0	8	6	8	9	9	9	6	9	9	9	7	8	3	2	0	0	0	2	2	G
MARKSMAN	4,5	x	x	✓	2	2	2	2	2	2	2	2	2	9	6	9	9	9	9	9	9	9	9	7	8	7	2	0	0	2	2	2	G
VALTERA EZ	14	x	x	✓	3	3	3	5	5	6	6	3	–	8	5	–	7 ³	8	9	9	9	9	8	5	7	8	–	–	–	–	–	–	G
Preemergence and Early Postemergence Grass Herbicides																																	
DUAL II MAGNUM or KODODO	15	✓	✓	✓	9	9	8	8 ²	8	9	9	9	4	2	2	2	–	2	7	2	9 ^{2,3}	8 ²	4	3	3	7 ²	0	0	8 ^{1,2}	0	0	0	E
FRONTIER MAX	15	✓	✓	✓	9	9	7	8 ²	8	9	9	9	4	2	2	2	–	2	7	2	9 ^{2,3}	8 ²	4	3	3	7 ²	0	0	8 ^{1,2}	0	0	0	E
PROWL H2O	3	x	x	✓	9	9	6	9	8	8	8	–	5	–	–	–	–	6	9	0	8	8	2	–	6	–	–	–	–	–	–	E	
RIM SULFURON 25%	2	x	x	✓	9	0	7/8	9	9 ^R	9 ^R	7	9	9	0	0	0	0	5	5	7	2	9 ^R	0	0	5	–	0	6	0	9	0	0	G
ZIDUA SC	15	x	x	✓	9	9	9	8 ²	8	9	9	9	4	2	2	2	–	2	7	2	9 ^{2,3}	8 ²	4	3	3	7 ²	0	0	8 ^{1,2}	0	0	0	E
Preemergence and Early Postemergence Grass and Broadleaf Herbicides																																	
ACURON	27,27, 15,5	x	x	✓	9	9	9	8 ²	8	8	8	9	4	9	8	–	9	9	9	9	9	9	9	9	9	9	2	0	8	0	0	0	E
CONVERGE XT*	27+5	✓	x	✓	9	9	9	9 ²	9	9	9	9	8 ²	8	7	–	7	9	9	9	9	9	9	7	9	8	–	0	0	0	0	0	E
ENGARDE	2+27	x	x	✓	9	8	8	9	9	9	7	9	9	9	5	8	–	9	9	9	9	9	8	–	9	6	–	–	8 ⁴	7 ⁴	–	–	E
PRIMEXTRA II MAGNUM	15,5	✓	✓	✓	9	9	9	8	8	9	9	9	2	9	5	9	6	9	9 ^R	9	9	9	9 ^R	–	2	7	0	0	8 ^{1,2}	0	0	0	E

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		seed corn	sweet corn	field corn	barnyard grass	smooth crabgrass	large crabgrass	fall panicum	foxtail, giant	foxtail, green	foxtail, yellow	witchgrass	proso millet	buckwheat, wild	cocklebur	corn spurry	fleabane, Canada	lady's thumb	lamb's-quarters	mustards	nightsades	pigweeds	ragweed, common	ragweed, giant	velvetleaf	waterhemp	bindweed, field	horsetail	nutsedge		quackgrass	sow-thistle	thistle, Canada
Preemergence and Early Postemergence Tank-Mixes (for Control of Grass and Broadleaf Weeds)																																	
ARMEZON PRO + AATREX	15,27 +5	x	x	✓	9	9	9	8 ²	8	8	8	9	7	9	7	9	6	9	9	9	9	9	9	5	7	8	-	0	8 ^{1,2}	0	8 ⁴	8 ⁴	E
ARMEZON PRO + MARKSMAN	15,27 +4,5	x	x	✓	9	9	9	8 ²	8	8	8	9	7	9	9	9	9	9	9	9	9	9	9	9 ⁴	9 ⁴	8	8 ⁴	0	8 ^{1,2}	0	8 ⁴	8 ⁴	E
BROADSTRIKE RC +DUAL II MAGNUM	2 +15	x	x	✓	9	9	9	8 ²	8	8	8	9	2	-	4	-	7 ^R	8	9 ^R	8	9 ^{2,3}	9 ^R	8 ^R	7 ^R	9	6	-	8	8 ^{1,2}	-	-	-	G
BROADSTRIKE RC +PRIMEXTRA II MAGNUM	2 +15,5	x	x	✓	9	9	9	8 ²	8	9	9	9	2	9	5	9	7 ^R	9	9 ^R	9	9	9	9 ^R	-	9	7 ²	0	8	8 ^{1,2}	0	0	0	G
DUAL II MAGNUM ⁶ + CALLISTO + AATREX	15 +27,5	x	x	✓	9	9	9	8 ²	8	8	8	9	4	9	8	-	7	9	9	9	9	9	9	8 ⁴	9	8	2	0	8 ^{1,2}	0	0	0	E
DUAL II MAGNUM + dicamba ⁶	15 +4	x	x	✓	9	9	9	8 ²	8	8	8	9	2	9	9	9	9	9	9	6	9	9	9	9 ⁴	9 ⁴	7 ²	8 ⁴	0	8 ^{1,2}	0	9 ⁴	8 ⁴	G
DUAL II MAGNUM ⁶ + MARKSMAN	15 +4,5	x	x	✓	9	9	9	8 ²	8	8	8	9	2	9	9	9	9	9	9	9	9	9	9	9 ⁴	9 ⁴	7 ²	8 ⁴	0	8 ^{1,2}	0	8 ⁴	8 ⁴	G
FRONTIER MAX + AATREX	15+ 5	x	x	✓	9	9	9	8 ²	8	9	9	9	4	9	6	9	3	9	9 ^R	9	9	9	9 ^R	6	5	7 ²	2	0	8 ^{1,2}	2	2	0	E
FRONTIER MAX + dicamba ⁶	15+ 4	x	x	✓	9	9	9	8 ²	8	8	8	9	2	9	9	9	9	9	9	6	9	9	9	9 ⁴	9 ⁴	7 ²	8 ⁴	0	8 ^{1,2}	0	9 ⁴	8 ⁴	G
FRONTIER MAX + MARKSMAN	15 +4,5	x	x	✓	9	9	9	8 ²	8	8	8	9	2	9	9	9	9	9	9	9	9	9	9	9 ⁴	9 ⁴	7 ²	8 ⁴	0	8 ^{1,2}	0	8 ⁴	8 ⁴	E
PRIMEXTRA II MAGNUM + CALLISTO	15,5 +27	✓	✓	✓	9	9	9	8 ²	8	8	8	9	4	9	8	7 ⁴	7	9	9	9	9	9	9	8 ⁴	9	8	2	0	8 ^{1,2}	0	0	0	E

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Preemergence and Early Postemergence Tank-Mixes (cont'd)																																	
PRIMEXTRA II MAGNUM + dicamba ⁶	15+4	x	x	✓	9	9	9	8 ²	8	8	8	9	2	9	9	9	9	9	9	9	9	9	9 ⁴	9 ⁴	7	8 ⁴	0	8 ^{1.2}	0	8 ⁴	8 ⁴	G	
PROWL H2O + AATREX	3+5	x	x	✓	9	8	8	9	8	8	8	7	5	9	7	9	3	9	9	9	9	9 ^R	6	6	-	2	-	-	2	2	-	E	
PROWL H2O + dicamba ⁶	3+4	x	x	✓	9	8	8	9	8	8	8	-	5	8	9	8	9	9	9	6	9	9	9 ⁴	9 ⁴	-	-	-	-	-	-	-	E	
PROWL H2O + MARKSMAN	3+4,5	x	x	✓	9	8	8	9	8	8	8	8	5	9	9	9	9	9	9	9	9	9	9 ⁴	9 ⁴	-	-	-	-	-	-	-	E	
Postemergence Grass Herbicides																																	
ACCENT or NICOSH	2	✓	✓ ⁵	✓	9	0	7/8	9	9 ^R	9 ^R	8	9	9	0	0	0	0	0	0	0	0	9 ^R	0	0	0	-	0	6	0	9	0	0	E
STEADFAST IS	2	x	x	✓	9	0	7/8	9	9 ^R	9 ^R	7	9	9	0	0	0	0	5	5	7	2	9 ^R	0	0	5	-	0	6	0	9	0	0	G
Postemergence Broadleaf Herbicides and Tank-mixes																																	
2,4-D AMINE ⁶	4	x	x	✓	0	0	0	0	0	0	0	0	0	4	8	2	7	4	9	9	7	9	8	-	8	8	7	0	0	0	8	8	F
AATREX + crop oil	5	✓	✓	✓	4	4	4	0	4	4	4	4	4	9	6	9	3	9	9 ^R	9	9	9 ^R	9 ^R	8	7	6	7	5	5	5	7	2	G
AATREX + PARDNER (bromoxynil ⁶)	5+6	✓	✓	✓	4	4	4	0	4	4	4	4	4	9	7	9	9	9	9	9	9	9	-	9	6	7	5	5	5	7	2	E	
AATREX + BUCTRIL M (bromoxynil/MCPA ⁶)	5+4,6	x	✓	✓	4	4	4	0	4	4	4	4	4	9	9	9	-	9	9	9	9	9	-	9	-	7	7	5	5	7	7	G	
AATREX + dicamba ⁶	5+4	x	x	✓	4	4	4	0	4	4	4	4	4	9	9	9	9	9	9	9	9	9	9	9	9	8	8	5	5	5	9	8	G
ARMEZON + AATREX	27+5	✓	✓	✓	7	7	7	7	8	7	7	7	7	8	7	-	6	9	9	9	9	9	9	9	7	8	-	-	-	-	-	-	E

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Postemergence Broadleaf Herbicides and Tank-mixes (cont'd)																																	
BASAGRAN FORTÉ, BROADLOOM or BENTA SUPER	6	✓	✓	✓	0	0	0	0	0	0	0	0	0	7	9	9	5	9	7	9	7	8 ^R	8	8	9	–	6	0	6	0	6	8	E
BUCTRIL M (bromoxynil/MCPA ⁶)	4,6	x	✓	✓	0	0	0	0	0	0	0	0	9	9	–	6	9	9	9	9	8	9	–	9	–	7	7	0	0	7	7	F	
CALLISTO + AATREX	27,5	✓	✓	✓	2	0	8 ⁴	0	2	2	2	2	2	8	8	–	7	9	9	9	9	9	8	7	9	9	2	0	0	0	0	0	E
DISTINCT	19,4	x	x	✓	–	–	–	–	–	–	–	–	9	8	9	9	9	9	6	9	9	9	9	9	7	8	0	0	0	9	9	E	
EMBUTOX (2,4-DB ⁶)	4	x	x	✓	0	0	0	0	0	0	0	0	4	8	0	–	0	7	8	7	9	8	–	8	–	8	0	0	0	8	8	G	
ENGENIA (dicamba ⁶)	4	x	x	✓	0	0	0	0	0	0	0	0	9	9	9	9	9	9	6	9	9	9	9	9	8	8	0	0	0	9	8	G	
ENGENIA (dicamba ⁶) + 2,4-D AMINE ⁷	4+4	x	x	✓	0	0	0	0	0	0	0	0	9	9	9	9	9	9	9	9	9	9	9	9	–	8	0	0	0	9	8	F	
LAUDIS + AATREX 480	27+5	x	✓	✓	8	6	6	0	7	7	9	5	–	8	8	–	8	8	9	9	9	9	9	9	9	–	–	0	6	–	–	E	
LONTREL XC or PYRALID	4	x	x	✓	0	0	0	0	0	0	0	0	8	5	–	9	5	2	0	2	2	8	9	2	2	6	–	0	0	9	9	E	
MARKSMAN	4,5	x	x	✓	7	0	0	0	7	7	7	7	0	9	9	9	9	9	9	9	9	9	9	9	8	8	0	0	0	8	8	E	
MCPA ⁶	4	x	x	✓	0	0	0	0	0	0	0	0	2	7	7	7	0	9	9	–	7	9	–	7	–	7	6	0	0	7	7	P	
PARDNER (bromoxynil ⁶)	6	✓	✓	✓	0	0	0	0	0	0	0	0	9	7	–	–	9	9	8	9	8 ^R	9	–	9	–	7	0	0	0	7	7	E	
PEAK	2	✓	x	✓	0	0	0	0	0	0	0	0	–	9	–	–	9	9	9	–	9	9	9	9	5	–	–	0	0	–	–	E	
PERMIT	2	x	✓	✓	0	0	0	0	0	0	0	0	–	8	–	3	8	–	8	–	8 ^R	8 ^R	8 ^R	8	3	–	–	8	0	–	–	E	
TROPOTOX PLUS or CLOVITOX PLUS or TOPSIDE	4	x	x	✓	0	0	0	0	0	0	0	0	8	8	0	–	0	7	8	7	9	9	–	9	–	8	7	0	0	8	8	G	

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Postemergence Grass and Broadleaf Herbicides and Tank-Mixes																																	
ACCENT + CALLISTO + AATREX	2+27 +5	✓	✓ ⁵	✓	9	0	7/8	9	9 ^R	9 ^R	8	9	9	8	8	-	7	9	9	9	9	9	8	-	9	9	2	6	0	9	0	0	E
ACCENT + DISTINCT	2+ 19,4	x	x	✓	9	0	7/8	9	9 ^R	9 ^R	8	9	9	9	8	9	9	9	9	6	9	9	9	9	9	7	8	6	0	9	9	9	E
ACCENT + ENGENIA, FEXAPAN or XTENDIMAX	2+4	x	x	✓	9	0	7/8	9	9 ^R	9 ^R	8	9	9	9	9	9	9	9	9	6	9	9	9	-	9	-	8	6	0	9	9	8	G
ACCENT + MARKSMAN	2+4,5	x	x	✓	9	0	7/8	9	9 ^R	9 ^R	7	9	9	9	9	9	9	9	9	9	9	9	9	9	9	-	8	6	0	9	8	8	E
ACCENT + PARDNER (bromoxynil ⁶)	2+6	x	x	✓	9	0	7/8	9	9 ^R	9 ^R	8	9	9	9	7	-	-	9	9	8	9	8	9	-	9	-	7	6	0	9	7	7	E
DESTRA IS	2+27	x	x	✓	9	0	7/8	9	9 ^R	9 ^R	7	9	5	8	8	-	7	9	9	9	9	9	8	7	9	-	2	6	6	9	6	2	E
OPTION + AATREX	2+5	x	x	✓	9	0	7	9	9 ^R	9 ^R	7	9	9	9	6	-	6	9	9 ^R	9	9	9 ^R	9	-	9	-	7	6	5	7/8	7	2	E
OPTION + CALLISTO + AATREX	2+27 +4	x	x	✓	9	0	7	9	9 ^R	9 ^R	8	9	9	8	8	-	7	9	9	9	9	9	8	9	9	2	6	0	9	0	0	E	
OPTION + DISTINCT	2+ 19,4	x	x	✓	9	0	7	9	9 ^R	9 ^R	8	9	9	8	8	9	9	9	9	9	9	9	9	9	9	7	8	6	0	9	0	0	E
OPTION + MARKSMAN	2+4,5	x	x	✓	9	0	7	9	9 ^R	9 ^R	7	9	9	9	9	9	9	9	9	9	9	9	9	9	9	-	8	6	0	7/8	8	8	E
OPTION + PARDNER (bromoxynil ⁶)	2+6	x	x	✓	9	0	7	9	9 ^R	9 ^R	7	9	9	9	7	-	9	9	9	9	9	9	9	-	9	-	7	6	5	8	7	5	E

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TABLE 8–1. Conventional Corn (Field, Seed and Sweet) Herbicide Weed Control Ratings (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 * = sold as a co-pack under this trade name
 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					Crop Tolerance			
		seed corn	sweet corn	field corn	barnyard grass	smooth crabgrass	large crabgrass	fall panicum	foxtail, giant	foxtail, green	foxtail, yellow	witchgrass	proso millet	buckwheat, wild	cocklebur	corn spurry	fleabane, Canada	lady's thumb	lamb's-quarters	mustards	nightshades	pigweeds	ragweed, common	ragweed, giant	velvetleaf	waterhemp	bindweed, field	horsetail	nutsedge		quackgrass	sow-thistle	thistle, Canada
Postemergence Grass and Broadleaf Herbicides and Tank-Mixes (cont'd)																																	
PROWL H2O + ACCENT + dicamba ⁶	3+2+4	x	x	✓	9	9	9	9	8	8	8	9	7	8	9	8	9	9	9	6	9	9	9	9	8	-	-	-	-	-	-	-	G
SHIELDEX + AATREX	27+5	✓	✓	✓	6	-	8	-	6	8	6	-	-	-	9	-	9	-	9	9	9	9	9	-	9	-	-	-	-	-	-	-	E

¹ PPI timing is needed to achieve this level of control.

² Use the high rate of herbicide for optimum control.

³ Use PRE timing for optimum control.

⁴ Weed must be emerged to achieve this level of control. Re-growth of perennial sow-thistle and Canada thistle is likely.

⁵ For use on all sweet corn varieties, however not all varieties have been tested. Contact the variety manufacturer for more information on the tolerance of a specific variety.

⁶ Various formulations available, see Table 3–1. *Herbicides Used in Ontario*. See label for specific uses and rates.

⁷ The addition of atrazine is required to achieve this level of control.

