If you have a mind to do things your own way, we’re here to help, with straightforward prices on effective products and an expert team to back them up. It’s that simple.

ADAMA.COM/CANADA
1.855.264.6262

Always read and follow pesticide label directions.
We know how hard Canadian agri-retails work to support their communities.

So in 2016, ADAMA Canada created the #ThankARetailer contest as a way for retails and the communities they serve to support local causes. Each year, we give away $15,000 to four winning retails across the Canadian provinces. In the past two years alone, we have donated a total of $135,000 to eight outstanding retails and their communities, and we are looking forward to donating another $60,000 to the good causes our 2019 contest winners chose to support.

This year’s contest is a little different. In addition to the prize money, we’re also giving every single one of our retail nominees the chance to win funding for their good causes through sponsored ADAMA Day events. Keep an eye out for those events, and tune in next winter for another chance at the $15,000 prize.

On behalf of everyone at ADAMA Canada, thank you for all you do.

ThankARetailer.ca    #ThankARetailer
# HERBICIDE

<table>
<thead>
<tr>
<th>Product</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,4-D Ester 700</td>
<td>3</td>
</tr>
<tr>
<td>ARMORY™ 240</td>
<td>7</td>
</tr>
<tr>
<td>ARROW® 240 EC</td>
<td>9</td>
</tr>
<tr>
<td>ARROW ALL IN™</td>
<td>11</td>
</tr>
<tr>
<td>BADGE® II</td>
<td>13</td>
</tr>
<tr>
<td>BISON® 400 L</td>
<td>15</td>
</tr>
<tr>
<td>BROMOTRIL® II (Post-emergent)</td>
<td>17</td>
</tr>
<tr>
<td>BROMOTRIL® II (Pre-seed)</td>
<td>19</td>
</tr>
<tr>
<td>DAVAI™ 80 SL</td>
<td>21</td>
</tr>
<tr>
<td>ESTEEM™</td>
<td>23</td>
</tr>
<tr>
<td>FORCEFIGHTER® M</td>
<td>25</td>
</tr>
<tr>
<td>HOTSHOT®</td>
<td>27</td>
</tr>
<tr>
<td>LADDER® 240 EC</td>
<td>29</td>
</tr>
<tr>
<td>LADDER ALL IN™</td>
<td>31</td>
</tr>
<tr>
<td>OUTSHINE®</td>
<td>33</td>
</tr>
<tr>
<td>PHANTOM® 240 SL</td>
<td>35</td>
</tr>
<tr>
<td>PRIORITY® (Post-harvest and chemfallow, pre-seed)</td>
<td>37</td>
</tr>
<tr>
<td>RUSH® 24</td>
<td>41</td>
</tr>
<tr>
<td>RUSH M®</td>
<td>43</td>
</tr>
<tr>
<td>SQUADRON®</td>
<td>45</td>
</tr>
<tr>
<td>THRASHER® II</td>
<td>49</td>
</tr>
<tr>
<td>TOPLINE®</td>
<td>51</td>
</tr>
</tbody>
</table>

Always read and follow pesticide label directions.
WEEDS DON’T STAND A CHANCE
**HERBICIDE**

**2,4-D ESTER 700**

Provides reliable post-emergent control of broadleaf weeds and great tank-mix flexibility in wheat, barley, rye, soybeans and other crops.

**ACTIVE INGREDIENT**
2,4-D Ester

**CHEMISTRY GROUP**
Group 4

**APPLICATION RATES AND PACKAGING**
- 2 x 10 L jug/case
- 120 L drum (rates vary)

**REGISTERED CROPS:**
- Wheat (spring, winter)
- Barley
- Fall rye
- Field corn
- Non-crop land
- Pastures
- Rye
- Soybeans
- Pastures
- Rye
- Soybeans

