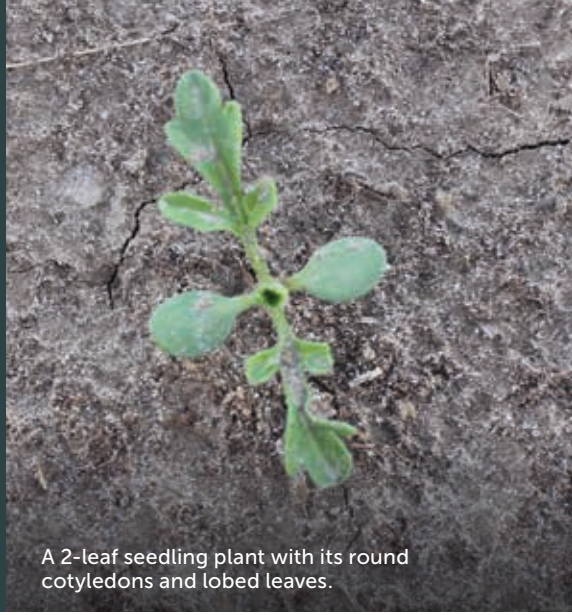
RAGWEED, COMMON

Ambrosia artemisiifolia L.

ANNUAL: Reproduces by seed



A 2-leaf seedling plant with its round cotyledons and lobed leaves.

HERBICIDE RESISTANCE STATUS

Populations exist that are resistant to group 5 herbicides (e.g. Aatrex 480), group 2 herbicides (e.g. Pursuit) and group 9 herbicides (e.g. Roundup Weathermax).

INFLUENCE OF TILLAGE

A Pennsylvania study found that spring tillage delayed seedling emergence by two weeks and reduced the total number of emerged seedlings compared to no tillage (Meyers et al, 2005). A French study demonstrated that seed germination was greatest when left on the soil surface and decreased at greater burial depths with no germination occurring when seed was buried 10-12 cm deep (Guillemin and Chauvel, 2011).

INFLUENCE OF COVER CROPS

Common ragweed seed has been reported to germinate at higher percentages when exposed to light and greater fluctuations in soil temperature (Pickett and Baskin, 1973). Such conditions are most likely to occur at the soil surface. One could assume that fall seeded cover crops that are roller crimped to act as mulch for spring planted crops would reduce germination of common ragweed seed because they presumably provide an environment with less light exposure and more stability in the range of soil temperatures. A Maryland study in organic cropping systems observed lower common ragweed emergence in corn plots where a fall seeded hairy vetch cover crop was terminated with a roller crimper compared to discing (Teasdale and Mirsky, 2015). However, a North Carolina study found no difference in common ragweed populations in plots consisting of cover crops compared to plots where no cover crops were included (Lassister et al.,, 2011).

A 6-leaf common ragweed plant with its deeply divided leaves.

A cluster of common ragweed plants beyond the stage for optimum control.

CORN

Control of common ragweed is most easily achieved when growing corn. There are a number of pre-emergence and post-emergence herbicides that will control common ragweed and other broadleaf weeds.

BEST HERBICIDE OPTIONS

CORN

Applications made prior to crop and weed emergence **(pre-emergence)**.

PRODUCT (*active ingredient*)	**PRODUCT RATE/ACRE** (a.i.rate/ha)	**AVERAGE CONTROL (%)** (8 weeks after application)	**RANGE IN CONTROL (%)**	**NUMBER OF TRIALS**
CONVERGE XT (*isoxaflutole + atrazine*)	174 mL/ac + 0.88 L/ac (105 kg/ha + 1.063 kg/ha)	98	91-100	6
INTEGRITY (*saflufenacil/dimethenamid-p*)	445 mL/ac (735 g/ha)	97	94-100	6
CALLISTO + AATREX LIQUID 480 (*mesotrione + atrazine*)	120 mL/ac + 850 mL/ac (140 g/ha + 1 kg/ha)	97	89-99	6
BATTALION co-pack (*rimsulfuron + s-metolachlor + dicamba*)	20 acre/case rate	97	94-99	5
MARKSMAN (*dicamba/atrazine*)	1.8 L/ac (1.8 kg/ha)	96	86-99	6
AATREX 480 (*atrazine*)	1.24 L/ac (1.49 kg/ha)	90	69-99	6

Source: Dr. P.H. Sikkema, University of Guelph (Ridgetown Campus)

CORN

Applications made to emerged weeds and crop **(post-emergence)**.