TABLE 8-2. Additional Weed Control Ratings for Conventional Corn (Field, Seed and Sweet)**LEGEND:** * = herbicides sold as a co-pack under this trade name

Weed Species	Timing	Herbicides (control rating — out of 10)
atriplex, spreading	Preemergence	CONVERGE XT* (7), MARKSMAN (6)
	Postemergence	PARDNER + AATREX (9), MARKSMAN (7), ENGENIA/FEXAPAN (6), DISTINCT (5), AATREX + oil (2)
adzuki beans, volunteer	Postemergence	CALLISTO + AATREX (9), DISTINCT (9)
bur-cucumber	Preemergence	AATREX (5), CONVERGE XT* (5), MARKSMAN (5), PRIMEXTRA II MAGNUM (5)
	Postemergence	PARDNER + AATREX (8), PEAK + DICAMBA (7), MARKSMAN (6), AATREX + oil (5), CALLISTO + AATREX (4), DICAMBA (2), DISTINCT (2)
clover, red (volunteer)	Postemergence	DICAMBA (9), DISTINCT (9), MARKSMAN (9)
dandelion	Postemergence	OPTION + DISTINCT (7), DISTINCT (7)
flower of an hour	Postemergence	DICAMBA (9), MARKSMAN (9), PARDNER + AATREX (8), AATREX + oil (7), DISTINCT (2)
horsenettle	Postemergence	STEADFAST + DISTINCT (8), STEADFAST + MARKSMAN (7), DISTINCT (5)
prickly lettuce	Postemergence	STEADFAST + DISTINCT (9), MARKSMAN (9), PEAK + DICAMBA (8), DICAMBA (8), DISTINCT (8), PARDNER + AATREX (8)
red top	Postemergence	OPTION (9), STEADFAST (9), ACCENT (8)
sandbur	Preemergence	DUAL II MAGNUM/KOMODO (5), FRONTIER MAX (5), PROWL H20 (5)
	Postemergence	OPTION (9), ACCENT (7)
stink and tufted love grass	Preemergence	DUAL II MAGNUM/KOMODO (9), FRONTIER MAX (9), PROWL H20 (9)
	Postemergence	ACCENT (9)
swamp smartweed	Preemergence	CALLISTO + AATREX (4), CONVERGE XT (4), MARKSMAN (3), AATREX (2)
	Postemergence	PEAK + ENGENIA (6), DICAMBA (6), DISTINCT (5), MARKSMAN (3), PARDNER + AATREX (1), AATREX + oil (0)
three-seeded mercury	Preemergence	ACURON (9), CALLISTO + AATREX (9), CONVERGE XT1(9), MARKSMAN (9), AATREX (9)
	Postemergence	AATREX + oil (9), DISTINCT (9), MARKSMAN (9), PARDNER + AATREX (9), DICAMBA (7), CALLISTO + AATREX (0)
wild carrot	Postemergence	MARKSMAN (9), PEAK + DICAMBA (9), ACURON (8), CALLISTO + AATREX (8), DISTINCT (8), STEADFAST OR ACCENT + CALLISTO + AATREX (8), PARDNER + AATREX (7), DICAMBA (6), AATREX + oil (2)
wirestem muhly	Postemergence	OPTION (9), ACCENT (6)
wood-sorrel	Preemergence	AATREX (9), CONVERGE XT* (9), MARKSMAN (9)
	Postemergence	AATREX + oil (9), DICAMBA (9)
vetch, tufted	Postemergence	LONTREL XC (9), DICAMBA (8), DISTINCT (8), MARKSMAN (8), CALLISTO + AATREX (6)
volunteer wheat	Postemergence	ACCENT (8), OPTION (8), STEADFAST (8) – cereals must be at tillering or smaller to achieve this level of control

Conventional Corn (Field, Seed and Sweet)

Critical Stage: The Critical Stage to control weeds in corn is from emergence until the 8 leaf over stage

Apply all treatments in 150–300 L/ha (60–120 L/acre) water unless otherwise specified.

Cultural and Organic Control Methods

Any single method of weed control or the continuous use of the same herbicides can lead to the build-up of weeds resistant or tolerant to that control method. Triazine-resistant lamb's-quarters and pigweed, for example, are problematic due to continuous corn and repeated use of triazine herbicides. Rotating to other crops and/or other control methods reduces the chance of new or unique weed infestations.

To control small annual weed seedlings, blind harrow with a set of light harrows at a shallow depth before the corn has emerged, or use a weeder harrow (with L-shaped flexible tines) when the crop is 5–10 cm high. High speed (10 km/h), shallow (2.5–3 cm) cultivation with the rotary hoe when corn is 7–8 cm high also helps control small weed seedlings. These techniques will not reduce herbicide action and often enhances weed control. Inter-row cultivation can be used to complement other weed control measures. Row cultivation is most effective when weeds are small. Shallow cultivation will reduce: germination of new weed seeds, moisture loss and corn root injury.

Inter-row cultivation may be required when weeds escape herbicide treatment; consider weeds escapes when they are 5–7 cm high.

Cultivation gives some control of established perennial weeds but may also help to spread them to previously uninfested areas. Machinery sanitation is important when moving from one field to another. Many perennials (e.g., quackgrass, sow-thistle) can be spread on tillage equipment. Machinery operators should be particularly careful when moving from one farm to another.

Seed Corn

Some field corn registrations are applicable to seed corn, however, certain inbreds are susceptible to some herbicides. Check with the contracting company before applying any herbicide. For information on specific weeds see Table 8–1. *Conventional Corn (Field, Seed and Sweet) Herbicide Weed Control Rating* and then refer to the appropriate section for details about herbicide treatment.

Mixing Herbicides With Nitrogen

Nitrogen solution can be used as a carrier, instead of water, for preplant and preemergence application of some herbicides. Weed control activity is not increased. Spray before crop emergence. Consult the herbicide label for proper methods of application and use of dispersing agents. Calibrate the sprayer to apply the required amount of nitrogen. Use stainless steel flood jet nozzles of adequate size. Nitrogen solution is mildly corrosive, especially to brass; clean the sprayer immediately after use. UNITE may be used to improve liquid fertilizer herbicide compatibility and stability when a simultaneous application of a liquid fertilizer and liquid or wetttable powder herbicide is desired. Because formulations and rates vary, it is essential to read the label to determine the exact amount and method to be used.

Do not apply nitrogen solution with postemergence herbicides as significant crop injury and reduced weed control can occur.

Special Notes For Corn, Field and Sweet

PRECAUTIONS: Do not use 2,4-D, MCPA, MCPB, 2,4-DB or dicamba later than 2 weeks prior to the first appearance of tassels or ear silk. Use extreme care when applying these herbicides near susceptible crops because of possible herbicide movement. Soybeans, tomatoes and tobacco are extremely sensitive to dicamba and injury symptoms may persist for several weeks. Do not use dicamba in the area of susceptible crops when temperatures exceed 25°C on the day of application or if high humidity is expected, due to the possibility of dicamba volatilizing and injuring susceptible crops nearby. Leave several rows of corn unsprayed when adjacent to soybean fields or other susceptible crops.

Atrazine and Simazine Soil Residues

Atrazine and simazine residues may last for more than one year, particularly if high rates are used more than once and dry weather occurs. If atrazine or simazine is used year after year as in a continuous corn program, triazine residues may be higher. Atrazine when used at rates of 1 kg/ha (active ingredient) or lower on corn do not cause injury to succeeding crops of oats, barley, mixed grains, or soybeans. However certain crops are sensitive when grown the year after Atrazine has been applied at rates above 1 kg/ha (active ingredient). Refer to the product label and Tables 3–3 and 3–4. *Herbicide Crop Rotation and Soil pH Restrictions* for specific rotational crop restrictions.

Injury has been reported on tomatoes, white beans, forage seedlings, peas, tobacco, cucumbers, onions, and turnips following applications of atrazine at more than 1.1 kg/ha (active ingredient) on corn the previous year.

To reduce the hazard of atrazine residues on succeeding crops:

- Fall plowing will reduce triazine injury more than spring plowing will.

- Deeper tillage will reduce the concentration of herbicide in the upper soil area compared to shallow tillage.
- Ensure that the sprayer used is adequate and is properly calibrated and adjusted. Spray uniformly without overlaps and do not spray while the sprayer is stopped.

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 on a product's label. Cultivation equipment used for herbicide incorporation are known to spread perennial weeds to previously uninfested areas. Pay special attention to machinery cleanliness, and 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 controls

weed escapes and improves herbicide activity in the absence of rainfall.

- Postemergence (POST) –Apply herbicide when weeds are small and actively growing. Avoid applying herbicides past the maximum weed leaf stage listed on the label or control will be reduced. 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.

Corn Leaf Stages

Counting leaves on a corn plant may sound like an easy task, but there are complications that can cause miscounting. There are several methods of counting leaves. It is important to know which leaf counting method is being referred to.

This publication uses the leaf over method, (see Figure 8–1) where counting starts with leaves that have emerged from the whorl and the leaf tip is starting to arch over. This normally occurs when leaves are about 50% emerged. Most product labels also use this

method of leaf counting, but check the label or with the product representative to be sure. The comparative growth stages table in the next column gives a comparison among the count methods.

Another complication with leaf counting is where on the plant leaf counting begins. In this publication, the first leaf is the bottom leaf of the plant. The first leaf is shorter than other leaves and has a round leaf tip. However, as the plant grows the bottom leaves die and drop to the ground. For example, a 10 leaf corn plant may be incorrectly identified as a 7 leaf corn plant because 3 leaves may be “senesced” or fallen off. These leaves may not be immediately apparent and care must be taken to count them.

Start counting from the bottom leaf and check the first leaf to look for the rounded leaf tip.

It takes about 75–80 crop heat units (CHU) to produce each corn leaf. Therefore at temperatures of 30°C day, and 20°C at night, there is one new leaf every 2–3 days; and at 20°C day, and 10°C at night, one new leaf every 5–6 days.

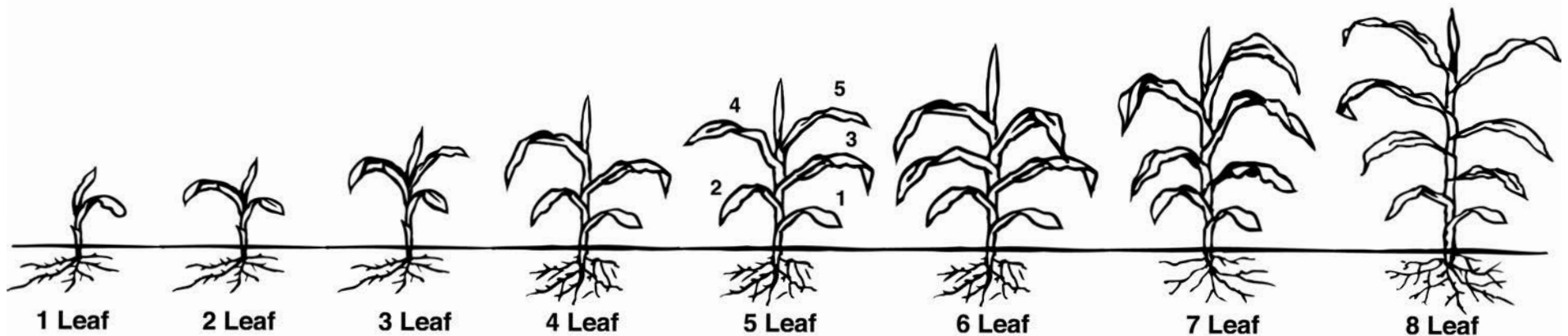


FIGURE 8–1. Leaf Over Method of Counting Corn Leaves.

Some product labels also use plant height to indicate crop growth stages. In general, plant height is more variable depending on plant genetics and on the weather of the season. The following Table 8–3 gives some comparative heights for each leaf stage but individual plants may be slightly more or less than the stage given depending on genetics and weather. The standing height is measured from the ground surface to the top of the plant as it stands. Leaf extended refers to the height of the plant with the leaves pulled up to their full height.

TABLE 8–3.
Comparative Growth Stages

Leaf Over ¹	Leaf Collar	Leaf Tip ²	Standing Height (cm)	Leaf Extended (cm)
2	1	3	5–6	5–11
4	3	5–6	9–17	16–25
6	4–5	7–8	18–33	29–46
8	5–6	9–10	36–54	54–77
10	8	12	58–85	86–112
12	10	14–15	99–114	121–149

¹ Number of leaf tips emerged from the whorl.

² Number of leaf whorls emerged from the whorl.

TABLE 8–4. Herbicide Treatment Rates for Conventional Corn (Field, Seed and Sweet)

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 Burndown and Residual Control			
Non-selective herbicides such as glyphosate are used to control emerged weeds prior to no-till planting. Tank-mixing of a residual herbicide with glyphosate can be used to improve application efficiency with a “one pass” weed management program.			
Refer also to Chapter 5, <i>Preplant & Postharvest Weed Control</i> for preplant application rates for glyphosate.			
It is also important to note that when targeting perennial weeds, the addition of a triazine-based herbicide (e.g., AATREX, CONVERGE 480, MARKSMAN, PRIMEXTRA II MAGNUM) will reduce the level of activity achieved with glyphosate. Increasing the rate of glyphosate should overcome this antagonism.			
Soil Applied Grass and Broadleaf Herbicides (Preemergence Timing Only)			
bicyclopyrone (7.1 g/L) (35 g/ha) mesotrione (28.5 g/L) (140 g/ha) s-metolachlor (257 g/L) (1262 g/ha) atrazine (120 g/L) (589 g/ha)	ACURON	4.91 L/ha (1.96 L/acre)	<ul style="list-style-type: none"> • Apply PRE to field, seed or sweet corn, Do NOT mix with ammonium sulphate (AMS). • Apply in a minimum of 150 L/ha (60 L/acre) or water or urea ammonium nitrate (UAN). • Nitrogen solutions (such as 28-0-0 UAN), excluding suspension and sulphur containing fertilizers, may replace water as a carrier for pre-emergence applications. Do not use nitrogen solutions as a carrier to corn that has emerged. Always predetermine the compatibility of ACURON Herbicide tank mixes with your liquid fertilizer carrier by mixing small proportional quantities in advance. • Pre harvest intervals: 50 days (sweet corn); 90 days (silage corn).
flumioxazin (70.4-105.6 g/ha)/ pyroxasulfone (89-134 g/ha)	FIERCE EZ (160 g/L : 203 g/L)	440–660 mL/ha (176–264 mL/acre)	<ul style="list-style-type: none"> • Apply between 7 and 30 days prior to planting field corn into no-till or minimum tillage fields. Provides preemergence control of susceptible weeds in field corn. • Do NOT apply to conventional tilled corn fields. • When weeds are already emerged, apply in a tank mix with a glyphosate product, present as isopropyl amine or potassium salt, at a rate 1.2 kg a.e./ha (e.g. glyphosate 540 g/L at 2.2 L/ha or 0.89 L/acre).
pyroxasulfone (125–150 g/ha) carfentrazone-ethyl (14.8–17.8 g/ha) atrazine (1.01–1.49 kg/ha)	FOCUS (447 g/L: 53 g/L) + AATREX (480 g/L)	280–336 mL/ha (112–134 mL/acre) + 2.1–3.1 L/ha (0.84–1.24 L/acre)	<ul style="list-style-type: none"> • Do NOT use on seed or sweet corn. • Apply PP or PRE. • Do NOT use on peat or muck soils and soils with 7% or more organic matter content. • Moisture is necessary to activate this herbicide in the soil prior to the germination of sensitive weeds. • Pre harvest interval: 60 days
saflufenacil/ dimethenamid-P (735 g/ha)	INTEGRITY (668 g/L)	1.1 L/ha (0.44 L/acre)	<ul style="list-style-type: none"> • Apply PPI or PRE. • A PPI application is required for the control of yellow nutsedge and Eastern black nightshade. • Do NOT incorporate greater than 3 cm deep or control will be reduced. • INTEGRITY may be used with liquid fertilizer as a carrier. Conduct a liquid fertilizer compatibility test by mixing a small quantity of herbicide with a proportional quantity of liquid fertilizer in a jar prior to loading a spray tank. • Pre harvest interval: 60 days (sweet corn), 100 days (field corn)
simazine (1.6–4 kg/ha)	SIMAZINE 480 (480 g/L)	3.4–8.3 L/ha (1.36–3.32 L/acre)	<ul style="list-style-type: none"> • Low rates should be used on sandy soils while the higher rates may be used on loams and clays. • Full season annual weed control can be expected except for crabgrass or fall panicum where infestations have built up. • Caution is advised when considering rates beyond 2.0 kg/ha (0.8 kg/acre) as high soil residues may be created and rotational crops may be affected.

TABLE 8–4. Herbicide Treatment Rates for Conventional Corn (Field, Seed and Sweet) (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.
Soil Applied Tank-Mixes (Preemergence Timing Only)			
s-metolachlor/benoxacor (1.14 kg/ha) + linuron (0.38–0.75 kg/ha) + atrazine (0.99–1.53 kg/ha)	DUAL II MAGNUM (915 g/L) + LOROX L (480 g/L) + AATREX (480 g/L) KOMODO (915 g/L) + LOROX L (480 g/L) + AATREX (480 g/L)	1.25 L/ha (0.5 L/acre) + 0.79–1.56 L/ha (0.32–0.63 L/acre) + 2.06–3.19 L/ha (0.83–1.28 L/acre)	<ul style="list-style-type: none"> • Use ONLY on sweet corn. • Make ONLY one application per year. • Apply in a minimum of 150 L water/ha. • Do NOT harvest sweet corn within 50 days of treatment. • Apply by ground equipment ONLY.
s-metolachlor/ benoxacor/atrazine (2.16–2.88 kg/ha) + linuron (0.37–0.75 kg/ha)	PRIMEXTRA II MAGNUM ((1:0.8) 720 g/L) + LOROX L (480 g/L)	3–4 L/ha (1.2–1.6 L/acre) + 0.77–1.56 L/ha (0.31–0.63 L/acre)	<ul style="list-style-type: none"> • Do NOT use on seed corn or sweet corn. • This tank-mix can be used on light textured soils with organic matter greater than 1.0%. • Linuron controls triazine resistant lamb's-quarters and redroot pigweed. Fall panicum or velvetleaf may not be controlled for the full season. • Pre harvest interval: 45 days
Soil Applied Broadleaf Herbicides (Preemergence timing only)			
atrazine (1.01–1.49 kg/ha)	AATREX (480 g/L)	2.1–3.1 L/ha (0.84–1.24 L/acre)	<ul style="list-style-type: none"> • Apply PPI, PRE. • Can be tank-mixed with glyphosate for PP burndown of emerged annual and perennial weeds, see Chapter 5, Preplant & Postharvest Weed Control for more information. • Pre harvest interval: 60 days (grain), 45 days (sweet),
atrazine (1.01–1.49 kg/ha) + dicamba (0.6 kg/ha)	AATREX (480 g/L) + ENGENIA (600 g/L) AATREX (480 g/L) + XTENDIMAX (350 g/L) AATREX (480 g/L) + FEXAPAN (350 g/L)	2.1–3.1 L/ha (0.84–1.24 L/acre) + 1 L/ha (0.4 L/acre) 2.1–3.1 L/ha (0.84–1.24 L/acre) + 1.71 L/ha (0.68 L/acre) 2.1–3.1 L/ha (0.84–1.24 L/acre) + 1.71 L/ha (0.69 L/acre)	<ul style="list-style-type: none"> • Apply PRE. • Do NOT use on seed corn or sweet corn. • This treatment should provide good control of triazine resistant broadleaf weeds and velvetleaf. • See notes on atrazine with respect to residues. • See precautions for FEXAPAN, XTENDIMAX or ENGENIA applied alone. • Do NOT apply to coarse (sand) textured soils with less than 2% organic matter. • Pre harvest interval: 30 days
flumetsulam (50 g/ha)	BROADSTRIKE RC (80%)	62.5 g/ha (25 g/acre)	<ul style="list-style-type: none"> • Apply PP, PPI or PRE. • Do NOT use on seed corn or sweet corn. • Do NOT use where the soil pH is greater than 7.8 or where the organic matter is less than 2%. • Do NOT apply to peat or muck soils or where the soil organic matter is greater than 5%. • Do NOT apply more than once a year. • Pre harvest interval: 90 days