**WEEDS CONTROLLED:**

<table>
<thead>
<tr>
<th>Susceptible Weed</th>
<th>Timing</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual sow thistle</td>
<td>Before 4-leaf stage</td>
<td></td>
</tr>
<tr>
<td>Bluebur</td>
<td>Before 4-leaf stage</td>
<td></td>
</tr>
<tr>
<td>Burdock</td>
<td>Before 4-leaf stage</td>
<td></td>
</tr>
<tr>
<td>Cocklebur, Daisy fleabane, False flax, False ragweed, Flixweed, Giant ragweed, Goat’s beard, Kochia, Lamb’s quarters, Mustards (except Dog and Tansy)</td>
<td>Before 4-leaf stage</td>
<td>Small seedlings (2 – 4 leaf), growing rapidly, good growing conditions: 0.2 – 0.3 L/ac Large weeds, dry or cold weather, heavy infestations: 0.3 L/ac Resistance increases with age.</td>
</tr>
<tr>
<td>Narrow-leaved hawk’s beard</td>
<td>In fall, and at 1–2 leaf stage in spring</td>
<td></td>
</tr>
<tr>
<td>Plantain, Prickly lettuce, Ragweeds, Redroot pigweed, Russian pigweed, Russian thistle, Shepherd’s purse, Stinging nettle, Stinkweed, Sweet clover (seedling), Thyme-leaved spurge</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Volunteer canola&lt;sup&gt;1&lt;/sup&gt;</td>
<td>1–4 leaf stage</td>
<td></td>
</tr>
<tr>
<td>Wild radish, Wild (prairie) sunflower</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<sup>1</sup>All types.
### Harder-to-Control Weed Timing Rate

<table>
<thead>
<tr>
<th>Weed</th>
<th>Timing</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Curled dock</td>
<td>Before 4-leaf stage</td>
<td>Small seedlings (2 – 4 leaf), growing rapidly, good growing conditions: 0.4 – 0.5 L/ac</td>
</tr>
<tr>
<td>Dog mustard, Field pepper-grass, Flixweed (if treated before bolting in spring), Groundsel, Hairy galinsoga, Hawkweed, Heal-all</td>
<td>Before 4-leaf stage</td>
<td>Large weeds, dry or cold weather, heavy infestations: 0.5 L/ac Resistance increases with age.</td>
</tr>
<tr>
<td>Knotweed</td>
<td>Before 4-leaf stage</td>
<td></td>
</tr>
<tr>
<td>Narrow-leaved hawk’s beard (if treated before bolting in spring), Oak-leaved goosefoot, Pineappleweed, Prostrate pigweed, Purslane, Sheep sorrel, Tansy mustard, Tumble pigweed, Velvetleaf</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Volunteer canola</td>
<td>4 – 6 leaf stage</td>
<td></td>
</tr>
</tbody>
</table>

1 All types.

### Very-Hard-to-Control Weed Timing Rate

<table>
<thead>
<tr>
<th>Weed</th>
<th>Timing</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biennial wormwood, Blue lettuce, Bull thistle, Burdock, Buttercup, Canada thistle, Chicory, Curled dock, Dandelion, Field bindweed, Field chickweed, Field horsetail, Gumweed, Hedge bindweed</td>
<td></td>
<td>Small seedlings (2 – 4 leaf), growing rapidly, good growing conditions: 0.4 – 0.5 L/ac</td>
</tr>
<tr>
<td>Hempnettle</td>
<td>If treated before 4-leaf stage</td>
<td>Large weeds, dry or cold weather, heavy infestations: 0.5 L/ac Resistance increases with age.</td>
</tr>
<tr>
<td>Hoary cress, Lady’s thumb, Leafy spurge, Mouse-eared chickweed, Perennial sow thistle, Russian knapweed, Scentless mayweed, Smartweed, Tartary buckwheat, Teasel, Volunteer sunflower, Wild buckwheat</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yellow rocket</td>
<td>Controlled with applications before 4-leaf stage</td>
<td></td>
</tr>
</tbody>
</table>