PRODUCT (*active ingredient*)	**PRODUCT RATE/ACRE** (a.i.rate/ha)	**AVERAGE CONTROL (%)** (8 weeks after application)	**RANGE IN CONTROL (%)**	**NUMBER OF TRIALS**
MARKSMAN (*dicamba/atrazine*)	1.8 L/ac (1.8 kg/ha)	100	98-100	6
PARDNER + AATREX 480 (*bromoxynil + atrazine*)	400 mL/ac + 1.24 L/ac (280 g/ha + 1.49 kg/ha)	99	96-100	2
ENGENIA *or* XTENDIMAX (*dicamba*)	400 mL/ac ***or*** 680 mL/ac (0.6 kg/ha)	98	83-95	6
DISTINCT + non-ionic surfactant + 28% UAN (*diflufenzopyr/dicamba*)	115 g/ac + 0.25% v/v + 1.25% v/v (0.2 kg/ha)	96	88-100	6
PEAK + BANVEL II (*prosulfuron + dicamba*)	5.3 g/ac + 120 mL/ac + 0.2% v/v (10 g/ha + 140 g/ha)	92	82-100	6
AATREX 480 + CROP OIL (*atrazine*)	1.24 L/ac + 1% v/v (1.49 kg/ha)	90	68-100	6
CALLISTO + AATREX 480 (*mesotrione + atrazine*)	85 mL/ac + 235 mL/ac (100 g/ha + 280 g/ha)	85	80-93	3

Source: Dr. P.H. Sikkema, University of Guelph (Ridgetown Campus)

Control of common ragweed with a pre-emergence application of Canopy Pro + Boundary LQD when evaluated prior to harvest in Woodstock, Ontario. The population of common ragweed at this location is not resistant to any herbicide groups, making control easier than in most Ontario environments.

SOYBEANS

Common ragweed that is resistant to group 2 herbicides (e.g. FirstRate, Classic and Pursuit) is widespread in Ontario while populations that are resistant to group 5 herbicides (e.g. Sencor) or group 9 herbicides (e.g. glyphosate) are less common. If growing non-GMO or "conventional" soybeans, control of common ragweed is best achieved with a sequential or "two-pass" herbicide program. Recent field trials have demonstrated that Boundary LQD + Canopy Pro or TriActor can provide good pre-emergence control of common ragweed that is not resistant to any herbicide groups. However, if group 2 and glyphosate resistant populations are present, pre-emergence applications of Lorox or Sencor at the highest labelled rate have provided the best early season control of common ragweed. If a second flush of common ragweed escapes a pre-emergence herbicide application, then a post-emergence application of Reflex or Blazer are your best options. FirstRate or Classic could also be used provided you are confident that the common ragweed is not resistant to either product.

When growing glyphosate tolerant (Roundup Ready) soybeans, glyphosate (360 g/L) applied at 1 L/ac is very effective at controlling emerged common ragweed. However, when fields have both glyphosate and group 2 resistant populations, no herbicide or tank-mix has provided acceptable control. Under such circumstances, planting a soybean cultivar that is tolerant to both glyphosate and dicamba (Roundup Ready 2Xtend) will allow for the use of dicamba, which has been effective at controlling common ragweed when applied sequentially both prior to and after planting.

BEST HERBICIDE OPTIONS

SOYBEANS

Applications made prior to the emergence of soybean and common ragweed populations not known to be resistant to herbicides.

PRODUCT (*active ingredient*)	PRODUCT RATE/ACRE (a.i.rate/ha)	AVERAGE CONTROL (%) (8 weeks after application)	RANGE IN CONTROL (%)	NUMBER OF TRIALS
BOUNDARY LQD (*s-metolachlor/metribuzin*) **+ CANOPY PRO** (*chlorimuron-ethyl/metribuzin*)	1 L/ac (1570/373 g/ha) + 14 g/ac & 220 g/ac (9 g/ha + 412 g/ha)	91	72-100	7
TRIACTOR (*flumioxazin + metribuzin + imazethapyr*)	75 g/ac + 220 g/ac + 126 mL/ac (94.6 g/ha + 412 g/ha + 75 g/ha)	91	74-100	12
CLASSIC + VALTERA + PROWL H_2O (*chlorimuron-ethyl + flumioxazin + pendimethalin*)	14 g/ac + 56 g/ac + 0.89 L/ac (9 g/ha + 71.4 g/ha + 1000 g/ha)	86	68-100	5
SENCOR 75 DF (*metribuzin*)	600 g/ac (1,120 g/ha)	83	53-100	7
LOROX 480 (*linuron*)	1.8 L/ac (2,250 g/ha)	79	30-94	7
CONQUEST LQ (*imazethapyr + metribuzin*)	126 mL/ac +330 mL/ac (75 g/ha + 425 g/ha)	75	32-100	8
PURSUIT (*imazethapyr*)	168 mL/ac (100 g/ha)	69	43-100	6
FIERCE (*flumioxazin/pyroxasulfone*)	85 g/ac (159.5 g/ha)	68	20-100	18
BOUNDARY LQD (*s-metolachlor/metribuzin*)	1 L/ac (1570/373 g/ha)	50	24-83	6
AUTHORTY + FOCUS (*sulfentrazone + pyroxasulfone /carfentrazone*)	117 mL/ac + 72 g/ac + 36 mL/ac (140 g/ha + 150 g/ha + 21.6 g/ha)	15	8-49	10