TABLE 8–4. Herbicide Treatment Rates for Conventional Corn (Field, Seed and Sweet) (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.
Soil Applied Broadleaf Herbicides (Preemergence timing only) (cont'd)			
mesotrione (0.140 kg/ha) + atrazine (1.0–1.49 kg/ha)	CALLISTO (480 g/L) + AATREX (480 g/L) MESTER 480 SC (480 g/L) + AATREX (480 g/L)	0.3 L/ha (0.12 L/acre) + 2.1–3.1 L/ha (0.85–1.25 L/acre)	<ul style="list-style-type: none"> Apply PRE to field, seed or sweet corn. For annual grass control and improved control of certain broadleaf weeds CALLISTO should be tank-mixed with Primextra II Magnum. Pre harvest interval: 100 days (grain), 90 days (silage)
dicamba (0.6 kg/ha)	ENGENIA (600 g/L) XTENDIMAX (350 g/L) FEXAPAN (350 g/L)	1 L/ha (0.4 L/acre) 1.71 L/ha (0.68L/acre)	<ul style="list-style-type: none"> Apply PRE. Do NOT use on seed corn or sweet corn. If corn seed is less than 4 cm below the soil surface, delay application until the spike stage of corn. Apply to medium to fine textured soils containing more than 2.5% organic matter. Do NOT apply to coarse (sand) textured soils with less than 2% organic matter. Do NOT incorporate. Pre harvest interval: 30 days
dicamba/atrazine (1.5–1.8 kg/ha)	MARKSMAN (393 g/L)	3.7–4.5 L/ha (1.5–1.8 L/acre)	<ul style="list-style-type: none"> Apply PRE. Do NOT use on seed corn or sweet corn. See notes on atrazine with respect to residues. See precautions for FEXAPAN, XTENDIMAX or ENGENIA applied alone. Do NOT apply to coarse (sand) textured soils with less than 2% organic matter. Pre harvest interval: 60 days
flumioxazin (71.4–107.1 g/ha)	VALTERA EZ (480 g/L)	150–225 mL/ha (60–90 mL/acre)	<ul style="list-style-type: none"> Apply between 7 and 30 days prior to planting field corn into no-till or minimum tillage fields. Provides preemergence control of susceptible weeds in field corn. Do NOT apply to conventional tilled corn fields. When weeds are already emerged, apply in a tank mix with a glyphosate product, present as isopropyl amine or potassium salt, at a rate 1.2 kg a.e./ha (e.g. glyphosate 540 g/L at 2.2 L/ha or 0.89 L/acre).
Preemergence and Early Postemergence Grass Herbicides			
s-metolachlor/benoxacor (1.14–1.6 kg/ha)	DUAL II MAGNUM (915 g/L) KOMODO (915 g/L)	1.25–1.75 L/ha (0.5–0.7 L/acre)	<ul style="list-style-type: none"> Apply PPI, PRE. Apply POST (up to 3 leaf corn) on field corn ONLY. For PPI timing, set incorporation equipment to work soil no deeper than 10 cm. Improved control of yellow nutsedge is obtained when DUAL II MAGNUM is applied PPI. Grassy weeds beyond the 2 leaf stage will not be controlled. Optimal control of nightshade is obtained when DUAL II MAGNUM is applied PRE. Do NOT use on muck, peat, or high organic matter soils. See tank-mixes for treatments to provide annual broadleaf control or follow with sequential postemergence broadleaf herbicide. Can be tank-mixed with glyphosate for PP burndown of emerged annual and perennial weeds, see Chapter 5, Preplant & Postharvest Weed Control for more information. Pre harvest interval: 85 days (grain), 45 days (sweet)

TABLE 8–4. Herbicide Treatment Rates for Conventional Corn (Field, Seed and Sweet) (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.
Preemergence and Early Postemergence Grass Herbicides (cont'd)			
dimethenamid (544–693 g/ha)	FRONTIER MAX (720 g/L)	756–963 mL/ha (305–390 mL/acre)	<ul style="list-style-type: none"> • Apply PPI or PRE to seed, sweet and field corn. • Apply POST (up to 3 leaf corn) on field corn ONLY. • For PPI timing, set incorporation equipment to work soil no deeper than 10 cm. • Improved control of yellow nutsedge is obtained when FRONTIER MAX is applied PPI at the highest rate. • Sensitive weeds beyond the 2 leaf stage will not be controlled. • Apply higher rates on fine textured or high organic matter soils or when targeting nightshade, nutsedge and pigweed. • Do NOT use on muck, peat, or high organic matter soils. • See tank-mixes for treatments to provide annual broadleaf control or follow with sequential postemergence broadleaf herbicide. • Maximum use rate of FRONTIER MAX for seed corn is 756 mL/ha (305 mL/acre). • Consult the seed corn company for information on the tolerance of seed corn inbred lines prior to the use of FRONTIER MAX herbicide.
pendimethalin (1.68 kg/ha)	PROWL H2O (455 g/L)	3.7 L/ha (1.48 L/acre)	<ul style="list-style-type: none"> • Do NOT use on seed corn or sweet corn. • Apply PRE or POST up to the 4 leaf stage of field corn. • PROWL H2O alone will not control emerged weeds. Tank-mixing or use of a sequential herbicide program to achieve broad spectrum control is suggested. Plant corn at least 4 cm deep and ensure good seed coverage. PROWL H2O may be applied in water or liquid fertilizer as a carrier. Conduct a liquid fertilizer compatibility test with any of the registered PROWL H2O tank-mix combinations. If there is no rain within 7 days, rotary hoeing or shallow cultivation is required. • Pre harvest interval: 100 days
rimsulfuron (15 g/ha) + non-ionic surfactant	RIMSULFURON 25% WDG + AGRAI 90	60 g/ha (24 g/acre) + 2 L/1,000 L	<ul style="list-style-type: none"> • Do NOT use on seed corn or sweet corn. • Do NOT apply to corn hybrids with corn heat unit (CHU) ratings of 2500 or less. • Apply PRE or POST up to the 3 leaf stage of field corn. • If sensitive weeds are emerged, the addition a non-ionic surfactant is required. Grassy weeds should be in the 1 to 4 leaf stage and broadleaf weeds in the 2 to 4 leaf stage to optimize control. • Can be tank-mixed with the following to improve spectrum of weed control: <ul style="list-style-type: none"> • DUAL II MAGNUM (625 mL/ha or 250 mL/acre) + CALLISTO (210 mL/ha or 84 mL/acre) • MARKSMAN (2.5 L/ha or 1 L/acre)
pyroxasulfone (125, 166, 208.5 or 246.5 g/ha)	ZIDUA SC (500 g/L)	Coarse: 250 mL/ha (100 mL/acre) Med: 332 mL/ha (133 mL/acre) (> 3% O.M.): 417 mL/ha (167 mL/acre) Fine: 493 mL/ha (197 mL/acre)	<ul style="list-style-type: none"> • Do NOT use on seed corn or sweet corn. • Apply PP, PRE or early POST up to the 4 leaf stage of field corn. • Do NOT use on peat or muck soils with 7% organic matter content. • Can be tank mixed with glyphosate or Aatrex 480

TABLE 8–4. Herbicide Treatment Rates for Conventional Corn (Field, Seed and Sweet) (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.
Preemergence and Early Postemergence Grass and Broadleaf Herbicides			
bicyclopyrone (7.1 g/L) (35 g/ha) mesotrione (28.5 g/L) (140 g/ha) s-metolachlor (257 g/L) (1262 g/ha) atrazine (120 g/L) (589 g/ha)	ACURON	4.91 L/ha (1.96 L/acre)	<ul style="list-style-type: none"> • Apply PRE or POST up to the 6 leaf stage of corn. Will not control grassy weeds beyond the 2 leaf stage of growth. Broadleaf weeds should be between the 2–6 leaf stage. • Do NOT apply to emerged seed or sweet corn. • No adjuvant is required. • Do NOT mix with ammonium sulphate (AMS). • Apply in a minimum of 150 L/ha (60 L/acre) or water or urea ammonium nitrate (UAN). • Pre harvest intervals: 50 days (sweet corn); 90 days (silage corn).
isoxaflutole (79–105 g/ha) + atrazine (800–1063 g/ha)	CONVERGE XT (sold as a co-pack): CONVERGE FLEXX (240 g/L) + CONVERGE 480 (480 g/L)	330–440 mL/ha (134–178 mL/acre) + 1.67–2.21 L/ha (0.67–0.89 L/acre)	<ul style="list-style-type: none"> • Apply PRE-PLANT or PRE to seed corn. • Not all seed corn inbred lines have been tested for tolerance to Converge Flexx. Use of this product must be approved by the contracting seed corn company and comply with their directions for use. • Apply PRE-PLANT, PRE or POST up to the 3 leaf stage of field corn. • Do NOT incorporate treatments prior to planting. • Use the higher application rates for control of fall panicum and proso millet. • CONVERGE XT is a co-pack of CONVERGE FLEXX and CONVERGE 480. • Do NOT use CONVERGE XT on sands, loamy sands and/or soils with less than 2% organic matter. • Can be tank-mixed with glyphosate for PP burndown of emerged annual and perennial weeds, see Chapter 5, Preplant & Postharvest Weed Control for more information. • Pre harvest interval: 30 days
rimsulfuron (15 g/ha) + mesotrione (144 g/ha)	ENGARDE (4.31%:41.38%)	348 g/ha (139 g/acre)	<ul style="list-style-type: none"> • Do NOT use on seed corn or sweet corn. • Apply PRE or Early POST up to the 2 leaf stage of corn. • A non-ionic surfactant must be used at 0.2% v/v when weeds are emerged at the time of application. • Engarde can be applied with 28% UAN as a carrier (PRE only). • Can be tank-mixed with glyphosate for emerged annual and perennial weeds. See Chapter 5, Preplant & Postharvest Weed Control for more information. • Pre harvest interval: 100 days (grain), 90 days (silage)
s-metolachlor/ benoxacor/atrazine (2.16–2.88 kg/ha)	PRIMEXTRA II MAGNUM ((1:0.8) 720 g/L)	3–4 L/ha (1.2–1.6 L/acre)	<ul style="list-style-type: none"> • Apply PPI, PRE or POST up to the 3 leaf stage of corn. • Use the higher rate where annual grass build up or nutsedge infestation is evident. • Grassy weeds beyond the 2 leaf stage will not be controlled. • The equivalent rate of PRIMEXTRA II MAGNUM can be achieved by adding DUAL II MAGNUM at 1.25–1.75 L/ha (0.5–0.7 L/acre) with AATREX at 2.1–3.1 L/ha (0.84–1.24 L/acre). • Can be tank-mixed with glyphosate for PP burndown of emerged annual and perennial weeds, see Chapter 5, Preplant & Postharvest Weed Control for more information. • Pre harvest interval: 100 days

TABLE 8–4. Herbicide Treatment Rates for Conventional Corn (Field, Seed and Sweet) (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.
Preemergence and Early Postemergence Tank-Mixes (for Control of Grass and Broadleaf Weeds)			
dimethenamid-p (630 g/L) (630 g/ha) topramezone (12.5 g/L) (12.5 g/ha) + atrazine (480 g/L) (480 g/ha)	AREMZON PRO + AATREX	1 L/ha (0.4 L/acre) + 1 L/ha (0.4 L/acre)	<ul style="list-style-type: none"> • Apply POST up to the 7 leaf stage of field corn. • In conventional corn, if weeds are emerged add Merge or Assist plus 28% UAN. • Grassy weeds are sensitive up to the 1–4 leaf stage and broadleaf weeds are sensitive up to the 1–8 leaf stage. • Pre harvest interval: 80 days
dimethenamid-p (630 g/L) (630 g/ha) topramezone (12.5 g/L) (12.5 g/ha) + dicamba (133 g/L) (488 g/ha) +atrazine (261 g/L) (966 g/ha)	ARMEZON PRO + MARKSMAN	1 L/ha (0.4 L/acre) + 2.5 L/ha (1 L/acre)	<ul style="list-style-type: none"> • Apply POST up to the 3 leaf stage of field corn. • Grassy weeds are sensitive up to the 1–4 leaf stage and broadleaf weeds are sensitive up to the 1–8 leaf stage. • Pre harvest interval: 80 days
flumetsulam (50 g/ha) + s-metolachlor/ benoxacor (1.14–1.6 kg/ha)	BROADSTRIKE RC (80%) + DUAL II MAGNUM (915 g/L)	62.5 g/ha (25 g/acre) + 1.25–1.75 L/ha (0.5–0.7 L/acre)	<ul style="list-style-type: none"> • Apply PP, PPI, PRE or POST up to the 2 leaf stage of corn. • Do NOT use on seed corn or sweet corn. • See precautions for BROADSTRIKE RC alone and DUAL II MAGNUM alone. • Pre harvest interval: 90 days
flumetsulam (50 g/ha) + s-metolachlor/ benoxacor/atrazine (2.16–2.88 kg/ha)	BROADSTRIKE RC (80%) + PRIMEXTRA II MAGNUM ((1:0.8) 720 g/L)	62.5 g/ha (25 g/acre) + 3–4 L/ha (1.2–1.6 L/acre)	<ul style="list-style-type: none"> • Apply PP, PPI, PRE or POST up to the 2 leaf stage of corn. • Do NOT use on seed corn or sweet corn. • See precautions for BROADSTRIKE RC alone and PRIMEXTRA II MAGNUM alone. • Pre harvest interval: 90 days
s-metolachlor/benoxacor (1.14–1.6 kg/ha) + dicamba (0.6 kg/ha)	DUAL II MAGNUM (915 g/L) + ENGENIA (600 g/L)	1.25–1.75 L/ha (0.5–0.7 L/acre) + 1 L/ha (0.4 L/acre)	<ul style="list-style-type: none"> • Do NOT use on seed corn or sweet corn. • Apply PRE or POST up to the 3 leaf stage of field corn. • Use higher rates on heavy grass infestations and for fall panicum. Fall panicum may not be controlled all season. • Grassy weeds beyond the 2 leaf stage will not be controlled. • See precautions for ENGENIA, FEXAPAN or XTENDIMAX applied alone. • Do NOT apply to coarse (sand) textured soils with less than 2% organic matter. • Pre harvest interval: 85 days
	DUAL II MAGNUM (915 g/L) + FEXAPAN (350 g/L)	1.25–1.75 L/ha (0.5–0.7 L/acre) + 1.7 L/ha (0.68 L/acre)	
	DUAL II MAGNUM (915 g/L) + XTENDIMAX (350 g/L)		

TABLE 8–4. Herbicide Treatment Rates for Conventional Corn (Field, Seed and Sweet) (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.
Preemergence and Early Postemergence Tank-Mixes (for Control of Grass and Broadleaf Weeds) (cont'd)			
s-metolachlor/benoxacor (1.14–1.6 kg/ha) + dicamba (0.6 kg/ha) + atrazine (1.01–1.49 kg/ha)	DUAL II MAGNUM (915 g/L) + ENGENIA (600 g/L) + AATREX (480 g/L) DUAL II MAGNUM (915 g/L) + FEXAPAN (350 g/L) + AATREX (480 g/L) DUAL II MAGNUM (915 g/L) + XTENDIMAX (350 g/L) + AATREX (480 g/L)	1.25–1.75 L/ha (0.5–0.7 L/acre) + 1 L/ha (0.4 L/acre) + 2.1–3.1 L/ha (0.84–1.24 L/acre) 1.25–1.75 L/ha (0.5–0.7 L/acre) + 1.7 L/ha (0.68 L/acre) + 2.1–3.1 L/ha (0.84–1.24 L/acre)	<ul style="list-style-type: none"> • Do NOT use on seed corn or sweet corn. • Apply PRE or POST up to the 3 leaf stage of field corn. • Use higher rates on heavy grass infestations and for fall panicum. Fall panicum may not be controlled all season. • Grassy weeds beyond the 2 leaf stage will not be controlled. • See precautions for ENGENIA, FEXAPAN or XTENDIMAX applied alone. • Do NOT apply to coarse (sand) textured soils with less than 2% organic matter. • Pre harvest interval: 85 days
s-metolachlor/benoxacor (1.14–1.60 kg/ha) + mesotrione (0.140 kg/ha) + atrazine (1.0–1.49 kg/ha)	DUAL II MAGNUM (915 g/L) + CALLISTO (480 g/L) + AATREX (480 g/L) KOMODO (915 g/L) + CALLISTO (480 g/L) + AATREX (480 g/L)	1.25–1.75 L/ha (0.5–0.7 L/acre) + 0.3 L/ha (0.12 L/acre) + 2.1–3.1 L/ha (0.85–1.25 L/acre)	<ul style="list-style-type: none"> • Apply PRE to field, seed and sweet corn. • Apply PRE or POST up to the 3 leaf stage of field corn ONLY. • Use high rates for heavy grass infestations. • Grassy weeds beyond the 2 leaf stage will not be controlled. • Do NOT apply to corn treated with an organophosphorous insecticide. • Pre harvest interval: 100 days (grain), 90 days (silage)
s-metolachlor/benoxacor (1.14–1.6 kg/ha) + dicamba/atrazine (1.48–1.8 kg/ha)	DUAL II MAGNUM (915 g/L) + MARKSMAN (393 g/L) KOMODO (915 g/L) + MARKSMAN (393 g/L)	1.25–1.75 L/ha (0.5–0.7 L/acre) + 3.7–4.5 L/ha (1.5–1.8 L/acre)	<ul style="list-style-type: none"> • Do NOT use on seed corn or sweet corn. • Apply PRE or POST up to the 3 leaf stage of field corn. • Use higher rates on heavy grass infestations and for fall panicum. Fall panicum may not be controlled all season. • Grassy weeds beyond the 2 leaf stage will not be controlled. • See precautions for ENGENIA, FEXAPAN or XTENDIMAX alone. • Do NOT apply to coarse (sand) textured soils with less than 2% organic matter. • Pre harvest interval: 85 days
dimethenamid (544–693 g/ha) + atrazine (1–1.53 kg/ha)	FRONTIER MAX (720 g/L) + AATREX (480 g/L)	756–963 mL/ha (305–390 mL/acre) + 2.08–3.19 L/ha (0.832–1.28 L/acre)	<ul style="list-style-type: none"> • Apply PP, PPI, PRE or POST up to the 3 leaf stage of corn. • Use the higher rate of FRONTIER MAX for heavier weed populations. Control of non-emerged triazine resistant weeds will be limited to pigweed. • Grassy weeds beyond the 2 leaf stage will not be controlled. • Can be tank-mixed with glyphosate for PP burndown of emerged annual and perennial weeds, see Chapter 5, Preplant & Postharvest Weed Control for more information. • Pre harvest interval: 60 days (grain)
dimethenamid (544–693 g/ha) + dicamba (0.6 kg/ha)	FRONTIER MAX (720 g/L) + ENGENIA (480 g/L)	756–963 mL/ha (305–390 mL/acre) + 1 L/ha (0.4 L/acre)	<ul style="list-style-type: none"> • Do NOT use on seed corn, popcorn or sweet corn. • Apply PP, PRE or POST up to the 3 leaf stage of field corn. • Use the higher rate of FRONTIER MAX for heavier weed populations. For improved burndown control, the addition of glyphosate may be required. • Grassy weeds beyond the 2 leaf stage will not be controlled. • See precautions for ENGENIA applied alone. • Pre harvest interval: 30 days (grain)