2 Use highest listed rate for suppression.

**HOW IT WORKS:**

Systemic activity hinders plant cell growth in newly forming stems and leaves promoting uncontrolled, unstainable growth, causing stem curl-over, leaf withering and eventual plant death.
## CROP STAGING:

<table>
<thead>
<tr>
<th>Crop</th>
<th>Timing</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barley, Rye, Wheat (spring, winter)</td>
<td>Pre-seed or pre-emergent</td>
<td>0.2 – 0.5 L/ac</td>
</tr>
<tr>
<td>Barley, Rye, Wheat (spring, winter)</td>
<td>4 leaf to flag leaf</td>
<td>Up to 0.5 L/ac</td>
</tr>
<tr>
<td>Winter wheat, Fall rye</td>
<td>Pre-seed or pre-emergent</td>
<td>0.2 – 0.5 L/ac</td>
</tr>
<tr>
<td>Winter wheat, Fall rye</td>
<td>In spring, from full tillering to shot blade stage. Do not apply during and after flag leaf stage. Do not apply to seedling cereals in fall.</td>
<td>Up to 0.3 L/ac</td>
</tr>
<tr>
<td>Soybeans for control of giant ragweed</td>
<td>Pre-emergent – A minimum of 7 days before planting, giant ragweed plants must be present at spraying.</td>
<td>0.2 – 0.3 L/ac</td>
</tr>
<tr>
<td>Field corn</td>
<td>Before corn is 15 cm tall or before the 6-leaf stage. Application at later stages will damage corn. If applying at later stage, use a shielded spray, keep spray off corn foliage. Do not apply within 2 weeks of silking and tasseling.</td>
<td>Up to 0.3 L/ac</td>
</tr>
<tr>
<td>Established grasses for forage and seed production</td>
<td>In spring, up to shot blade of grasses or in fall after harvest. Application during flower or pollination development will reduce seed yield.</td>
<td>Up to 0.3 L/ac (for seed production) Up to 0.6 (hay and pasture crops)</td>
</tr>
<tr>
<td>Established pasture and rangeland</td>
<td>Apply at time of rapid growth, usually May, June or September. Apply after pasture has been grazed or cut and weed growth has resumed.</td>
<td>Up to 1.4 L/ac</td>
</tr>
<tr>
<td>Non-crop (stubble land, rights of ways, roadsides etc.)</td>
<td>Apply at time of rapid growth, usually May, June or September. A 2nd application may be required to control perennial weeds.</td>
<td>Up to 1.4 L/ac</td>
</tr>
</tbody>
</table>
HERBICIDE

2,4-D ESTER 700

WATER VOLUME:
- Ground: 12.5 – 50 L/ac
- Aerial: Minimum 12 L/ac

RAINFASTNESS:
Avoid applying when rain is forecast.

SUPPORTED TANK MIXES:
- Glyphosate
- Bromoxynil (BROMOTRIL® II)
- Tribenuron (Express® SG)
- BISON® 400 L
- BUMPER®
- PYRINEX® 480 EC

MIXING INSTRUCTIONS:
1. ½ fill the tank with clean water.
2. Add the required amount of ADAMA 2,4-D Ester 700 and agitate thoroughly.
3. Add any tank-mix partners.
4. Fill the tank and agitate again before use.

CROP ROTATIONS:
No restrictions.

PRE-HARVEST INTERVAL:
90 days

GRAZING RESTRICTIONS:
30 days

STORAGE:
Store the container tightly closed away from seeds, fertilizer, plants and foodstuffs. May be stored at any temperature. Shake well before using.

QUICK TIPS:
Avoid spray drift to any desirable vegetation. Coarse sprays are less likely to drift. Do not spray during periods of high winds.

Always read and follow pesticide label directions.
ARMORY™ 240

Provides more precise harvest timing with fast drydown of crops, protecting yield and grade, and reducing disease transmission late in the season.