Source: Dr. P.H. Sikkema, Dr. C.J. Swanton and F.J. Tardif, University of Guelph

SOYBEANS

Applications made prior to the emergence of soybean and common ragweed populations that are resistant to group 2 herbicides and glyphosate (Adapted from Van Wely, 2015).

PRODUCT (*active ingredient*)	PRODUCT RATE/ACRE (a.i.rate/ha)	AVERAGE CONTROL (%) (8 weeks after application)	RANGE IN CONTROL (%)	NUMBER OF TRIALS
LOROX 480 (*linuron*)	1.8 L/ac (2,250 g/ha)	87	80-92	4
SENCOR 75 DF (*metribuzin*)	600 g/ac (1,120 g/ha)	85	80-95	4
INTEGRITY (*saflufenacil/dimethenamid-P*)	150 mL/ac (247 g/ha)	78	74-85	4
OPTILL (*saflenacil/imazethapyr*)	60 g/ac (216 g/ha)	72	60-83	4
FIERCE (*flumioxazin/pyroxasulfone*)	85 g/ac (159.5 g/ha)	67	40-80	4
CANOPY PRO (*chlorimuron-ethyl/metribuzin*)	14 g/ac + 220 g/ac (9 g/ha + 412 g/ha)	60	27-83	4
BOUNDARY LQD (*s-metolachlor/benoxacor/ metribuzin*)	1 L/ac (1,943 g/ha)	59	33-83	4
CONQUEST LQ (*imazethapyr + metribuzin*)	126 mL/ac +330 mL/ac (75 g/ha + 425 g/ha)	53	42-74	4
GUARDIAN PLUS (*chlorimuron-ethyl + flumioxazin*)	14 g/ac + 71.4 g/ac (9 g/ha + 71.4 g/ha)	49	20-70	4
VALTERA (*flumioxazin*)	56 g/ac (140 g/ha)	48	20-67	4
BROADSTRIKE RC (*flumtesulam*)	35 g/ac (70 g/ha)	41	20-57	4
FIRSTRATE (*chloransulam-methyl*)	17 g/ac (35 g/ha)	39	27-57	4
PURSUIT (*imazethapyr*)	168 mL/ac (100 g/ha)	38	23-57	4

SOYBEANS

Applications made to emerged weeds and crop **(post-emergence)**.

PRODUCT (*active ingredient*)	PRODUCT RATE/ACRE (a.i.rate/ha)	AVERAGE CONTROL (%) (6-8 weeks after application)	RANGE IN CONTROL (%)	NUMBER OF TRIALS
FIRSTRATE + non-ionic surfactant + 28% UAN (*cloransulam-methyl*)	8.5 g/ac + 0.25% v/v + 0.25% v/v (17.5 g/ha)	98	96-99	5
REFLEX + TURBOCHARGE (*fomesafen*)	0.4 L/ac + 0.5% v/v (240 g/ha)	81	43-97	9
BLAZER (*acifluorfen*)	1 L/ac (600 g/ha)	67	35-92	9
CLASSIC + non-ionic surfactant (*chlorimuron-ethyl*)	14 g/ac + 0.2% v/v (9 g/ha)	66	18-88	4
CLEANSWEEP + 28% UAN (*imazethapyr + bentazon*)	126 mL/ac + 700 mL/ac + 0.8 mL/ac (75 g/ha + 840 g/ha)	58	33-83	4
BASAGRAN FORTE (*bentazon*)	900 mL/ac (1080 g/ha)	50	13-88	9
PURSUIT + non-ionic surfactant (*imazethapyr*)	126 mL/ac + 0.25% v/v + 0.8 L/ac (75 g/ha)	41	0-91	5
PINNACLE SG + non-ionic surfactant (*thifensulfuron-methyl*)	4.8 g/ac + 0.1% v/v (6 g/ha)	34	7-61	5

Source: Dr. P.H. Sikkema, Dr. C.J. Swanton and F.J. Tardif, University of Guelph

RAGWEED, COMMON

Control of small common ragweed after an application of Reflex + Turbocharge.