TABLE 8-4. Herbicide Treatment Rates for Conventional Corn (Field, Seed and Sweet) (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.
Preemergence and Early Postemergence Tank-Mixes (for Control of Grass and Broadleaf Weeds) (cont'd)			
dimethenamid (544–693 g/ha) + dicamba/atrazine (1.8 kg/ha)	FRONTIER MAX (720 g/L) + MARKSMAN (393 g/L)	756–963 mL/ha (305–390 mL/acre) + 4.5 L/ha (1.8 L/acre)	<ul style="list-style-type: none"> • Do NOT use on seed or sweet corn. • Apply PP, PRE or POST up to the 3 leaf stage of field corn. • Use the higher rate of FRONTIER MAX for heavier weed populations. For improved burndown control, adding glyphosate may be required. • Grassy weeds beyond the 2 leaf stage will not be controlled. • See precautions for ENGENIA, FEXAPAN or XTENDIMAX applied alone. • Pre harvest interval: 60 days (grain)
s-metolachlor/ benoxacor/atrazine (2.16–2.88 kg/ha) + mesotrione (0.140 kg/ha)	PRIMEXTRA II MAGNUM ((1:0.8) 720 g/L) + CALLISTO (480 g/L) PRIMEXTRA II MAGNUM ((1:0.8) 720 g/L) + MESTER 480 SC (480 g/L)	3–4 L/ha (1.2–1.6 L/acre) + 0.3 L/ha (0.12 L/acre)	<ul style="list-style-type: none"> • Apply PRE to seed and sweet corn. • Apply PRE or POST up to the 3 leaf stage of field corn. • Use high rates for heavy grass infestations. • Grassy weeds beyond the 2 leaf stage will not be controlled. • Do NOT apply to corn treated with an organophosphorous insecticide. • Pre harvest interval: 100 days (grain), 90 days (silage)
s-metolachlor/ benoxacor/atrazine (2.16–2.88 kg/ha) + dicamba (0.6 kg/ha)	PRIMEXTRA II MAGNUM ((1:0.8) 720 g/L) + ENGENIA (600 g/L) PRIMEXTRA II MAGNUM ((1:0.8) 720 g/L) + FEXAPAN (350 g/L) PRIMEXTRA II MAGNUM ((1:0.8) 720 g/L) + XTENDIMAX (350 g/L)	3–4 L/ha (1.2–1.6 L/acre) + 1 L/ha (0.4 L/acre) 3–4 L/ha (1.2–1.6 L/acre) + 1.7 L/ha (0.68 L/acre)	<ul style="list-style-type: none"> • Do NOT use on seed corn or sweet corn. • Apply PRE or POST up to the 3 leaf stage of field corn. • Use higher rates on heavy grass infestations and for fall panicum. Fall panicum may not be controlled all season. • Grassy weeds beyond the 2 leaf stage will not be controlled. • See precautions for ENGENIA, FEXAPAN or XTENDIMAX alone. • Do NOT apply to coarse (sand) textured soils with less than 2% organic matter. • Pre harvest interval: 80 days (grain)
pendimethalin (1.68 kg/ha) + atrazine (1.53 kg/ha)	PROWL H2O (455 g/L) + AATREX (480 g/L)	3.7 L/ha (1.48 L/acre) + 3.19 L/ha (1.28 L/acre)	<ul style="list-style-type: none"> • Do NOT use on seed corn or sweet corn. • Apply PRE or POST up to the 4 leaf stage of field corn. • See precautions for PROWL H2O alone. • Pre harvest interval: 100 days (grain)
pendimethalin 1.68 kg/ha + dicamba (0.6 kg/ha)	PROWL H2O (455 g/L) + ENGENIA (600 g/L) PROWL H2O (455 g/L) + FEXAPAN (350 g/L) PROWL H2O (455 g/L) + XTENDIMAX (350 g/L)	3.7 L/ha (1.48 L/acre) + 1 L/ha (0.5 L/acre) 3.7 L/ha (1.48 L/acre) + 1.7 L/ha (0.68 L/acre)	<ul style="list-style-type: none"> • Do NOT use on seed corn or sweet corn. • Apply PRE or POST up to the 4 leaf stage of field corn. • See precautions for PROWL H2O alone, and ENGENIA, FEXAPAN or XTENDIMAX alone. • Pre harvest interval: 100 days (grain)
pendimethalin (1.68 kg/ha) + dicamba/atrazine (1.48–1.8 kg/ha)	PROWL H2O (455 g/L) + MARKSMAN (393 g/L)	3.7 L/ha (1.48 L/acre) + 3.7–4.5 L/ha (1.5–1.8 L/acre)	<ul style="list-style-type: none"> • Do NOT use on seed corn or sweet corn. • Apply PRE or POST up to the 4 leaf stage of field corn. • See precautions for PROWL H2O alone and ENGENIA, FEXAPAN or XTENDIMAX alone. • Pre harvest interval: 100 days (grain)

TABLE 8–4. Herbicide Treatment Rates for Conventional Corn (Field, Seed and Sweet) (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.
Postemergence Grass Herbicides			
nicosulfuron (25 g/ha) + non-ionic surfactant (0.2% v/v) + liquid urea ammonium (5 L/ha)	ACCENT (75 DF) + non-ionic surfactant + liquid urea ammonium nitrate (UAN)	33 g/ha (13 g/acre) + 2 L/1,000 L + 5 L/ha (2 L/acre)	<ul style="list-style-type: none"> • Do NOT add liquid urea ammonium nitrate (UAN) when applying ACCENT to seed or sweet corn. • For use on all sweet corn varieties, however not all varieties have been tested. Contact the variety supplier for more information on the tolerance of a specific variety. • Adding UAN will give improved control of yellow foxtail in field corn. • Adapt oil concentrate (1% v/v), Merge or Sure-Mix (0.5% v/v) can be used in place of a non-ionic surfactant (field corn only). • Always add water soluble packages to clean water with the agitator running. Corn should be within the 1–8 leaf stage of growth. Apply ACCENT when annual grasses are in the 1–6-leaf stage and quackgrass is in the 3–6 leaf stage. • If corn has been injured by frost, wait 48–72 hours before applying. • Apply ONLY when the temperature in the 24 hours before AND after application ranges between 5°C and 28°C. Temperatures outside this range increase the potential for crop injury. • A rapid fluctuation in temperature (greater than 20°C difference within 24–36 hours) will stress the corn crop. For maximum crop safety, allow 24 hours for the corn to acclimatize before spraying. • Pre harvest interval: 30 days (grain), 40 days (sweet)
rimsulfuron (12.5%)/ nicosulfuron (25.2%) (15–25 g/ha) + non-ionic surfactant (0.2% v/v)	STEADFAST IS ((2:1) 37.7 DF) + non-ionic surfactant	40–66.5 g/ha (16–26.6 g/acre) + 2 L/1,000 L	<ul style="list-style-type: none"> • Do NOT use on seed corn or sweet corn. • Apply POST up to the 8 leaf stage of field corn. • Use the higher rate for dense weed populations or late weed growth stages for more consistent control. • Has soil residual activity but requires rainfall for activation of the herbicide in the top 5-10 cm of the soil profile. Rainfall must occur before weed germination. Weeds which germinate and emerge before activation by rainfall will not be controlled. • Apply ONLY when the temperature in the 24 hours before AND after application ranges between 5°C and 28°C. Temperatures beyond this range increase the potential for crop injury. • A rapid fluctuation in temperature (greater than 20°C difference within 24–36 hours) will stress the corn crop. For maximum crop safety, allow 24 hours for the corn to acclimatize before spraying. • Pre harvest interval: 30 days
Postemergence Broadleaf Herbicides and Tank-Mixes			
2,4-D (0.28–0.56 kg/ha)	2,4-D AMINE 600 (564 g/L)*	0.5–1 L/ha (0.2–0.4 L/acre)	<ul style="list-style-type: none"> • Do NOT use on seed corn or sweet corn. • Apply as an overall spray until corn is 15 cm high (leaf extended); thereafter, use drop nozzles. • Use the higher rate for larger weeds, heavy infestations are during unfavourable environmental conditions (e.g., dry weather). • See special notes on postemergence use of 2,4-D and related herbicides. • Do NOT add oil or surfactant. <p>* Numerous products exist, refer to Table 3–1. <i>Herbicides Used in Ontario</i>, for a complete list of available products.</p>

TABLE 8-4. Herbicide Treatment Rates for Conventional Corn (Field, Seed and Sweet) (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.
Postemergence Broadleaf Herbicides and Tank-Mixes (cont'd)			
atrazine (1.01–1.49 kg/ha) + oil (10–17 L/ha)	AATREX (480 g/L) + oil	2.1–3.1 L/ha (0.84–1.24 L/acre) + 10–17 L/ha (4–6.8 L/acre)	<ul style="list-style-type: none"> • For increased activity and extended period of activity, apply in an oil water emulsion of 10–17 L/ha (4–6.8 L/acre) of emulsifiable light mineral oil and 150–200 L/ha water (60–80 L/acre). Apply when most weeds have emerged. The low rate can be used successfully if subsequent cultivation is planned. • Pre harvest interval: 60 days (grain), 54 days (sweet corn)
atrazine 1.1–1.49 kg/ha + bromoxynil/MCPA (0.56 kg/ha)	AATREX (480 g/L) + BUCTRIL M ((1:1) 560 g/L)	2.29–3.1 L/ha (0.96–1.24 L/acre) + 1 L/ha (0.4 L/acre)	<ul style="list-style-type: none"> • Do NOT use on seed corn. • Apply from the 4–6 leaf stage of corn but injury may occur if applied after the 6 leaf stage. • Controls a wider spectrum of broadleaf weeds than bromoxynil/MCPA alone. • Do NOT add oil or surfactant. • If harvesting sweet corn by hand, re-entry into the field is not permitted until 15 days after application. • Pre harvest interval: 60 days (grain)
	AATREX (480 g/L) + BADGE (450 g/L)	2.29–3.1 L/ha (0.96–1.24 L/acre) + 1.25 L/ha (0.5 L/acre)	
	AATREX (480 g/L) + MEXTROL (450 g/L)		
	AATREX (480 g/L) + LOGIC M (450 g/L)		
	AATREX (480 g/L) + BROMOXYNIL-MCPA 225-225		
atrazine (1.01–1.49 kg/ha) + dicamba (0.288 kg/ha)	AATREX (480 g/L) + ENGENIA (600 g/L)	2.1–3.1 L/ha (0.84–1.24 L/acre) + 0.48 L/ha (0.19 L/acre)	<ul style="list-style-type: none"> • Do NOT use on seed corn. • This treatment will provide good to excellent control of broadleaf weeds including those triazine resistant and velvetleaf. Use the higher rate for residual control. • See special notes for corn regarding dicamba applications and precautions for ENGENIA, FEXAPAN or XTENDIMAX alone POST. • Pre harvest interval: 60 days (grain)
	AATREX (480 g/L) + FEXAPAN (350 g/L)	2.1–3.1 L/ha (0.84–1.24 L/acre) + 0.82 L/ha (0.33 L/acre)	
	AATREX (480 g/L) + XTENDIMAX (350 g/L)		
atrazine (1.01–1.49 kg/ha) + bromoxynil (0.28 kg/ha)	AATREX (480 g/L) + PARDNER (280 g/L)	2.1–3.1 L/ha (0.84–1.24 L/acre) + 1–1.2 L/ha (0.4–0.48 L/acre)	<ul style="list-style-type: none"> • Apply from the 4–8 leaf stage of corn. A reduced rate of atrazine at 0.5 kg/ha (half the low rate) can be used to control weeds listed for PARDNER (or KORIL) alone plus ragweed up to the 8 leaf stage, velvetleaf and triazine susceptible red root pigweed up to 6 leaves. • Do NOT add oil or surfactant. • See precautions for bromoxynil. • Pre harvest interval: 60 days (grain), 45 days (sweet)
	AATREX (480 g/L) + bromoxynil (240 g/L)*	2.1–3.1 L/ha (0.84–1.24 L/acre) + 1.2–1.4 L/ha (0.48–0.56 L/acre)	
	AATREX (480 g/L) + bromoxynil (480 g/L)*	2.1–3.1 L/ha (0.84 - 1.24 L/acre) + 0.6–0.7 L/ha (0.24–0.28 L/acre)	

* Numerous products exist, refer to Table 3-1. *Herbicides Used in Ontario*, for a complete list of available products.

TABLE 8–4. Herbicide Treatment Rates for Conventional Corn (Field, Seed and Sweet) (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.
Postemergence Broadleaf Herbicides and Tank-Mixes (cont'd)			
topramezone (12.5 g/ha) + atrazine (0.5 kg/ha)	ARMEZON (336 g/L) + AATREX (480 g/L) + MERGE	37 mL/ha (15 mL/acre) + 1.04 L/ha (0.42 L/acre) + 5 L/1,000 L	<ul style="list-style-type: none"> Apply to emerged grassy (up to 4 leaf) and broadleaf (up to 8 leaf) weeds. Apply between the spike and 7 leaf stage of seed, sweet and field corn. For seed and sweet corn: ASSIST + UAN must be used instead of MERGE at a rate of 12.5 L/1,000 L. The use of MERGE will increase the risk of crop injury to seed and sweet corn. If using the adjuvant MERGE, do NOT add liquid ammonium nitrate (UAN). Pre harvest interval: 45 days (grain, silage)
	or + ASSIST OIL + liquid urea ammonium nitrate (UAN)	or + 12.5 L/1,000 L + 12.5 L/1,000 L	
	IMPACT (336 g/L) + AATREX (480 g/L) + MERGE	37 mL/ha (15 mL/acre) + 1.04 L/ha (0.42 L/acre) + 5 L/1,000 L	
	or + ASSIST OIL + liquid urea ammonium nitrate (UAN)	or + 12.5 L/1,000 L + 12.5 L/1,000 L	
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"> Top growth of nutsedge and Canada thistle are controlled and field bindweed may be suppressed by 2 applications of 1.75 L/ha (0.7 L/acre) (0.84 kg active/ha) applied 10 days apart. Cool weather or drought may reduce control.
	BENTA SUPER (480 g/L) + XA OIL CONCENTRATE	1.75–2.25 L/ha (0.7–0.9 L/acre) + 1-2 L/ha (400-800 mL/acre)	
	BROADLOOM (480 g/L) + XA OIL CONCENTRATE		
bromoxynil/MCPA (0.558 kg/ha)	BUCTRIL M ((1:1) 560 g/L)	1 L/ha (0.4 L/acre)	<ul style="list-style-type: none"> Do NOT use on seed corn. Apply from the 4–6 leaf stage of corn but injury may occur if applied after the 6 leaf stage. Controls most annual broadleaf weeds up to the 4 leaf stage (lamb's-quarters and mustards to 8 leaf stage). If harvesting sweet corn by hand, re-entry into the field is not permitted until 15 days after application.
	BADGE (450 g/L)	1.25 L/ha (0.5 L/acre)	
	MEXTROL (450 g/L)		
	LOGIC M (450 g/L)		
	BROMOXYNIL-MCPA 225-225		
flumetsulam (78.125 g/ha)	BROADSTRIKE RC (80%)	62.5 g/ha (25 g/acre)	<ul style="list-style-type: none"> Do NOT use on seed corn or sweet corn. Apply POST up to the 8 leaf stage of corn and when weeds are at the cotyledon to 2 leaf stage of growth. Do NOT use where the soil pH is greater than 7.8 or where the organic matter is less than 2%. Do NOT apply to peat/muck soils or where the soil organic matter is greater than 5%. Do NOT apply more than once a year. Pre harvest interval: 90 days

TABLE 8–4. Herbicide Treatment Rates for Conventional Corn (Field, Seed and Sweet) (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.
Postemergence Broadleaf Herbicides and Tank-Mixes (cont'd)			
mesotrione (0.1 kg/ha) + atrazine (0.28 kg/ha) + non-ionic surfactant (0.2% v/v)	CALLISTO (480 g/L) + AATREX (480 g/L) + non-ionic surfactant MESTER 480 SC (480 g/L) + AATREX (480 g/L) + non-ionic surfactant	0.21 L/ha (0.085 L/acre) + 0.58 L/ha (0.235 L/acre) + 2 L/1,000 L	<ul style="list-style-type: none"> • Apply from the 3–8 leaf stage of field corn. • Apply from the 3–6 leaf stage of seed or sweet corn. • Do NOT apply to Delmonte 2038 sweet corn. • Do NOT harvest sweet corn within 50 days of treatment. • Seed corn inbred and sweet corn varieties vary in their tolerance to CALLISTO, consult your seed supplier for more information. • Apply in 100–200 L/ha of water. • Do NOT apply to corn treated with an organophosphorous insecticide. • Pre harvest interval: 100 days (grain), 90 days (silage)
diflufenzopyr/dicamba (0.2 kg/ha) + non-ionic surfactant (0.25% v/v) + liquid urea ammonium (1.25% v/v)	DISTINCT (70 WG) + non-ionic surfactant + liquid urea ammonium nitrate (UAN)	0.285 kg/ha (0.115 kg/acre) + 2.5 L/1,000 L + 12.5 L/1,000 L	<ul style="list-style-type: none"> • Do NOT use on seed corn or sweet corn. • Apply to actively growing weeds when corn is in the 2–6 leaf stage. • Apply when temperatures above 4°C are predicted for the 24 hours before and after application. • Pre harvest interval: 120 days
2,4-DB (1.1–1.5 kg/ha)	EMBUTOX (625 g/L) CALIBER 625 (625 g/L) COBUTOX (625 g/L)	1.75–2.25 L/ha (0.7–0.9 L/acre)	<ul style="list-style-type: none"> • Do NOT use on seed corn or sweet corn. • See special notes on postemergence use of 2,4-DB and related hormone chemicals. • Do NOT add oil or surfactant.
dicamba (0.288-0.6 kg/ha)	ENGENIA (600 g/L) FEXAPAN (350 g/L) XTENDIMAX (350 g/L)	0.48 – 1 L/ha (0.19 – 0.4 L/acre) 0.82 – 1.71 L/ha (0.33 – 0.68L/acre)	<ul style="list-style-type: none"> • Do NOT use on seed corn or sweet corn. • Application can be made from the spike to 5 leaf stage of corn. Use drop pipes when corn is 10–50 cm tall. • See special notes on postemergence use of dicamba, 2,4-D and related herbicides. • Do NOT use dicamba if temperatures exceed 25°C at the time of application, or if high humidity is expected, due to the possibility of dicamba volatilizing and injury to susceptible crops nearby. • Do NOT add oil or surfactant. • Pre harvest interval: 30 days
dicamba (0.14 kg/ha) + 2,4-D (0.4 kg/ha)	ENGENIA (600 g/L) + 2,4-D AMINE 600 (564 g/L)* FEXAPAN (350 g/L) + 2,4-D AMINE 600 (564 g/L)* XTENDIMAX (350 g/L) + 2,4-D AMINE 600 (564 g/L)*	0.23 L/ha (93 mL/acre) + 0.70 L/ha (0.29 L/acre) 0.4 L/ha (160 mL/acre) + 0.70 L/ha (0.29 L/acre)	<ul style="list-style-type: none"> • Do NOT use on seed corn or sweet corn. • Application can be made from the spike to 5 leaf stage of corn. Use drop pipes when corn is 10–50 cm tall. • See special notes on postemergence use of dicamba, 2,4-D and related herbicides. • Do NOT add oil or surfactant. • Pre harvest interval: 30 days <p>* Numerous products exist, refer to Table 3–1. <i>Herbicides Used in Ontario</i> for a complete list of available products.</p>