ACTIVE INGREDIENT: Diquat
CHEMISTRY GROUP: Group 22

APPLICATION RATES AND PACKAGING:
- 2 x 10 L jugs/case
- 120 L drum

Beans, lentils, peas, chickpeas, canola, mustard, flax, sunflowers:
  - Ground: 0.5 – 0.69 L/ac
  - Aerial: 0.69 – 0.93 L/ac

Legumes:
  - Ground: 0.69 – 1.09 L/ac
  - Aerial: 0.69 – 1.09 L/ac

Oats:
  - Ground: 0.36 – 0.51 L/ac

Potatoes:
  - Ground: 0.51 – 1.42 L/ac
  - Aerial: 0.69 – 0.93 plus 0.51 L/ac

Sweet white lupins:
  - Ground: 0.93 L/ac

Vegetables:
  - Ground: 0.93 – 1.86 L/ac

Fruit:
  - Ground: 1.86 L/ac

REGISTERED CROPS:
- Beans
- Canola
- Chickpeas
- Flax
- Legumes
- Lentils
- Mustard
- Oats
- Peas
- Potatoes
- Sunflowers
- Sweet white lupins
- Weeds in non-crop land
- Suppression of perennial grasses under apple trees

WEEDS CONTROLLED:
- Potato vines
- Corn spurry in oats
- Weeds in stale seedbeds (vegetables and field crops)
- Weeds in vegetables (inter-row directed)

HOW IT WORKS:
ARMORY™ 240 works on contact to disrupt plant cells and is rainfast in 30 minutes, leading to more rapid drydown of plants and weeds when compared to systemic herbicides. Harvesting can typically begin within 4 – 10 days, depending on crop and weather conditions.

WATER VOLUME:
90 – 200 L/ac

RAINFASTNESS:
30 minutes
SUPPORTED TANK MIXES:
- Agral® 90
- LI 700®
- Liberate®
- Other non-ionic surfactants

MIXING INSTRUCTIONS:
Use LI 700 wetting and spreading agent at 2.5 L per 1000 L of spray solution (0.25%) or Agral® 90, wetting and spreading agent, at a rate of 1 L for each 1000 L of spray mixture unless otherwise stated.

PRE-HARVEST INTERVALS:
- Pulse crops: 4 – 10 days, depending on weather and crop
- Potatoes: 7 days

GRAZING RESTRICTIONS:
Do not graze the treated areas or cut for hay.

STORAGE:
Store above 0 C.

QUICK TIPS:
Avoid morning and evening applications. Suggested conditions for aerial applications is a temperature below 25 C, humidity above 50% and wind speed below 9 km/h at flying height.
HERBICIDE

ARROW® 240 EC

Get broad-spectrum grassy weed control in canola, pulses and other broadleaf and specialty crops.

ACTIVE INGREDIENT
Clethodim

CHEMISTRY GROUP
Group 1

APPLICATION RATES AND PACKAGING
- 50 ml/ac for light infestations or 60 ac/case
- 80 ml/ac for moderate infestations or 40 ac/case
- 150 ml/ac for quack grass or 20 ac/case
- 1 x 3 L jug + 1 x 9 L jug of X-ACT® adjuvant

REGISTERED CROPS:
- Alfalfa, seedling
- Beans
- Canola
- Chickpeas
- Coriander
- Cranberries
- Fenugreek
- Flax
- Highbush blueberries
- Lentils
- Linola™
- Mustard
- Onion
- Peas
- Potatoes
- Prairie carnation
- Soybeans
- Spinach
- Sunflowers
- Canola
- Highbush blueberries
- Lentils
- Linola™
- Mustard
- Onion
- Peas
- Potatoes
- Prairie carnation
- Soybeans
- Spinach
- Sunflowers

WEEDS CONTROLLED:

<table>
<thead>
<tr>
<th>Grass Species</th>
<th>Leaf Stage</th>
<th>Application Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foxtail (green, yellow), Wild oats, Volunteer cereals (wheat, barley, oats)</td>
<td>2–4</td>
<td>50 ml/ac</td>
</tr>
<tr>
<td>Barnyard grass, Fall panicum, Proso millet, Volunteer corn, Volunteer canarygrass, Witch grass</td>
<td>2–6</td>
<td>50 ml/ac</td>
</tr>
<tr>
<td>Barnyard grass, Crabgrass (smooth, large), Fall panicum, Foxtail (green, yellow), Persian darnel, Proso millet, Quack grass suppression, Volunteer canarygrass, Volunteer cereals (wheat, barley, oats), Volunteer corn, Wild oats, Witch grass</td>
<td>2–6</td>
<td>80 ml/ac</td>
</tr>
<tr>
<td>Quack grass control</td>
<td>2–6</td>
<td>150 ml/ac</td>
</tr>
</tbody>
</table>

HOW IT WORKS:
The active ingredient is translocated from the treated foliage to the growing points of the leaves, shoots and roots. Leaf foliage will first change from green to yellowish, then purplish and finally brown. Newest leaf of affected plant pulls out easily in 3–5 days. Time required for complete control is normally 7–21 days following treatment, depending on growing conditions and crop competition.

CROP STAGING:
- Most crops are tolerant at all stages, so target applications at the optimal weed stage.
- Always adhere to the pre-harvest interval for each crop.
ARROW® 240 EC

WATER VOLUME:
- Ground application only
- 20 – 90 L/ac to achieve uniform spray coverage

RAINFASTNESS:
1 hour

SUPPORTED TANK MIXES:
Herbicides:
- Canola: Lontrel® or Muster®
- Clearfield® canola only: Imazethapyr (PHANTOM® 240 SL)
- LibertyLink® canola only: Liberty®
- Field peas: Imazethapyr (PHANTOM® 240 SL), DAVAI™ 80 SL, Solo® ADV
- Flax, including low linolenic acid varieties: Bromoxynil + MCPA ester (BADGE® II) or Curtail® M
- Flax, not including low linolenic: Lontrel® or MCPA ester
- Glyphosate-tolerant soybeans: Glyphosate
- Soybeans: DAVAI™ 80 SL, Solo® ADV

MIXING INSTRUCTIONS:
1. Fill clean spray tank ½ full with water. Start agitation.
2. Add the correct amount of ARROW® 240 EC. Continue to agitate.
3. Add the correct amount of adjuvant X-ACT® along with the remaining amount of water necessary to fill the spray tank.
4. Continue to agitate or run the bypass system.
5. After any break in the spraying operation, agitate thoroughly before spraying again.
6. Do not allow the mixture to sit overnight.
7. If tank mixing, follow label directions for each tank-mix partner.

CROP ROTATIONS:
No restrictions when applied alone.

PRE-HARVEST INTERVALS:
- Alfalfa, fenugreek: 30 days
- Blueberries, spinach: 14 days
- Canola, coriander, beans, flax (including low linolenic), lentils, potatoes, chickpeas, mustard: 60 days
- Onion: 45 days
- Soybeans, peas: 75 days
- Sunflowers: 72 days

GRAZING RESTRICTIONS:
Do not cut treated crops for feed or graze until 60 days after application.

STORAGE:
- May be stored at any temperature.
- Shake well before use.

QUICK TIPS:
ARROW® 240 EC works best when applied to actively growing weeds. Regrowth of tillers may occur if applied to weeds under stress conditions. ARROW® 240 EC must be used with the adjuvant X-ACT®.

Always read and follow pesticide label directions.
HERBICIDE

ARROW ALL IN™

A more concentrated formulation of grassy weed control in canola, soybeans, pulses and a variety of specialty crops with the convenience of a built-in surfactant.

ACTIVE INGREDIENT
Clethodim 120 g/L

CHEMISTRY GROUP
Group 1

APPLICATION RATES AND PACKAGING
- 150 ml/ac for standard rate or 80 ac/case
- 100 ml/ac for light infestations and easier-to-control weeds or 120 ac/case
- 300 ml/ac for quack grass control or 40 ac/case
- 2 x 6 L jugs/case

A more concentrated formulation of grassy weed control in canola, soybeans, pulses and a variety of specialty crops with the convenience of a built-in surfactant.