Re-growth on a large common ragweed plant following an application of Reflex + Turbocharge. When applied to ragweed that is larger than 6 leaves, control with Reflex + Turbocharge is often inconsistent.

Control of common ragweed with the highest labelled rate of Sencor 75 DF applied pre-plant. The population of common ragweed at this site is resistant to both group 9 (e.g. glyphosate) and group 2 (e.g. FirstRate) herbicides.

Control of ragweed in late August following a two-pass herbicide program with Integrity applied pre-plant followed by Reflex and Turbcharge applied post-emergence. To the left and right are unsprayed areas.

SOYBEANS

Applications made after crop emergence and to emerged glyphosate and group 2 resistant common ragweed (Adapted from Van Wely, 2015).

PRODUCT (*active ingredient*)	PRODUCT RATE/ACRE (a.i.rate/ha)	AVERAGE CONTROL (%) (8 weeks after application)	RANGE IN CONTROL (%)	NUMBER OF TRIALS
Post-emergence herbicide options only for Roundup Ready Soybean cultivars				
FLEXSTAR GT (*fomesafen/glyphosate*)	1.4 L/ac (1,200 g/ha)	58	44-71	2
Herbicide options only for Roundup Ready 2 Xtend Soybean cultivars				
Pre-plant application timing				
XTENDIMAX (350 g/L) *or* ENGENIA (600 g/L) (*dicamba*)	340 mL/ac *or* 200 mL/ac (300 g/ha)	65	20-89	2
XTENDIMAX (350 g/L) *or* ENGENIA (600 g/L) (*dicamba*)	680 mL/ac *or* 400 mL/ac (600 g/ha)	69	44-93	2
Post application timing				
XTENDIMAX (350 g/L) *or* ENGENIA (600 g/L) (*dicamba*)	340 mL/ac *or* 200 mL/ac (300 g/ha)	71	61-80	2
XTENDIMAX (350 g/L) *or* ENGENIA (600 g/L) (*dicamba*)	680 mL/ac *or* 400 mL/ac (600 g/ha)	81	72-89	2
Sequential (applied pre-plant and then again post-emergence)				
XTENDIMAX (350 g/L) *or* ENGENIA (600 g/L) (*dicamba*)	340 mL/ac *or* 200 mL/ac (300 g/ha)	94	88-89	2
XTENDIMAX (350 g/L) *or* ENGENIA (600 g/L) (*dicamba*)	680 mL/ac *or* 400 mL/ac (600 g/ha)	92	85-99	2

RAGWEED, COMMON

Glyphosate resistant common ragweed control following two applications of glyphosate.

Glyphosate resistant common ragweed control following Xtendimax applied at 340 mL/ac pre-plant and then again post-emergence.

CEREALS

Ragweed is one of the more common annual weeds in cereals crops. Fortunately it is controlled by a number of cereal herbicides when applied to emerged common ragweed. Application timing that maximizes control of common ragweed usually coincides with the beginning to middle part of May and prior to the flag leaf stage of winter cereals when the weed is in the 4-6 leaf stage of growth.

POST-CEREAL HARVEST

Common ragweed that has been cut by the combine header during harvest will re-grow and begin to flower within a few weeks. Tillage or fall herbicide applications made within four weeks following cereal harvest will significantly reduce the amount of seed returned to the soil.

CEREALS

Applications made to emerged weeds and winter wheat **(post-emergence)**.

PRODUCT (active ingredient)	PRODUCT RATE/ACRE (a.i.rate/ha)	AVERAGE CONTROL (%) (8 weeks after application)	RANGE IN CONTROL (%)	NUMBER OF TRIALS
BUCTRIL M (560 g/L) (*bromoxynil/MCPA*)	0.4 L/ac (0.56 kg/ha)	100	99-100	3
TROPHY [TROPHY A + TROPHY B] (*fluroxypyr + MCPA*)	0.24 L/ac + 0.45 L/ac (108 g/ha + 560 g/ha)	99	99-100	3
DICHLORPROP-D (582 g/L) (*dichlorprop/2,4-D*)	0.7 L/ac (1.017 kg/ha)	99	99-100	3
2,4-D ESTER (660 g/L) (*2,4-D*)	0.52 L/ac (850 g/ac)	97	95-100	3
MCPA ESTER (600 g/L) (*MCPA*)	0.56 L/ac (850 g/ac)	95	93-98	3

Source: Dr. P.H. Sikkema, University of Guelph (Ridgetown Campus)

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