TABLE 8–4. Herbicide Treatment Rates for Conventional Corn (Field, Seed and Sweet) (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.
Postemergence Broadleaf Herbicides and Tank-Mixes (cont'd)			
tembotrione (61–92.4 g/ha) + atrazine (0.576 kg/ha)	LAUDIS (420 g/L) + HASTEN ADJUVANT + 28% UAN + AATREX 480	145–220 mL/ha (58–88 mL/acre) + 1.75 L/ha (0.7 L/acre) +3.5 L/ha (1.4 L/acre) + 1.2 L/ha (0.48 L/acre)	<ul style="list-style-type: none"> Field corn: apply POST up to and including the 8 leaf stage. Sweet corn: apply POST from the 2 leaf to 8 leaf stage, but without the addition of Aatrex 480. Check with seed supplier for any warnings since sweet corn hybrids vary in their tolerance to herbicides Best results are obtained when applications are made to broadleaf weeds prior to the 6 leaf stage and grassy weeds prior to tillering.
clopyralid (0.15 kg/ha)	LONTREL XC (600 g/L) PYRALID (300 g/L)	250mL/ha (100mL/acre) 504 mL/ha (200 mL/acre)	<ul style="list-style-type: none"> Apply POST from the spike to 8 leaf stage of corn. Do NOT use on seed corn or sweet corn. Canada thistle and perennial sow-thistle should be in the rosette to pre-bud stage of growth to maximize control. Control will be reduced under dry soil conditions.
dicamba/atrazine (1.5 kg/ha)	MARKSMAN (393 g/L)	3.7 L/ha (1.5 L/acre)	<ul style="list-style-type: none"> Apply POST up to the 5 leaf stage of corn. Do NOT use on seed corn or sweet corn. See notes on atrazine with respect to residues. See precautions for FEXAPAN, XTENDIMAX or ENGENIA applied alone. Do NOT apply to coarse (sand) textured soils with less than 2% organic matter. Pre harvest interval: 60 days
MCPA (0.38–0.63 kg/ha)	MCPA AMINE (500 g/L)	0.76–1.26 L/ha (0.3–0.5 L/acre)	<ul style="list-style-type: none"> Do NOT use on seed corn or sweet corn. Treat before corn reaches 15 cm tall or the 4 leaf stage of growth. Use the lower rate for small, actively growing weeds and the higher rate for larger weeds or when growing under adverse weather conditions. Top growth control of fully developed horsetail (15-25 cm tall) can be achieved with 1 L/ha (0.4 L/acre) of product.
bromoxynil (0.28–0.34 kg/ha)	PARDNER (280 g/L) bromoxynil (240 g/L)* bromoxynil (480 g/L)*	1–1.2 L/ha (0.4–0.48 L/acre) 1.2–1.4 L/ha (0.48–0.56) 0.6–0.7 L/ha (0.24–0.28 L/acre)	<ul style="list-style-type: none"> Controls most annual broadleaf weeds, including triazine resistant species at the 1–4 leaf stage. Some bromoxynil products are not registered for use on seed or sweet corn, refer to Chapter 3, Notes on Herbicides and the product label for registered crop uses. <p>* Numerous products exist, refer to Table 3–1. <i>Herbicides Used in Ontario</i> for a complete list of available products.</p>
prosulfuron (10 g/ha) + non-ionic surfactant (0.2% v/v)	PEAK (75 WG) + non-ionic surfactant	13.3 g/ha (5.3 g/acre) + 2 L/1,000 L	<ul style="list-style-type: none"> Do NOT apply to sweet corn. Apply when the corn is in the 2–7 leaf stage. Controls most annual broadleaf weeds including triazine resistant lamb's-quarters and pigweed up to the 6 leaf stage; cocklebur and velvetleaf up to the 6 leaf stage; and ragweed up to the 8 leaf stage. Do NOT apply to corn treated with organophosphorus insecticides.
halosulfuron (34–67.5 g/ha) + non-ionic surfactant (0.25% v/v)	PERMIT (72.6% WG) + non-ionic surfactant	47–93 g/ha (19–38 g/acre) + 2.5 L/1,000 L	<ul style="list-style-type: none"> Apply when the corn is in the spike–10 leaf stage. For sweet corn, the maximum use rate is 70 g/ha (28 g/acre). The 47 g/ha (19 g/acre) rate will control labelled broadleaf weeds and nutsedge that is shorter than 15 cm. The 70–90 g/ha (28–38 g/acre) will control nutsedge that is 15–30 cm tall. Permit can be applied up to twice per season, but not to exceed a total of 140 g/ha (56 g/acre) in sweet corn and 186 g/ha (76 g/acre) in seed or field corn.

TABLE 8–4. Herbicide Treatment Rates for Conventional Corn (Field, Seed and Sweet) (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.
Postemergence Broadleaf Herbicides and Tank-Mixes (cont'd)			
MCPB/MCPA (15:1) (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"> • Do NOT use on seed corn or sweet corn. • Apply when corn is 30–60 cm high, using drop pipes. • See special notes on postemergence use of MCPB/MCPA and related herbicides. • Do NOT add oil or surfactant.
	CLOVITOX PLUS (400 g/L)		
	TOPSIDE (400 g/L)		
Postemergence Grass and Broadleaf Herbicides and Tank-mixes			
nicosulfuron (25 g/ha) + mesotrione (0.1 kg/ha) + atrazine (0.28 kg/ha) + non-ionic surfactant (0.2% v/v)	ACCENT (75 DF) + CALLISTO (480 g/L) + AATREX LIQUID (480 g/L) + non-ionic surfactant	33 g/ha (13 g/acre) + 0.21 L/ha (0.085 L/acre) + 0.58 L/ha (0.235 L/acre) + 2 L/1,000 L	<ul style="list-style-type: none"> • Apply from the 3–8 leaf stage of corn. • Apply in 100–200 L/ha of water. • See precautions for ACCENT and CALLISTO + AATREX LIQUID. • For use on all sweet corn varieties, however not all varieties have been tested. Contact the seed supplier for more information on the tolerance of a specific variety. • Pre harvest interval: 100 days (grain), 90 days (silage)
	ACCENT (75 DF) + MESTER 480 SC (480 g/L) + AATREX LIQUID (480 g/L) + non-ionic surfactant		
nicosulfuron (25 g/ha) + diflufenzopyr/dicamba (0.2 kg/ha) + non-ionic surfactant (0.2% v/v) + urea ammonium nitrate (5 L/ha)	ACCENT (75 DF) + DISTINCT (70 WG) + non-ionic surfactant + urea ammonium nitrate (UAN)	33 g/ha (13 g/acre) + 0.285 kg/ha (0.115 kg/acre) + 2.5 L/1,000 L + 5 L/ha (2 L/acre)	<ul style="list-style-type: none"> • Do NOT use on seed corn or sweet corn. • Apply to active growth stage of seedling broadleaf weeds (less than 5 cm tall). • Apply to annual grasses in the 1–6 leaf stage and to quackgrass in the 3–6 leaf stage (10–20 cm). • Apply when corn is in the 2–8 leaf stage. • See precautions for ACCENT and DISTINCT. • Pre harvest interval: 120 days
nicosulfuron (25 g/ha) + dicamba (0.288 kg/ha) + non-ionic surfactant (0.2% v/v)	ACCENT (75 DF) + ENGENIA (600 g/L) + non-ionic surfactant	33 g/ha (13 g/acre) + 0.48 L/ha (190 mL/acre) + 2 L/1,000 L	<ul style="list-style-type: none"> • Do NOT use on seed corn or sweet corn. • See precautions for ACCENT and ENGENIA. • Do NOT apply to corn beyond the 6 leaf stage. • Pre harvest interval: 60 days
nicosulfuron (25 g/ha) + dicamba/atrazine (1 kg/ha) + non-ionic surfactant (0.2% v/v)	ACCENT (75 DF) + MARKSMAN (393 g/L) + non-ionic surfactant	33 g/ha (13 g/acre) + 2.5 L/ha (1 L/acre) + 2 L/1,000 L	<ul style="list-style-type: none"> • Do NOT use on seed or sweet corn. • See precautions for ACCENT and MARKSMAN. • Do NOT apply to corn beyond the 6 leaf stage. • Pre harvest interval: 60 days

TABLE 8–4. Herbicide Treatment Rates for Conventional Corn (Field, Seed and Sweet) (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.
Postemergence Grass and Broadleaf Herbicides and Tank-mixes (cont'd)			
nicosulfuron (25 g/ha) + bromoxynil (0.28 kg/ha) + non-ionic surfactant (0.2% v/v)	ACCENT (75 DF) + PARDNER (280 g/L) + non-ionic surfactant	33 g/ha (13 g/acre) + 1 L/ha (0.4 L/acre) + 2 L/1,000 L	<ul style="list-style-type: none"> • Use ONLY when the corn is between the 4 and 8 leaf stage. • See precautions for ACCENT and PARDNER/bromoxynil. • For use on all sweet corn varieties, however not all varieties have been tested. Contact the seed supplier for more information on the tolerance of a specific variety. • Pre harvest interval: 30 days
	ACCENT (75 DF) bromoxynil (240 g/L)* + non-ionic surfactant	33 g/ha (13 g/acre) + 1.2 L/ha (0.5 L/acre) + 2 L/1,000 L	<ul style="list-style-type: none"> * Numerous products exist, refer to Table 3–1. <i>Herbicides Used in Ontario</i> for a complete list of available products.
	ACCENT (75 DF) bromoxynil (480 g/L)* + non-ionic surfactant	33 g/ha (13 g/acre) + 0.6 L/ha (0.24 L/acre) + 2 L/1,000 L	
rimsulfuron (5.45%)/ (15 g/ha) mesotrione (36.36%) (100 g/ha)	DESTRA IS + non-ionic surfactant	275 g/ha (110 g/acre) +2 L/1,000 L	<ul style="list-style-type: none"> • Apply from the 3 to 8 leaf stage of corn. • Apply when grassy weeds are in the 1–4 leaf stage, when quackgrass is in the 3 to 6 leaf stage and up to the 8 leaf stage of broadleaf weeds. Provides residual control of fall panicum, green foxtail, lamb's-quarters and pigweed spp. • A rapid fluctuation in temperature (greater than 20°C difference within 24–36 hours) will stress the corn crop. For maximum crop safety, allow 24 hours for the corn to acclimatize before spraying Destra™ IS Herbicide as a postemergence application on emerged corn.
foramsulfuron (35 g/ha) + atrazine (0.84–1.12 kg/ha) + liquid urea ammonium (2.5 L/ha)	OPTION 2.25 OD (22.5 g/L) + AATREX (480 g/L) + urea ammonium nitrate (UAN)	1.56 L/ha (0.63 L/acre) + 1.75–2.33 L/ha (0.7–0.93 L/acre) + 2.5 L/ha (1 L/acre)	<ul style="list-style-type: none"> • Do NOT use on seed corn or sweet corn. • Apply up to the 8 leaf stage of corn. • Pre harvest interval: 70 days
foramsulfuron (35 g/ha) + mesotrione (0.1 kg/ha) + atrazine (0.28 L/ha) + liquid urea ammonium (2.5 L/ha)	OPTION 2.25 OD (22.5 g/L) + CALLISTO (480 g/L) + AATREX (480 g/L) + urea ammonium nitrate (UAN)	1.56 L/ha (0.63 L/acre) + 0.21 L/ha (0.085 L/acre) + 0.58 L/ha (0.235 L/acre) + 2.5 L/ha (1 L/acre)	<ul style="list-style-type: none"> • Do NOT use on seed corn or sweet corn. • Apply up to the 8 leaf stage of corn. • Apply in 175 L/ha (70 L/acre) of water. • See precautions for CALLISTO + AATREX LIQUID.
foramsulfuron (35 g/ha) + diflufenzopyr/dicamba (0.2 kg/ha) + UAN (2.5 L/ha)	OPTION 2.25 OD (22.5 g/L) + DISTINCT (70 WG) + urea ammonium nitrate (UAN)	1.56 L/ha (0.63 L/acre) + 0.285 kg/ha (0.115 kg/acre) + 2.5 L/ha (1 L/acre)	<ul style="list-style-type: none"> • Do NOT use on seed corn or sweet corn. • Apply up to the 6 leaf stage of corn. • See precautions for DISTINCT.

TABLE 8–4. Herbicide Treatment Rates for Conventional Corn (Field, Seed and Sweet) (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.
Postemergence Grass and Broadleaf Herbicides and Tank-mixes (cont'd)			
foramsulfuron (35 g/ha) + dicamba/atrazine (1 kg/ha) + UAN (2.5 L/ha)	OPTION 2.25 OD (22.5 g/L) + MARKSMAN (393 g/L) + urea ammonium nitrate (UAN)	1.56 L/ha (0.63 L/acre) + 2.5 L/ha (1 L/acre) + 2.5 L/ha (1 L/acre)	<ul style="list-style-type: none"> • Do NOT use on seed corn or sweet corn. • Apply up to the 5 leaf stage of corn. • See precautions for MARKSMAN.
foramsulfuron (35 g/ha) + bromoxynil (0.14 kg/ha) + atrazine (0.5 kg/ha) + UAN (2.5 L/ha)	OPTION 2.25 OD (22.5 g/L) + PARDNER (280 g/L) + AATREX (480 g/L) + urea ammonium nitrate (UAN)	1.56 L/ha (0.63 L/acre) + 0.5 L/ha (0.2 L/acre) + 1.04 L/ha (0.42 L/acre) + 2.5 L/ha (1 L/acre)	<ul style="list-style-type: none"> • Do NOT use on seed corn or sweet corn. • Apply up to the 8 leaf stage of corn. • See precautions for PARDNER/bromoxynil.
	OPTION 2.25 OD (22.5 g/L) + bromoxynil (240 g/L)* + AATREX (480 g/L) + urea ammonium nitrate (UAN)	1.56 L/ha (0.63 L/acre) + 0.6 L/ha (0.24 L/acre) + 1.04 L/ha (0.42 L/acre) + 2.5 L/ha (1 L/acre)	* Numerous products exist, refer to Table 3–1. <i>Herbicides Used in Ontario</i> , for a complete list of available products.
	OPTION 2.25 OD (22.5 g/L) + bromoxynil (480 g/L)* + AATREX (480 g/L) + urea ammonium nitrate (UAN)	1.56 L/ha (0.63 L/acre) + 0.3 L/ha (0.12 L/acre) + 1.04 L/ha (0.42 L/acre) + 2.5 L/ha (1 L/acre)	
pendimethalin (1 kg/ha) + nicosulfuron (12.5 g/ha) + dicamba (300 g/ha) + non-ionic surfactant (0.2% v/v)	PROWL H2O (455 g/L) + ACCENT (75 DF) + ENGENIA (600 g/L) + non-ionic surfactant	2.2 L/ha (0.88 L/acre) + 16.7 g/ha (6.7 g/acre) + 0.5 L/ha (0.2 L/acre) + 2 L/1,000 L	

TABLE 8–4. Herbicide Treatment Rates for Conventional Corn (Field, Seed and Sweet) (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.
Postemergence Grass and Broadleaf Herbicides and Tank-mixes (cont'd)			
tolpyralate (30–40 g/ha) + atrazine (0.56 kg/ha)	SHIELDEX (400 g/L) + AATREX 480	75–100 mL/ha (30–40 mL/acre) + 1.16 L/ha (466 mL/acre)	<ul style="list-style-type: none"> • Apply Shieldex 400SC Herbicide to field, sweet or pop corn up to 50 cm tall or that is exhibiting up to and including 6 leaf collars (V6), whichever is more restrictive. • Apply in 140–470 L/ha (56–188 L/acre) of water. Use the higher water volumes under heavy weed populations or adverse weather conditions. • Broadleaf weeds should be no larger than 10 cm and grasses should be no taller than 10 centimeters and prior to first tillering. Good coverage is essential to achieve optimum weed control. • Weed control may be improved by adding a nitrogen source. Use 12.5 to 25 L/1000 L spray solution of urea ammonium nitrate (UAN), such as 28% N or 32% N, or 8.4 to 20.4 kg/1000 L of a spray grade ammonium sulfate (AMS). • Avoid disturbing treated areas for at least 7 days after application to allow maximum herbicide uptake and translocation. • Pre harvest intervals: 45 days (field, popcorn); 35 days (sweet corn); 21 days (silage corn). Rainfast: 1 hour

WEED CONTROL FOR HERBICIDE TOLERANT CORN HYBRIDS

1) Glyphosate Tolerant (“Roundup Ready”) Corn

Weed Management Strategies for Glyphosate Tolerant Corn

There are four main strategies that one can use to manage weeds in glyphosate tolerant corn:

- A single application of glyphosate.
- Glyphosate tank-mixed with a residual herbicide.
- Two in-crop applications of glyphosate.
- A preemergence application with a residual herbicide followed with an in-crop application of glyphosate.