REGISTERED CROPS:
- Alfalfa, seedling
- Beans
- Canola
- Carnations
- Chickpeas
  (Desi & Kabuli)
- Coriander
- Cranberries
- Fenugreek
- Field peas
- Flax
- Highbush blueberries
- Lentils
- Mustard
- Onions
- Potatoes
- Soybeans
- Spinach
- Sunflowers

WEEDS CONTROLLED:

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HOW IT WORKS:
The active ingredient is translocated from the treated foliage to the growing points of the leaves, shoots and roots. Leaf foliage will first change from green to yellowish, then purplish and finally brown. Newest leaf of affected plant pulls out easily in 3 – 5 days. Time required for complete control is normally 7 – 21 days following treatment, depending on growing conditions and crop competition.

CROP STAGING:
- Most crops are tolerant at all stages, so target applications at the optimal weed stage.
- Always adhere to the pre-harvest interval for each crop.
WATER VOLUME:
- Recommended: 40 L/ac
- Ground application only

RAINFASTNESS:
1 hour

SUPPORTED TANK MIXES:
- Flax: BADGE® II (including low-linolenic varieties); MCPA ester (does not include low-linolenic varieties); Lontrel™ 360 (does not include low-linolenic varieties); Curtail® M (including low-linolenic varieties)
- Canola: Lontrel™ 360; Muster®; Imazethapyr (PHANTOM® 240 SL or Pursuit®) (imazethapyr-tolerant canola only); Liberty® (glufosinate ammonia-tolerant canola varieties)
- Field peas: Imazethapyr (PHANTOM® 240 SL or Pursuit®); DAVAI™ 80 SL (imazamox)
- Soybeans (glyphosate-tolerant): Glyphosate, DAVAI™ 80 SL, PHANTOM® 240 SL or Pursuit®

MIXING INSTRUCTIONS:
1. Thoroughly clean the sprayer by flushing the system with water containing detergent.
2. Fill clean spray tank ½ full with clean water. Start agitation system.
3. Add the required amount of the tank-mix partner. Continue to agitate.
4. Add the correct amount of ARROW ALL IN™. Continue to agitate.
5. Continue to add the remaining amount of water to fill the spray tank. Continue to agitate.
6. After any break in the spraying operation, agitation thoroughly before spraying again. Check inside the tank to ensure that sprayer agitation is sufficient to re-mix the spray materials. Do not allow the mixture to sit overnight. In the case of tank mixtures with broadleaf herbicides, settling will occur if agitation is not continuous.
7. If an oil film starts to build up in the tank, drain it and clean the tank with a strong detergent solution.
8. Immediately after use, thoroughly clean the sprayer by flushing the system with clean water containing detergent.

CROP ROTATIONS:
30-day plant-back interval for all unlabelled crops.

PRE-HARVEST INTERVALS:
- Alfalfa (seedling), Cranberries, Fenugreek: 30 days
- Canola, Chickpeas (desi, kabuli), Coriander, Dry beans (pinto, black, great northern, red, pink, navy), Flax (including low-linolenic acid varieties), Lentils, Mustard (oriental, brown, yellow) (condiment type only), Potatoes: 60 days
- Dry onions: 45 days
- Field peas, Soybeans: 75 days
- Highbush blueberries, Spinach: 14 days
- Sunflowers: 72 days

GRAZING RESTRICTIONS:
Do not cut treated crops for feed or graze until 60 days after application.

STORAGE:
Do not freeze.

QUICK TIPS:
Most effective control is achieved when application is made prior to tillering when annual grasses are small and actively growing.

Always read and follow pesticide label directions.
HERBICIDE

BADGE® II

Get proven control of almost 30 broadleaf weeds in cereals, flax and corn with easy-to-use tank-mix options for one-shot weed control.

ACTIVE INGREDIENTS
Bromoxynil and MCPA ester

CHEMISTRY GROUPS
Group 4 (MCPA ester) and Group 6 (bromoxynil)

APPLICATION RATES AND PACKAGING
- 0.5 L/ac or 1 case treats 40 acres
- 2 x 10 L jug/case
- 120 L drum treats 240 acres

REGISTERED CROPS:
Field crops:
- Barley
- Canary seed
- Corn
- Fall rye

Seedling grasses:
- Bromegrass
- Creeping red fescue
- Crested wheatgrass
- Intermediate wheatgrass
- Meadow fescue

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Seedling grasses:
- Bromegrass
- Creeping red fescue
- Crested wheatgrass
- Intermediate wheatgrass
- Meadow fescue

WEEDS CONTROLLED:
- American nightshade
- Ball mustard
- Bluebur
- Canada thistle1
- Cocklebur
- Common buckwheat
- Common groundsel
- Common ragweed
- Cow cockle5
- Flixweed
- Green smartweed
- Kochia2
- Lady’s thumb
- Lamb’s quarters
- Night-flowering catchfly
- Pale smartweed
- Perennial sow thistle1
- Redroot pigweed
- Russian thistle2
- Scentless chamomile3
- Shepherd’s purse
- Stinkweed
- Tartary buckwheat
- Velvetleaf4
- Volunteer canola (all types)
- Volunteer sunflower
- Wild buckwheat
- Wild mustard
- Wild tomato
- Wormseed mustard

1 Top growth control.
2 Spray before plants are 2 inches high.
3 Spring annual only.
4 Spray before plants are 3 inches high.
5 Up to 4-leaf stage.

HOW IT WORKS:
A combination of systemic and contact activity with weeds yellowing within 2 – 4 days and exhibiting abnormal growth (twisting and cupping of leaves) in 2 – 10 days.
CROP STAGING:

<table>
<thead>
<tr>
<th>Crop</th>
<th>Stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barley, Oats, Spring wheat (including durum)</td>
<td>2 leaf to early flag</td>
</tr>
<tr>
<td>Canary seed</td>
<td>3 – 5 leaf</td>
</tr>
<tr>
<td>Corn</td>
<td>4 – 6 leaf</td>
</tr>
<tr>
<td>Fall rye</td>
<td>When growth commences in spring to early flag leaf</td>
</tr>
<tr>
<td>Flax, Solin</td>
<td>2 inches to early bud stage. Best tolerance occurs when flax is 2 – 4 inches tall.</td>
</tr>
<tr>
<td>Seedling grasses</td>
<td>2 – 4 leaf</td>
</tr>
<tr>
<td>Timothy (established for seed production)</td>
<td>Prior to shot blade in the seed production year.</td>
</tr>
<tr>
<td>Winter wheat</td>
<td>2 – 4 leaf stage in the fall or after growth resumes up to early flag leaf.</td>
</tr>
</tbody>
</table>

WATER VOLUME:
- Ground: 20 – 40 L/ac in cereals and flax; 80 – 120 L/ac in corn; 60 L/ac in forages
- Aerial: 8 – 20 L/ac

RAINFASTNESS:
1 hour

SUPPORTED TANK MIXES:
- Corn: Atrazine
- Flax and Solin: Clethodim (ARROW® 240 EC) or Poast®
- Oats: MCPA ester
- Spring wheat and barley: Ally®, Avenge®, MCPA ester, Refine® SG or tralkoxydim (BISON® 400 L)
- Spring wheat only: Axial®, clodinafop (LADDER® 240 EC, LADDER ALL IN™) or Everest®
- Winter wheat: Refine Extra®

MIXING INSTRUCTIONS:
1. Fill clean spray tank ½ full with water.
2. Add the required amount of BADGE® II and agitate thoroughly.
3. Fill the tank and agitate again before use.
4. When tank mixing, follow instructions on both labels.