Public research trials evaluated the performance of these four strategies at 11 locations over 2 growing seasons. Yield data from these trials are presented in Table 8–5. *Corn Yield from Different Weed Management Strategies in Glyphosate Tolerant Corn*, on this page, as a percentage of the top yielding treatment. In general, all four strategies can provide maximum yields in any given field provided it offers excellent weed control from the 3–8 leaf stage of corn.

TABLE 8–5. Corn Yield From Different Weed Management Strategies in Glyphosate Tolerant Corn

Strategy	Pros	Cons	Yield (%)
Two Pass Glyphosate glyphosate applied at the 3–4 leaf stage of corn and again at the 7–8 leaf stage of corn	<ul style="list-style-type: none"> Typically provides the best weed control and corn yields. Better perennial weed control. 	<ul style="list-style-type: none"> More expensive. Increases selection pressure of glyphosate and chance of selecting herbicide resistant weed populations. 	100
PRE/POST residual herbicide applied PRE followed by glyphosate applied at the 7–8 leaf stage of corn	<ul style="list-style-type: none"> Typically provides the best weed control and corn yields. Multiple herbicide modes of action to manage resistant weed populations. Better perennial weed control. 	<ul style="list-style-type: none"> More expensive. 	99
One Pass Tank-Mix with Residual Herbicide glyphosate + residual herbicide applied at the 3–4 leaf stage of corn	<ul style="list-style-type: none"> Only one application. Multiple herbicide modes of action to manage resistant weed populations. 	<ul style="list-style-type: none"> Timing too early to control many perennial weeds. Reduced weed control when tank-mix partner does not provide residual control of weed spectrum in the field. 	97
One Pass Glyphosate (Early) glyphosate applied at the 3–4 leaf stage of corn	<ul style="list-style-type: none"> Only one application. 	<ul style="list-style-type: none"> Season long weed control not always possible. Weeds emerging after application can significantly reduce yield. 	96
One Pass Glyphosate (Late) glyphosate applied at the 7–8 leaf stage of corn	<ul style="list-style-type: none"> Not recommended. 	<ul style="list-style-type: none"> Not recommended. 	90

Yield data collected from 11 replicated trials during the 2007 and 2008 growing seasons.

Source: Dr. P.H. Sikkema (Ridgetown Campus, University of Guelph) and Dr. R. Nurse (AAFC, Harrow).

2) Glufosinate Tolerant (“Liberty Link”) Corn

Weed Management Strategies for Glufosinate Tolerant Corn

There are four main strategies that one can use to manage weeds in glufosinate tolerant (“Liberty Link”) corn.

- A single application of LIBERTY 200 SN.
- LIBERTY 200 SN tank-mixed with a residual herbicide.
- Two in-crop applications of LIBERTY 200 SN.
- A preemergence application with a residual herbicide followed with an in crop application of LIBERTY.

Grain yield and weed control associated with any of the above four strategies is similar to what has been observed by the University of Guelph in glyphosate tolerant corn, refer to Table 8–5. In general, Liberty provides optimum weed control under hot humid conditions, when applications are made during the day (versus the morning or evening) and when spray coverage is thorough. Cool conditions, weed size, and dew on weed leaves will reduce the level of control of Liberty even at labeled rates.

3) "Enlist" Field Corn

Weed Management Strategies for Enlist Field Corn

Enlist hybrids are tolerant to glyphosate, glufosinate ammonium (Liberty 200SN) and quizalofop-p-ethyl (e.g., Assure II) that normally would kill corn. Enlist hybrids also have increased tolerance to 2,4-D which can be applied to other field corn hybrids. Regardless, these 4 active ingredients primarily control weeds that are emerged and many of the principles discussed above to optimize weed control in Roundup Ready Corn, equally apply to Enlist corn hybrids.

A weed management strategy that includes a preemergence application with a residual herbicide followed by an in-crop application of Enlist Duo is the preferred approach. Please refer to Table 8–6, for *Preemergence Herbicides with Limited Residual Weed Control*. A preemergence herbicide application with limited residual control may require a post emergent Enlist Duo application (Enlist Tolerant Hybrids Only).

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 given 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 8–6. Herbicide Tolerant Corn (“Roundup Ready”, “Liberty-Link” and “Enlist” Hybrids) Herbicide Weed Control Ratings

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
 * = sold as a co-pack under this trade name R = populations resistant to this herbicide exist in Ontario and won’t be adequately controlled if present

Trade Name	WSSA group(s)	Weed Stage	Annual Grasses										Annual Broadleaves										Perennials					Crop Tolerance			
			barnyard grass	smooth crabgrass	large crabgrass	fall panicum	foxtail, giant	foxtail, green	foxtail, yellow	witchgrass	proso millet	buckwheat, wild	cocklebur	corn spurry	fleabane, Canada	lady’s thumb	lamb’s-quarters	mustards	nightshades	pigweeds	ragweed, common	ragweed, giant	velvetleaf	waterhemp	bindweed, field	horsetail	nutsedge		quackgrass	sow-thistle	thistle, Canada
Preemergence Herbicides with Limited Residual Weed Control – May Require a Postemergence Herbicide Application																															
ACURON	27,27,15,5	un-emerged	9	9	9	8 ²	8	8	8	9	4	9	8	–	9	9	9	9	9	9	9	9	9	9	2	0	8	0	0	0	E
ARMEZON PRO + AATREX	15,27+5	un-emerged	9	9	9	8 ²	8	8	8	9	7	9	7	9	6	9	9	9	9	9	9	5	7	6	8 ⁴	0	8	0	8 ⁴	8 ⁴	E
ARMEZON PRO + MARKSMAN	15,27+4,5	un-emerged	9	9	9	8 ²	8	8	8	9	7	9	9	9	9	9	9	9	9	9	9 ⁴	9 ⁴	7	8 ⁴	0	8	0	8 ⁴	8 ⁴	E	
CONVERGE XT*	27+5	un-emerged	9	9	9	9	9	7	9	9	9	9	7	–	6	9	9	9	9	9	9	6	9	8	–	0	0	0	0	0	G
ENGARDE	2+27	un-emerged	9	8	8	9	9	9	7	9	9	9	5	8	–	9	9	9	9	9	8	–	9	6	–	–	8 ¹	7 ¹	–	–	E
FOCUS	15,14	un-emerged	9	9	8	–	9	9	9	–	–	8	–	–	–	8	9	9	9	7	–	6	7	–	–	–	–	–	–	E	
INTEGRITY	15,14	un-emerged	9	8	7	–	8	8	8	9	4	9	8	–	9	9	9	9	7	9	9	5	9	8	0	5	6	0	0	0	E
PRIMEXTRA II MAGNUM	15,5	un-emerged	9	8	8	8	8	8	8	9	2	9	7	9	6	9	9 ^R	9	9	9 ^R	7 ^R	–	5	7	0	0	3	0	0	0	E
PROWL H2O + AATREX	3+5	un-emerged	9	–	–	–	–	8	8	–	–	9	7	9	5	9	9 ^R	9	9	9 ^R	8 ^R	6	6	–	2	0	0	0	2	2	E
PROWL H2O + MARKSMAN	3+4,5	un-emerged	9	–	–	–	–	8	8	–	–	9	9	9	9	9	9	9	9	9	8	7	8	–	8 ¹	0	0	0	8 ¹	8 ¹	E

¹ Weed must be emerged to achieve this level of control.

² Various formulations available, see Table 8–7.

³ For use on ROUNDUP READY corn (glyphosate tolerant) only.

⁴ Glyphosate must be applied at a rate of 1.8 kg ai/ha in order to achieve this level of control, refer to Table 8–8.

⁵ For use on “Liberty Link” corn (glufosinate tolerant) only.

⁶ For use on “Enlist” corn (glufosinate, glyphosate and 2,4-D tolerant) only.

TABLE 8-6. Herbicide Tolerant Corn ("Roundup Ready", "Liberty-Link" and "Enlist" Hybrids) Herbicide Weed Control Ratings (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
 * = sold as a co-pack under this trade name R = populations resistant to this herbicide exist in Ontario and won't be adequately controlled if present

Trade Name	WSSA group(s)	Weed Stage	Annual Grasses										Annual Broadleaves										Perennials					Crop Tolerance			
			barnyard grass	smooth crabgrass	large crabgrass	fall panicum	foxtail, giant	foxtail, green	foxtail, yellow	witchgrass	proso millet	buckwheat, wild	cocklebur	corn spurry	fleabane, Canada	lady's thumb	lamb's-quarters	mustards	nightshades	pigweeds	ragweed, common	ragweed, giant	velvetleaf	waterhemp	bindweed, field	horsetail	nutsetge		quackgrass	sow-thistle	thistle, Canada
One Pass Postemergence Non-Residual Herbicides and Tank-mixes for "Roundup Ready" (Glyphosate Tolerant) Hybrids Only																															
glyphosate ^{2,3}	9	emerged weeds	9	9	9	9	9	9	9	9	9	8	9	8	9 ^R	8	9	9	9	9	9 ^R	8 ^R	9	9 ^R	7	-	8 ⁴	9	8	9	E ³
		residual weed control	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
LONTREL XC + glyphosate ^{2,3}	4 +9	emerged weeds	9	9	9	9	9	9	9	9	9	9	9	8	9	8	9	9	9	9	8	9	9	9	-	-	-	9	9	9	E ³
		residual weed control	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
One Pass Preemergence or Postemergence Tank-Mixes with Residual Weed Control for "Roundup Ready" (Glyphosate Tolerant) Hybrids Only																															
CALLISTO GT ³	9,27	emerged weeds	9	9	9	9	9	9	9	9	9	9	9	8	8	8	9	9	9	9	9	8	9	7	7	-	8 ⁴	9	8	9	G ³
		residual weed control	-	-	-	-	-	-	-	-	9	6	9	8	9	9	9	9	9	9	7	5	9	8	2	0	0	0	0	0	
glyphosate ^{2,3} + AATREX	9+5	emerged weeds	9	9	9	9	9	9	9	9	9	9	8	9 ^R	9	9	9	9	9	9 ^R	8 ^R	9	9 ^R	7	-	8 ⁴	9	8	9	E ³	
		residual weed control	2	2	2	2	2	2	2	2	9	7	9	5	9	9 ^R	9	9	9 ^R	9 ^R	6	5	5	2	0	0	0	0	0		0
glyphosate ^{2,3} + ACURON	9+ 27,27, 15,5	emerged weeds	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	7	-	8 ⁴	9	8	9	E ³	
		residual weed control	9	9	9	8 ²	8	8	8	9	4	9	8	-	9	9	9	9	9	9	8	9	9	2	0	8	0	0	0		0
glyphosate ^{2,3} + ARMEZON PRO + AATREX	15,27 +4	emerged weeds	9	9	9	9	9	9	9	9	8	9	8	9 ^R	8	9	9	9	9	9	9	9	8	7	-	8 ⁴	9	8	9	E ³	
		un-emerged	9	9	9	8 ²	8	8	8	9	7	9	5	9	5	9	9 ^R	9	9	9 ^R	9 ^R	6	5	5	2	0	0	2	2		0

¹ Weed must be emerged to achieve this level of control.
² Various formulations available, see Table 8-7.
³ For use on ROUNDUP READY corn (glyphosate tolerant) only.
⁴ Glyphosate must be applied at a rate of 1.8 kg ai/ha in order to achieve this level of control, refer to Table 8-8.
⁵ For use on "Liberty Link" corn (glufosinate tolerant) only.
⁶ For use on "Enlist" corn (glufosinate, glyphosate and 2,4-D tolerant) only.

TABLE 8-6. Herbicide Tolerant Corn ("Roundup Ready", "Liberty-Link" and "Enlist" Hybrids) Herbicide Weed Control Ratings (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
 * = sold as a co-pack under this trade name R = populations resistant to this herbicide exist in Ontario and won't be adequately controlled if present

Trade Name	WSSA group(s)	Weed Stage	Annual Grasses										Annual Broadleaves										Perennials					Crop Tolerance		
			barnyard grass	smooth crabgrass	large crabgrass	fall panicum	foxtail, giant	foxtail, green	foxtail, yellow	witchgrass	proso millet	buckwheat, wild	cocklebur	corn spurry	fleabane, Canada	lady's thumb	lamb's-quarters	mustards	nightshades	pigweeds	ragweed, common	ragweed, giant	velvetleaf	waterhemp	bindweed, field	horsetail	nutsetge		quackgrass	sow-thistle
One Pass Preemergence or Postemergence Tank-Mixes with Residual Weed Control for "Roundup Ready" (Glyphosate Tolerant) Hybrids Only (cont'd)																														
glyphosate ^{2,3} + PRIMEXTRA II MAGNUM	9+ 15,5	emerged weeds	9	9	9	9	9	9	9	9	9	9	9	9 ^R	9	9	9	9	9	9 ^R	8 ^R	9	9 ^R	7	-	8 ⁴	9	8	9	E ³
		residual weed control	9	8	8	8	8	8	9	2	9	7	9	6	9	9	9	9	9	9 ^R	-	5	7	0	0	3	0	0	0	
HALEX GT ³ + AATREX	9,15, 27+5	emerged weeds	9	9	9	9	9	9	9	9	9	9	8	9	9	9	9	9	9	9	7	9	7	7	-	8 ⁴	9	8	9	E ³
		residual weed control	9	9	9	9	9	9	9	4	9	8	-	8	9	9	9	9	9	8	6	9	8	2	0	3	0	0	0	
PERMIT + glyphosate ^{2,3}	2+9	emerged weeds	9	9	9	9	9	9	9	9	9	9	9 ^R	9	9	9	9	9	9	9	8 ^R	9	9 ^R	7	-	8	9	8	9	E ³
		residual weed control	9	9	9	9	9	9	9	4	-	8	-	8 ^R	8	8 ^R	8	-	8 ^R	8 ^R	8 ^R	8	-	-	-	6	0	-	-	
ROUNDUP XTEND	9 +4	emerged weeds	9	9	9	9	9	9	9	9	8	9	8	9	8	9	9	9	9	9	9	9	9 ^R	8	-	8 ⁴	9	9	9	E ³
		residual weed control	0	0	0	0	0	0	0	0	8	7	8	9	9	9	6	9	9	9	7	8	3	2	0	0	0	2	2	
VIOS G3 + glyphosate ^{2,3}	2,27 +9	emerged weeds	9	9	9	9	9	9	9	9	9	9	9 ^R	9	9	9	9	9	9	9	8 ^R	9	6	7	-	8 ⁴	9	8	9	E ³
		residual weed control	9	8	8	9	9	9	9	7	9	-	-	4	9	9	9	9	9	9	-	8	-	-	-	0	-	0	-	

¹ Weed must be emerged to achieve this level of control.

² Various formulations available, see Table 8-7.

³ For use on ROUNDUP READY corn (glyphosate tolerant) only.

⁴ Glyphosate must be applied at a rate of 1.8 kg ai/ha in order to achieve this level of control, refer to Table 8-8.

⁵ For use on "Liberty Link" corn (glufosinate tolerant) only.

⁶ For use on "Enlist" corn (glufosinate, glyphosate and 2,4-D tolerant) only.

TABLE 8-6. Herbicide Tolerant Corn ("Roundup Ready", "Liberty-Link" and "Enlist" Hybrids) Herbicide Weed Control Ratings (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
 * = sold as a co-pack under this trade name R = populations resistant to this herbicide exist in Ontario and won't be adequately controlled if present

Trade Name	WSSA group(s)	Weed Stage	Annual Grasses										Annual Broadleaves										Perennials					Crop Tolerance					
			barnyard grass	smooth crabgrass	large crabgrass	fall panicum	foxtail, giant	foxtail, green	foxtail, yellow	witchgrass	proso millet	buckwheat, wild	cocklebur	corn spurry	feabane, Canada	lady's thumb	lamb's-quarters	mustards	nightshades	pigweeds	ragweed, common	ragweed, giant	velvetleaf	waterhemp	bindweed, field	horsetail	nutssedge		quackgrass	sow-thistle	thistle, Canada		
Two Pass Treatments for "Roundup Ready" (Glyphosate Tolerant) Hybrids Only																																	
glyphosate ^{2,3} (2-3 leaf); glyphosate ^{2,3} (7-8 leaf)	9	emerged weeds	9	9	9	9	9	9	9	9	9	8	9	8	8 ^R	8	9	9	9	9	9	9	8 ^R	9	9 ^R	8	-	8 ⁴	9	9	9	E ³	
One Pass Postemergence Non-Residual Herbicides for "Liberty-Link" (Glufosinate Tolerant) Hybrids Only																																	
LIBERTY 200 SN ⁵	10	emerged weeds	9	9	9	9	9	9	8	9	9	8	9	-	4	8	8	9	9	9	9	9	-	8	4	6	6	6	6/7	8	7	E ⁵	
One Pass Tank-Mixes with Residual Weed Control for "Liberty Link" (Glufosinate Tolerant) Hybrids Only																																	
LIBERTY 200 SN ⁵ + AATREX	10 +5	emerged weeds	9	9	9	9	9	9	8	9	9	8	9	9	5	8	8	9	9	9	9	9	-	8	4	6	6	6	6/7	8	7	E ⁵	
		residual weed control	2	2	2	2	2	2	2	2	2	9	7	9	5	9	9 ^R	9	9	9 ^R	9 ^R	9 ^R	6	5	5	2	0	0	0	0	0		
LIBERTY 200 SN ⁵ + DISTINCT	10+ 19,4	emerged weeds	9	9	9	9	9	9	8	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	8	6	6	6/7	9	9	E ⁵	
LIBERTY 200 SN ⁵ + MARKSMAN	10 +4,5	emerged weeds	9	9	9	9	9	9	8	9	9	9	9	-	9	9	9	9	9	9	9	9	9	9	9	4	8	6	6	6/7	8	8	E ⁵
		residual weed control	2	2	2	2	2	2	2	2	2	9	7	9	9	9	9	9	9	9	9	9	9	7	8	7	2	0	0	2	2	2	
LIBERTY 200 SN ⁵ + PROWL H2O	10 +3	emerged weeds	9	9	9	9	9	9	8	9	9	8	9	-	4	8	9	9	9	9	9	9	-	8	4	6	6	6	6/7	8	7	E ⁵	
		residual weed control	9	9	9	9	8	8	8	-	5	-	-	-	0	6	9	0	8	8	2	-	6	-	-	-	-	-	-	-	-		
VIOS G3 + LIBERTY 200 SN ⁵	2,27 +10	emerged weeds	9	9	9	9	9	9	9	9	9	8	9	-	4	9	8	9	9	9	9	9	-	9	6	6	6	6	6/7	8	7	E ⁵	
		residual weed control	9	8	8	9	9	9	9	9	7	9	-	-	4	9	9	9	9	9	9	9	-	8	-	-	-	0	-	0	-		

¹ Weed must be emerged to achieve this level of control.

² Various formulations available, see Table 8-7.

³ For use on ROUNDUP READY corn (glyphosate tolerant) only.

⁴ Glyphosate must be applied at a rate of 1.8 kg ai/ha in order to achieve this level of control, refer to Table 8-8.

⁵ For use on "Liberty Link" corn (glufosinate tolerant) only.

⁶ For use on "Enlist" corn (glufosinate, glyphosate and 2,4-D tolerant) only.

TABLE 8–6. Herbicide Tolerant Corn (“Roundup Ready”, "Liberty-Link" and "Enlist" Hybrids) Herbicide Weed Control Ratings (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
 * = sold as a co-pack under this trade name R = populations resistant to this herbicide exist in Ontario and won't be adequately controlled if present

Trade Name	WSSA group(s)	Weed Stage	Annual Grasses										Annual Broadleaves										Perennials					Crop Tolerance			
			barnyard grass	smooth crabgrass	large crabgrass	fall panicum	foxtail, giant	foxtail, green	foxtail, yellow	witchgrass	proso millet	buckwheat, wild	cocklebur	corn spurry	feabane, Canada	lady's thumb	lamb's-quarters	mustards	nightshades	pigweeds	ragweed, common	ragweed, giant	velvetleaf	waterhemp	bindweed, field	horsetail	nutsedge		quackgrass	sow-thistle	thistle, Canada
One Pass Postemergence Non-Residual Herbicides for "Enlist" (glyphosate, glufosinate and 2,4-D tolerant) Hybrids Only																															
ENLIST 1	4	emerged weeds	0	0	0	0	0	0	0	0	0	4	8	2	7	4	9	9	7	9	8	9	8	8	7	0	0	0	8	8	F ⁶
ENLIST DUO ⁶	4,9	emerged weeds	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	8	8	7	8	9	9	9	F ⁶	
glyphosate ^{2,6}	9	emerged weeds	9	9	9	9	9	9	9	9	8	9	8	9 ^R	8	9	9	9	9	9	9 ^R	8 ^R	9	9 ^R	7	–	8 ⁴	9	8	9	F ⁶
LIBERTY 200 SN ⁵	10	emerged weeds	9	9	9	9	9	9	8	9	9	8	9	–	4	8	8	9	9	9	9	–	8	4	6	6	6	6/7	8	7	F ⁶

¹ Weed must be emerged to achieve this level of control.

² Various formulations available, see Table 8–7.

³ For use on ROUNDUP READY corn (glyphosate tolerant) only.

⁴ Glyphosate must be applied at a rate of 1.8 kg ai/ha in order to achieve this level of control, refer to Table 8–8.

⁵ For use on “Liberty Link” corn (glufosinate tolerant) only.

⁶ For use on “Enlist” corn (glufosinate, glyphosate and 2,4-D tolerant) only.

TABLE 8–7. Glyphosate Product Rates, Manufacturer, Rainfast and Salt Type Labeled for Use on Glyphosate Tolerant (“Roundup Ready”) Corn**LEGEND:** a.i. = active ingredient ✓ = product contains this salt type — = not in product

Glyphosate Products	PRODUCT RATE			Manufacturer	Rainfast	SALT TYPE		
	0.9 kg/ha a.i.	1.35 kg/ha a.i.	1.8 kg/ha a.i.			Dimethylamine	Isopropylamine	Potassium
CREDIT XTREME (540 g/L) ¹	0.67 L/acre	1 L/acre	1.34 L/acre	NUFARM	1 hour	—	✓	✓
CRUSH'R 540 (540 g/L) ¹	0.67 L/acre	1 L/acre	1.34 L/acre	AGRI STAR	1 hour	—	—	✓
FACTOR 540 (540 g/L)	0.67 L/acre	1 L/acre	1.34 L/acre	IPCO	1 hour	—	—	—
GLYFOS (360 g/L)	1 L/acre	1.5 L/acre	2 L/acre	CHEMINOVA	not specified	—	✓	—
MAD DOG K PLUS	0.67 L/acre	1 L/acre	1.34 L/acre	LOVELAND	1 hour	—	—	✓
MATRIX (480 g/L)	0.75 L/acre	1.13 L/acre	1.5 L/acre	IPCO	not specified	✓	—	—
POLARIS MAX (540 g/L) ¹	0.67 L/acre	1 L/acre	1.34 L/acre	CORTEVA	1 hour	—	—	✓
ROUNDUP TRANSORB HC (540 g/L) ¹	0.67 L/acre	1 L/acre	1.34 L/acre	BAYER	1 hour	—	—	✓
ROUNDUP WEATHERMAX (540 g/L) ¹	0.67 L/acre	1 L/acre	1.34 L/acre	BAYER	1 hour	—	—	✓
SHARDA GLYPHOSATE 360	1 L/acre	1.5 L/acre	2 L/acre	SHARDA	not specified	—	✓	—
STONEWALL (540 g/L)	0.67 L/acre	1 L/acre	1.34 L/acre	WINFIELD	1 hour	—	—	✓
VM 480 (480 g/L)	0.75 L/acre	1.13 L/acre	1.5 L/acre	CORTEVA	not specified	✓	—	—

¹ IMPORTANT NOTE: Only tank-mix products containing the active ingredient "dicamba" (e.g. ENGENIA, FEXAPAN or XTENDIMAX) with a glyphosate product containing a potassium salt. Tank-mixing with other glyphosate products can increase the potential for off-target drift through volatilization. Refer to each product label in the tank-mix and follow the directions of the more restrictive label.

TABLE 8–8. Herbicide Treatment Rates for Herbicide Tolerant Corn (“Roundup Ready”, "Liberty-Link" and "Enlist" Hybrids)

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 Burndown and Residual Control			
<ul style="list-style-type: none"> • Non-selective herbicides such as glyphosate are used to control emerged weeds prior to no-till planting. Tank-mixing of a residual herbicide with glyphosate can be used to improve application efficiency with a “one pass” weed management program. • Refer also to Chapter 5, Preplant & Postharvest Weed Control for preplant application rates for glyphosate. • It is also important to note that when targeting perennial weeds, the addition of a triazine-based herbicide (e.g., AATREX, CONVERGE 480, MARKSMAN, PRIMEXTRA II MAGNUM) will reduce the level of activity achieved with glyphosate. Increasing the rate of glyphosate should overcome this antagonism. 			
Preemergence Herbicides with Limited Residual Weed Control – May Require a Postemergence Glyphosate Application (Glyphosate Tolerant Hybrids Only)			
bicyclopyrone (7.1 g/L) (35 g/ha) mesotrione (28.5 g/L) (140 g/ha) s-metolachlor (257 g/L) (1262 g/ha) atrazine (120 g/L) (589 g/ha)	ACURON	4 L/ha (1.6 L/acre)	<ul style="list-style-type: none"> • Apply PRE, use for early season weed control through the critical crop establishment phase and in a planned weed management program with a post-emergent glyphosate application. • Do NOT mix with ammonium sulphate (AMS). • Apply in a minimum of 150 L/ha (60 L/acre) or water or UAN. • Nitrogen solutions (such as 28-0-0 UAN), excluding suspension and sulphur containing fertilizers, may replace water as a carrier for pre-emergence applications. Do not use nitrogen solutions as a carrier to corn that has emerged. Always predetermine the compatibility of ACURON Herbicide tank mixes with a liquid fertilizer carrier by mixing small proportional quantities in advance. • Pre harvest intervals: 50 days (sweet corn); 90 days (silage corn).
dimethenamid-p (630 g/L) (630 g/ha) topramezone (12.5 g/L) (12.5 g/ha) + atrazine (480 g/L) (480 g/ha)	AREMZON PRO + AATREX	1 L/ha (0.4 L/acre) + 1 L/ha (0.4 L/acre)	<ul style="list-style-type: none"> • Apply PRE, use for early season weed control through the critical crop establishment phase and in a planned weed management program with a post-emergent glyphosate application. • Pre harvest interval: 80 days
dimethenamid-p (630 g/L) (630 g/ha) topramezone (12.5 g/L) (12.5 g/ha) + dicamba (133 g/L) (488 g/ha) +atrazine (261 g/L) (966 g/ha)	ARMEZON PRO + MARKSMAN	1 L/ha (0.4 L/acre) + 2.5 L/ha (1 L/acre)	<ul style="list-style-type: none"> • Apply PRE, use for early season weed control through the critical crop establishment phase and in a planned weed management program with a post-emergent glyphosate application. . • Pre harvest interval: 80 days
isoxaflutole (52.5 g/ha) + atrazine (532 g/ha)	CONVERGE XT (sold as a co-pack): CONVERGE FLEXX (240 g/L) + CONVERGE 480 (480 g/L)	220 mL/ha (89 mL/acre) + 1.1 L/ha (0.44 L/acre)	<ul style="list-style-type: none"> • Use ONLY with pedigreed (certified) corn seed designated as glyphosate tolerant or “Roundup Ready” corn. • Use for early season weed control through the critical crop establishment phase. • Use in a planned weed management program with a post-emergent glyphosate application. • See precautions for CONVERGE XT.

TABLE 8–8. Herbicide Treatment Rates for Herbicide Tolerant Corn (“Roundup Ready”, "Liberty-Link" and "Enlist" Hybrids) (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.
Preemergence Herbicides with Limited Residual Weed Control – May Require a Postemergence Glyphosate Application (Glyphosate Tolerant Hybrids Only) (Cont'd)			
rimsulfuron (15 g/ha) + mesotrione (144 g/ha)	ENGARDE (4.31%:41.38%)	348 g/ha (139 g/acre)	<ul style="list-style-type: none"> Apply PRE or Early POST up to the 2 leaf stage of corn. Engarde can be applied with 28% UAN as a carrier (PRE only). Can be tank-mixed with glyphosate for emerged annual and perennial weeds. See Chapter 5, Preplant & Postharvest Weed Control for more information.
pyroxasulfone (100 g/ha) carfentrazone-ethyl (11.87 g/ha)	FOCUS (447 g/L:53 g/L)	224 mL/ha (90 mL/acre)	<ul style="list-style-type: none"> Apply PP or PRE. This rate is called a "set-up treatment" which is an application to remove early weed competition to allow good crop establishment. An in-crop application of herbicide may be required subsequently to control emerged weeds.
saflufenacil/ dimethenamid-P (488 g/ha)	INTEGRITY (668 g/L)	0.73 L/ha (0.292 L/acre)	<ul style="list-style-type: none"> Use ONLY with pedigreed (certified) corn seed designated as glyphosate tolerant or “Roundup Ready” corn. A postemergence application of glyphosate applied at the 7–8 leaf stage of corn may be necessary for the control of perennial weeds or weed escapes. See precautions for INTEGRITY.
s-metolachlor/benoxacor/ atrazine (1.8 kg/ha)	PRIMEXTRA II MAGNUM (1:0.8) 720 g/L)	2.5 L/ha (1 L/acre)	<ul style="list-style-type: none"> Use ONLY with pedigreed (certified) corn seed designated as glyphosate tolerant or “Roundup Ready” corn. This reduced rate of PRIMEXTRA II MAGNUM (1 L/acre) provides suppression of labeled weeds and is part of a planned weed management program that includes a follow-up postemergence treatment of glyphosate.
pendimethalin (1 kg/ha) + atrazine (1 kg/ha)	PROWL H2O (455 g/L) + AATREX (480 g/L)	2.2 L/ha (0.89 L/acre) + 2.1 L/ha (0.83 L/acre)	<ul style="list-style-type: none"> Use ONLY with pedigreed (certified) corn seed designated as glyphosate tolerant or “Roundup Ready” corn. A postemergence application of glyphosate applied at the 7–8 leaf stage of corn may be necessary for the control of perennial weeds or weed escapes. See precautions for PROWL H2O alone and AATREX alone.
pendimethalin (1 kg/ha) + dicamba/atrazine (1 kg/ha)	PROWL H2O (455 g/L) + MARKSMAN (393 g/L)	2.2 L/ha (0.89 L/acre) + 2.5 L/ha (1 L/acre)	<ul style="list-style-type: none"> Use ONLY with pedigreed (certified) corn seed designated as glyphosate tolerant or “Roundup Ready” corn. A postemergence application of glyphosate applied at the 7–8 leaf stage of corn may be necessary for the control of perennial weeds or weed escapes. See precautions for PROWL H2O alone and MARKSMAN alone.
One Pass Postemergence Non-Residual Herbicides for Glyphosate Tolerant Hybrids Only			
glyphosate (0.9–1.8 kg/ha)	glyphosate (540 g/L)*	1.67–3.33 L/ha (0.67–1.34 L/acre)	<ul style="list-style-type: none"> Use ONLY with pedigreed (certified) corn seed designated as glyphosate tolerant or “Roundup Ready” corn. See Table 8–7. <i>Glyphosate Product Rates, Manufacturer, Rainfast and Salt Type Labeled for Use on Glyphosate Tolerant (“Roundup Ready”) Corn</i> for a list of registered glyphosate products. Apply up to and including the 8 leaf stage of corn. Applications should be timed to keep the corn crop weed-free from the 3–8 leaf stage of corn. <p>* Numerous products exist. Refer to Table 8–7. <i>Glyphosate Product Rates, Manufacturer, Rainfast and Salt Type Labeled for Use on Glyphosate Tolerant (“Roundup Ready”) Corn</i> for a complete list.</p>
	other glyphosate products	See Table 8–7.	

TABLE 8–8. Herbicide Treatment Rates for Herbicide Tolerant Corn (“Roundup Ready”, “Liberty-Link” and “Enlist” Hybrids) (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.
One Pass Postemergence Non-Residual Herbicides for Glyphosate Tolerant Hybrids Only (Cont'd)			
clopyralid (102 g/ha) + glyphosate (450 g/ha)	LONTREL XC (600 g/L) + ROUNDUP TRANSORB (540 g/L) PYRALID (300 g/L) + ROUNDUP TRANSORB (540 g/L)	170 mL/ha (68 mL/acre) + 0.83 L/ha (0.33 L/acre) 340 mL/ha (136 mL/acre) + 0.83 L/ha (0.33 L/acre)	<ul style="list-style-type: none"> • Use ONLY with pedigreed (certified) corn seed designated as glyphosate tolerant or “Roundup Ready” corn. • For improved control of vetch, Canada thistle, perennial sow-thistle and volunteer alfalfa (including glyphosate tolerant varieties). • Apply postemergence up to the 8 leaf stage of corn. • Do NOT apply to seed, sweet or popcorn. • Do NOT allow livestock to graze until 40 days after application.
One Pass Postemergence Tank-Mixes with Residual Control for Use in Glyphosate Tolerant Corn Only			
glyphosate (455 g/L) (1050 g/ha) + mesotrione (45.5 g/L) (105 g/ha) + nonionic surfactant (0.2% v/v)	CALLISTO GT + non-ionic surfactant	2.25 L/ha (0.9 L/acre) + 2 L/1,000 L	<ul style="list-style-type: none"> • CALLISTO GT can be applied up to and including the 8-leaf stage of GT corn. • Add a non-ionic spray surfactant, such as AGRAL 90, at a rate of 0.2% v/v. • In addition to broad-spectrum burn-down of emerged weeds, CALLISTO GT will provide residual control of Eastern Black Nightshade, redroot pigweed, velvetleaf and suppression of common ragweed.
glyphosate (0.9 kg/ha) + atrazine (0.75–1.0 kg/ha)	glyphosate (540 g/L)* + AATREX (480 g/L)	1.67 L/ha (0.67 L/acre) + 1.56–2.1 L/ha (0.63–0.85 L/acre)	<ul style="list-style-type: none"> • Use ONLY with pedigreed (certified) corn seed designated as glyphosate tolerant or “Roundup Ready” corn. • Apply up to and including the 5 leaf stage of corn. • Atrazine will provide residual control of broadleaf weeds. <p>* Numerous products exist. Refer to Table 8–7. <i>Glyphosate Product Rates, Manufacturer, Rainfast and Salt Type Labeled for Use on Glyphosate Tolerant (“Roundup Ready”) Corn</i> for a complete list.</p>
glyphosate (0.9 kg/ha) + bicyclopyrone (7.1 g/L) (35 g/ha) mesotrione (28.5 g/L) (140 g/ha) s-metolachlor (257 g/L) (1262 g/ha) atrazine (120 g/L) (589 g/ha)	glyphosate (540 g/L)* + ACURON	1.67 L/ha (0.67 L/acre) + 4–4.91 L/ha (1.6–1.9 L/acre)	<ul style="list-style-type: none"> • Use ONLY with pedigreed (certified) corn seed designated as glyphosate tolerant or “Roundup Ready” corn. • Apply POST up to and including the 6 leaf stage of corn • Do NOT mix with ammonium sulphate (AMS). • Do not use nitrogen solutions as a carrier to corn that has emerged. • No adjuvant required. One application per year. • DO NOT apply if other mesotrione containing products (e.g. CALLISTO) or s-metolachlor products (e.g. PRIMEXTRA II MAGNUM) were applied earlier in the season. <p>Numerous products exist. Refer to Table 8–7. <i>Glyphosate Product Rates, Manufacturer, Rainfast and Salt Type Labeled for Use on Glyphosate Tolerant (“Roundup Ready”) Corn</i> for a complete list.</p>

TABLE 8–8. Herbicide Treatment Rates for Herbicide Tolerant Corn (“Roundup Ready”, "Liberty-Link" and "Enlist" Hybrids) (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.
One Pass Postemergence Tank-Mixes with Residual Control for Use in Glyphosate Tolerant Corn Only (cont'd)			
glyphosate (0.9 kg/ha) + dimethenamid-p (630 g/L) (630 g/ha) topramezone (12.5 g/L) (12.5 g/ha) + atrazine (480 g/L) (480 g/ha)	glyphosate (540 g/L)* + AREMZON PRO + AATREX	1.67 L/ha (0.67 L/acre) + 1 L/ha (0.4 L/acre) + 1 L/ha (0.4 L/acre)	<ul style="list-style-type: none"> Use ONLY with pedigreed (certified) corn seed designated as glyphosate tolerant or “Roundup Ready” corn. Apply up to and including the 8 leaf stage of field corn and when grassy weeds are in the 1–4 leaf stage and broadleaf weeds are in the 1–8 leaf stage. Pre harvest interval: 80 days <p>Numerous products exist. Refer to Table 8–7. <i>Glyphosate Product Rates, Manufacturer, Rainfast and Salt Type Labeled for Use on Glyphosate Tolerant (“Roundup Ready”) Corn</i> for a complete list.</p>
glyphosate (0.9 kg/ha) + dimethenamid-p (630 g/L) (630 g/ha) topramezone (12.5 g/L) (12.5 g/ha) + dicamba (133 g/L) (488 g/ha) + atrazine (261 g/L) (966 g/ha)	glyphosate (540 g/L)* + ARMEZON PRO + MARKSMAN	1.67 L/ha (0.67 L/acre) + 1 L/ha (0.4 L/acre) + 2.5 L/ha (1 L/acre)	<ul style="list-style-type: none"> Use ONLY with pedigreed (certified) corn seed designated as glyphosate tolerant or “Roundup Ready” corn. Apply up to and including the 5 leaf stage of field corn and when grassy weeds are in the 1–4 leaf stage and broadleaf weeds are in the 1–8 leaf stage. Pre harvest interval: 80 days <p>Numerous products exist. Refer to Table 8–7. <i>Glyphosate Product Rates, Manufacturer, Rainfast and Salt Type Labeled for Use on Glyphosate Tolerant (“Roundup Ready”) Corn</i> for a complete list.</p>
glyphosate (0.9 kg/ha) + mesotrione (0.1 kg/ha) + atrazine (0.28 kg/ha) + non-ionic surfactant (0.2% v/v)	glyphosate (540 g/L)* + CALLISTO (480 g/L) + AATREX (480 g/L) + non-ionic surfactant glyphosate (540 g/L)* + MESTER (480 g/L) + AATREX (480 g/L) + non-ionic surfactant	1.67 L/ha (0.67 L/acre) + 0.21 L/ha (0.085 L/acre) + 0.58 L/ha (0.235 L/acre) + 2 L/1,000 L	<ul style="list-style-type: none"> Use ONLY with pedigreed (certified) corn seed designated as glyphosate tolerant or “Roundup Ready” corn. Apply up to and including the 8 leaf stage of corn. CALLISTO and Atrazine will provide residual broadleaf weed control. <p>* Numerous products exist. Refer to Table 8–7. <i>Glyphosate Product Rates, Manufacturer, Rainfast and Salt Type Labeled for Use on Glyphosate Tolerant (“Roundup Ready”) Corn</i> for a complete list.</p>
glyphosate (0.9 kg/ha) + isoxaflutole (52.5 g/ha) + atrazine (500 g/ha)	glyphosate (540 g/L)* + CONVERGE XT (sold as a co-pack): (CONVERGE FLEXX (240 g/L) + CONVERGE 480 (480 g/L))	1.67 L/ha (0.67 L/acre) + 220 mL/ha (89 mL/acre) + 1.04 L/ha (0.42 L/acre)	<ul style="list-style-type: none"> Use ONLY with pedigreed (certified) corn seed designated as glyphosate tolerant or “Roundup Ready” corn. Apply at the 1–3 leaf stage of corn. See precautions for CONVERGE XT. <p>* Numerous products exist. Refer to Table 8–7. <i>Glyphosate Product Rates, Manufacturer, Rainfast and Salt Type Labeled for Use on Glyphosate Tolerant (“Roundup Ready”) Corn</i> for a complete list.</p>

TABLE 8–8. Herbicide Treatment Rates for Herbicide Tolerant Corn (“Roundup Ready”, "Liberty-Link" and "Enlist" Hybrids) (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.
One Pass Postemergence Tank-Mixes with Residual Control for Use in Glyphosate Tolerant Corn Only (cont'd)			
glyphosate (0.9 kg/ha) + rimsulfuron (5.45%)/ (15 g/ha) mesotrione (36.36%) (100 g/ha)	glyphosate (540 g/L)* + DESTRA IS	1.67 L/ha (0.67 L/acre) + 275 g/ha (110 g/acre)	<ul style="list-style-type: none"> • Use ONLY with pedigreed (certified) corn seed designated as glyphosate tolerant or “Roundup Ready” corn. • Apply from 3 leaf to the 8 leaf stage of corn. • Provides residual control of fall panicum, green foxtail, lamb’s-quarters and pigweed spp. • A rapid fluctuation in temperature (greater than 20°C difference within 24-36 hours) will stress the corn crop. For maximum crop safety, allow 24 hours for the corn to acclimatize before spraying Destra™ IS Herbicide as a postemergence application on emerged corn. <p>* Numerous products exist. Refer to Table 8–7. <i>Glyphosate Product Rates, Manufacturer, Rainfast and Salt Type Labeled for Use on Glyphosate Tolerant (“Roundup Ready”) Corn</i> for a complete list.</p>
glyphosate (0.9 kg/ha) topramezone (0.0125 kg/ha) + dimethenamid (1.0 kg/ha) + atrazine (0.5 kg/ha)	glyphosate (540 g/L)* + IMPACT (336 g/L) + AATREX (480 g/L) glyphosate (360 g/L) + ARMEZON (336 g/L) + AATREX (480 g/L)	1.67 L/ha (0.67 L/acre) + 37 mL/ha (15 mL/acre) + 1.04 L/ha (0.42 L/acre)	<ul style="list-style-type: none"> • Use ONLY with pedigreed (certified) corn seed designated as glyphosate tolerant or “Roundup Ready” corn. • Apply up to and including the 7 leaf stage of corn. <p>* Numerous products exist. Refer to Table 8–7. <i>Glyphosate Product Rates, Manufacturer, Rainfast and Salt Type Labeled for Use on Glyphosate Tolerant (“Roundup Ready”) Corn</i> for a complete list.</p>
glyphosate (0.9 kg/ha) + tembotrione (61–92.4 g/ha) + atrazine (0.576 kg/ha)	glyphosate (540 g/L)* + LAUDIS (420 g/L) + AATREX (480 g/L)	1.67 L/ha (0.67 L/acre) + 145–220 mL/ha (58–88 mL/acre) + 1.2 L/ha (0.48 L/acre)	<ul style="list-style-type: none"> • Use ONLY with pedigreed (certified) corn seed designated as glyphosate tolerant or “Roundup Ready” corn. • Apply POST up to and including the 8 leaf stage of corn. <p>* Numerous products exist. Refer to Table 8–7. <i>Glyphosate Product Rates, Manufacturer, Rainfast and Salt Type Labeled for Use on Glyphosate Tolerant (“Roundup Ready”) Corn</i> for a complete list.</p>
glyphosate (0.9 kg/ha) + dicamba/atrazine (1–1.5 kg/ha)	glyphosate (540 g/L)* + MARKSMAN (393 g/L)	1.67 L/ha (0.67 L/acre) + 2.5–3.7 L/ha (1–1.5 L/acre)	<ul style="list-style-type: none"> • Use ONLY with pedigreed (certified) corn seed designated as as glyphosate tolerant or “Roundup Ready” corn. • Apply up to and including the 5 leaf stage of corn. • Marksman will provide residual control of broadleaf weeds. • See precautions for ENGENIA, FEXAPAN or XTENDIMAX applied POST. <p>* Numerous products exist. Refer to Table 8–7. <i>Glyphosate Product Rates, Manufacturer, Rainfast and Salt Type Labeled for Use on Glyphosate Tolerant (“Roundup Ready”) Corn</i> for a complete list.</p>

TABLE 8–8. Herbicide Treatment Rates for Herbicide Tolerant Corn (“Roundup Ready”, "Liberty-Link" and "Enlist" Hybrids) (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.
One Pass Postemergence Tank-Mixes with Residual Control for Use in Glyphosate Tolerant Corn Only (cont'd)			
glyphosate (0.9 kg/ha) + s-metolachlor/benoxacor/ atrazine (1.8 kg/ha)	glyphosate (540 g/L)* + PRIMEXTRA II MAGNUM ((1:0.8) 720 g/L)	1.67 L/ha (0.67 L/acre) + 2.5 L/ha (1.0 L/acre)	<ul style="list-style-type: none"> Use ONLY with pedigreed (certified) corn seed designated as glyphosate tolerant or “Roundup Ready” corn. Apply up to and including the 6 leaf stage of corn. PRIMEXTRA II MAGNUM will provide residual grass and broadleaf weed control. For tank-mixtures of PRIMEXTRA II MAGNUM plus any of the glyphosate products, to ensure optimum compatibility: Add PRIMEXTRA II MAGNUM to the tank first, then add AGRAL 90, AGSURF or COMPANION at 2.5 L/1,000 L. Continue agitation and add the glyphosate mix partner. <p>* Numerous products exist. Refer to Table 8–7. <i>Glyphosate Product Rates, Manufacturer, Rainfast and Salt Type Labeled for Use on Glyphosate Tolerant (“Roundup Ready”) Corn</i> for a complete list.</p>
glyphosate/s-metolachlor/ mesotrione (2,205 g/ha) + atrazine (0.28 kg/ha) + non-ionic surfactant (0.2% v/v)	HALEX GT (525 g/L) + AATREX (480 g/L) + non-ionic surfactant	4.2 L/ha (1.7 L/acre) + 0.58 L/ha (0.235 L/acre) + 2 L/1,000 L	<ul style="list-style-type: none"> Use ONLY with pedigreed (certified) corn seed designated as glyphosate tolerant or “Roundup Ready” corn. Apply up to and including the 6 leaf stage of corn. The addition of atrazine improves control of wild buckwheat, cocklebur, lady’s thumb, common and giant ragweed.
halosulfuron (34–67.5 g/ha) + glyphosate + non-ionic surfactant (0.25% v/v)	PERMIT (72.6% WG) + glyphosate (540 g/L)* + non-ionic surfactant	47–93 g/ha (19–38 g/acre) + 1.67 L/ha (0.67 L/acre) + 2.5 L/1,000 L	<ul style="list-style-type: none"> Apply when the corn is in the spike–10 leaf stage. For sweet corn, the maximum use rate is 70 g/ha (28 g/acre). The 47 g/ha (19 g/acre) rate will control labelled broadleaf weeds and nutsedge that is shorter than 15 cm. The 70–90 g/ha (28–38 g/acre) will control nutsedge that is 15–30 cm tall. Permit can be applied up to twice per season, but not to exceed a total of 140 g/ha (56 g/acre) in sweet corn and 186 g/ha (76 g/acre) in seed or field corn. <p>* Numerous products exist. Refer to Table 8–7. <i>Glyphosate Product Rates, Manufacturer, Rainfast and Salt Type Labeled for Use on Glyphosate Tolerant (“Roundup Ready”) Corn</i> for a complete list.</p>
tembotrione (37.5 g/ha)/ thiencarbazone-methyl (7.5 g/ha) + glyphosate (900 g/ha)	VIOS G3 (420 g/L) + glyphosate (540 g/L)*	110 mL/ha (44 mL/acre) 1.67 L/ha (0.67 L/acre)	<ul style="list-style-type: none"> Use ONLY with pedigreed (certified) corn seed designated as glyphosate tolerant or “Roundup Ready” corn. Apply up to and including the 6 leaf stage of corn. Apply only 1 application of VIOS G3 per season. <p>* Numerous products exist. Refer to Table 8–7. <i>Glyphosate Product Rates, Manufacturer, Rainfast and Salt Type Labeled for Use on Glyphosate Tolerant (“Roundup Ready”) Corn</i> for a complete list.</p>

TABLE 8–8. Herbicide Treatment Rates for Herbicide Tolerant Corn (“Roundup Ready”, "Liberty-Link" and "Enlist" Hybrids) (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.
Two Pass Postemergence Treatments in Glyphosate Tolerant Corn Only			
glyphosate (0.9–1.8 kg/ha)	glyphosate (540 g/L)*	1.67–3.33 L/ha (0.67–1.34 L/acre)	<ul style="list-style-type: none"> Use ONLY with pedigreed (certified) corn seed designated as glyphosate tolerant or “Roundup Ready” corn. The initial application should occur between the 3–5 leaf to remove early competition. A second application may be applied up to the 8 leaf stage of corn. Use 100–200 L/ha (40–80 L/acre) of water. <p>* Numerous products exist. Refer to Table 8–7. <i>Glyphosate Product Rates, Manufacturer, Rainfast and Salt Type Labeled for Use on Glyphosate Tolerant (“Roundup Ready”) Corn</i> for a complete list.</p>
	other glyphosate products	See Table 8–7.	
One Pass Postemergence Non-Residual Herbicides for Glufosinate (“Liberty Link”) Tolerant Corn Only			
glufosinate ammonium (0.5 kg/ha)	LIBERTY 200 SN (200 g/L)	2.5 L/ha (1 L/acre)	<ul style="list-style-type: none"> Use ONLY on field and seed corn specially developed to be tolerant to LIBERTY 200 SN. LIBERTY 200 SN can be applied from the 1–8 leaf stage of corn. LIBERTY 200 SN is a contact herbicide and has no residual activity. Consult the product label for rate recommendations for specific weeds and weed stages. 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. Do NOT add oil or any other surfactants.
One Pass Tank-Mixes with Residual Control for Glufosinate (“Liberty Link”) Tolerant Corn Only			
glufosinate ammonium (0.5 kg/ha) + atrazine (0.84–1.12 kg/ha)	LIBERTY 200 SN (200 g/L) + AATREX (480 g/L)	2.5 L/ha (1 L/acre) + 1.75–2.34 L/ha (0.7–0.93 L/acre)	<ul style="list-style-type: none"> Use ONLY on glufosinate tolerant (“Liberty Link”) corn hybrids. This tank-mix can be applied up to the 8 leaf stage of corn.
glufosinate ammonium (0.5 kg/ha) + dicamba (0.3 kg/ha)	LIBERTY 200 SN (200 g/L) + ENGENIA (600 g/L)	2.5 L/ha (1 L/acre) + 0.5 L/ha (0.2 L/acre)	<ul style="list-style-type: none"> Use ONLY on glufosinate tolerant (“Liberty Link”) corn hybrids. This tank-mix can be applied up to the 5 leaf stage of corn. See precautions for ENGENIA, FEXAPAN or XTENDIMAX alone POST.
diflufenzopyr/dicamba (0.2 kg/ha)	LIBERTY 200 SN (200 g/L) + DISTINCT (70 WG)	2.5 L/ha (1 L/acre) + 0.285 kg/ha (0.114 kg/ha)	<ul style="list-style-type: none"> Use ONLY on glufosinate tolerant (“Liberty Link”) corn hybrids. This tank-mix can be applied up to the 5 leaf stage of corn. See precautions for DISTINCT alone POST.
glufosinate ammonium (0.5 kg/ha) + dicamba/atrazine (1–1.5 kg/ha)	LIBERTY 200 SN (200 g/L) + MARKSMAN (393 g/L)	2.5 L/ha (1 L/acre) + 2.5–3.7 L/ha (1–1.5 L/acre)	<ul style="list-style-type: none"> Use ONLY on glufosinate tolerant (“Liberty Link”) corn hybrids. This tank-mix can be applied up to the 5 leaf stage of corn. See precautions for ENGENIA, FEXAPAN or XTENDIMAX alone POST.

TABLE 8–8. Herbicide Treatment Rates for Herbicide Tolerant Corn (“Roundup Ready”, "Liberty-Link" and "Enlist" Hybrids) (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.
One Pass Tank-Mixes with Residual Control for Glufosinate (“Liberty Link”) Tolerant Corn Only (cont'd)			
glufosinate ammonium (0.5 kg/ha) + pendimethalin (1 kg/ha)	LIBERTY 200 SN (200 g/L) + PROWL H2O (455 g/L)	2.5 L/ha (1 L/acre) + 2.2 L/ha (0.89 L/acre)	<ul style="list-style-type: none"> • Use ONLY on glufosinate tolerant (“Liberty Link”) corn hybrids. • This tank-mix can be applied up to the 4 leaf stage of corn.
tembotrione (37.5 g/ha)/ thiencarbazone-methyl (7.5 g/ha) + glufosinate ammonium (0.5 kg/ha)	VIOS G3 (420 g/L) + LIBERTY 200 SN (200 g/L)	110 mL/ha (44 mL/acre) + 2.5 L/ha (1 L/acre)	<ul style="list-style-type: none"> • Use ONLY on glufosinate tolerant (“Liberty Link”) corn hybrids. • Apply up to and including the 6 leaf stage of corn. • Apply only 1 application of VIOS G3 per season.
Two Pass Postemergence Treatments for Glufosinate (“Liberty Link”) Tolerant Corn Only			
glufosinate ammonium (0.5 kg/ha) followed by glufosinate ammonium (0.4 kg/ha)	LIBERTY 200 SN (200 g/L) followed by LIBERTY 200 SN (200 g/L)	2.5 L/ha (1 L/acre) followed by 2 L/ha (0.8 L/acre)	<ul style="list-style-type: none"> • Use ONLY on glufosinate tolerant (“Liberty Link”) corn hybrids. • The first application may be applied on 2–4 leaf stage of corn at the proper growth stage of the weeds. The second application may be made up to the 8 leaf stage of corn to control subsequent flushes of weeds.
Postemergence Herbicides for "Enlist E3" Corn Hybrids Only			
Herbicides containing the active ingredient “glyphosate” (e.g. ROUNDUP TRANSORB) and glufosinate ammonium (e.g. LIBERTY 200 SN) can also be used on Enlist E3 corn hybrids.			
2,4-D choline (500–817 g/ha)	ENLIST 1 (454 g/L)*	1.1–1.8 L/ha (0.44–0.72 L/acre)	<ul style="list-style-type: none"> • Apply POST up to the 8 leaf stage of Enlist E3 corn. • Controls broadleaf weeds only. Use the lower rate when weeds are in the seedling stage (2-4 Leaf) and the higher rate for harder to control species. • Make 1 to 2 applications with a minimum of 12 days between applications. • Two applications may be necessary for control of perennial weeds or late weed flushes that emerged after the initial application. • Apply as a coarse to extremely coarse spray (ASABE S-572 Standard). • Re-entry interval is 24 hours after application. • Do NOT apply more than two post emergent applications per use season. • Do NOT apply more than 8.6 L/ha of ENLIST DUO herbicide per use season. • Read and follow the Stewardship Program (www.traitstewardship.com) that accompanies the use of field corn seed containing the DAS-40278-9 gene.
2,4-D choline salt (194 g/L) + glyphosate (204 g/L)	ENLIST DUO	2.9–4.3 L/ha (1.17–1.74 L/acre)	<ul style="list-style-type: none"> • Apply POST up to the 8 leaf stage of Enlist corn. • Make 1 to 2 applications with a minimum of 12 days between applications. • Two applications may be necessary for control of perennial weeds or late weed flushes that emerged after the initial application. • Apply as a coarse to extremely coarse spray (ASABE S-572 Standard). • Re-entry interval is 48 hours after application. • Do NOT apply more than two post emergent applications per use season. • Do NOT apply more than 8.6 L/ha of ENLIST DUO herbicide per use season. • Read and follow the Stewardship Program (www.traitstewardship.com) that accompanies the use of field corn seed containing the DAS-40278-9 gene.