CROP ROTATIONS:
No re-cropping restrictions the year after treatment.

PRE-HARVEST INTERVAL:
Flax or Solin: 60 days

STORAGE:
Avoid freezing.

GRAZING RESTRICTIONS:
- Do not graze treated grain or established timothy crops or cut for feed within 30 days of application.
- Do not graze meadow foxtail in the year of treatment.
- Do not graze other treated forage grasses within 56 days of treatment.

QUICK TIPS:
BADGE® II herbicide is well known for being gentle on the crop. Avoid spraying if temperatures are above 25 C.

Always read and follow pesticide label directions.
BISON® 400 L

Get a wide window of application and excellent control of Persian darnel, wild oats and other grassy weeds in cereals and seedling forage grasses grown for seed. It gives you tank-mix flexibility with more than 20 different broadleaf herbicides.

ACTIVE INGREDIENT
Tralkoxydim

CHEMISTRY GROUP
Group 1

APPLICATION RATES AND PACKAGING
- 200 ml/ac or 40 ac/case
- 1 x 8 L jug BISON® 400 L + 1 x 8 L jug Addit® adjuvant per case

REGISTERED CROPS:
Field crops:
- Barley
- Rye (spring, winter)
- Triticale
- Wheat (spring, durum, winter)

Cereal crops underseeded to forage legumes:
- Alfalfa
- Birdsfoot trefoil
- Clovers
- Sainfoin

WEEDS CONTROLLED:

<table>
<thead>
<tr>
<th>Weed</th>
<th>Stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wild oats, Volunteer oats</td>
<td>1 – 6 leaf (Zadoks 11,20 – 14,22)</td>
</tr>
<tr>
<td>Green foxtail, Yellow foxtail</td>
<td>1–5 leaf (Zadoks 11,20 – 14,21)</td>
</tr>
<tr>
<td>Barnyard grass, Persian darnel</td>
<td>1–4 leaf (Zadoks 11–14)</td>
</tr>
</tbody>
</table>

HOW IT WORKS:
A systemic post-emergent herbicide that translocates the active ingredient to the growing point. Yellowing of the growing point in 1 – 3 weeks. The newest leaf pulls out easily in 3 – 5 days.

CROP STAGING:
Generally there are no restrictions. Always read the label for tank-mixing instructions and additional restrictions.

WATER VOLUME:
- Ground: 20 – 40 L/ac
- Aerial: 12 – 18 L/ac

RAINFASTNESS:
1 hour
**SUPPORTED TANK MIXES:**
Do not apply any broadleaf herbicide tank mixes to underseeded forage legumes.

Herbicides:
- 2,4-D ester
- Attain®
- Bromoxynil (BROMOTRIL® II)
- Bromoxynil + 2,4-D ester (THRASHER® II)
- Bromoxynil + MCPA ester (BADGE® II)
- Curtail® M
- Dichlorprop + 2,4-D ester
- Fluroxypyr + 2,4-D ester (RUSH® 24)
- Fluroxypyr + MCPA ester (RUSH M®)
- Lontrel®
- MCPA ester
- Prestige™ XC
- Starane®

Insecticides:
- Decis®
- Lambda-cyhalothrin (SILENCER® 120 EC)

**MIXING INSTRUCTIONS:**
1. Begin to fill spray tank or premix tank with clean water, and engage agitator.
2. Agitation must be continued throughout the entire mixing and spraying procedure.
3. When the spray tank or premix tank is ¾ full of water, add BISON® 400 L. If more than 1 case of BISON® 400 L is to be used, add the BISON® 400 L from all cases prior to adding tank-mixed products or Addit® adjuvant.
4. If tank mixing, add the recommended product(s) next.
5. Add Addit® adjuvant, and continue to fill tank to desired level with water.

**CROP ROTATIONS:**
Do not reseed treated areas to tame oats or corn for at least 4 weeks after application.

**PRE-HARVEST INTERVAL:**
60 days

**GRAZING RESTRICTIONS:**
- Immature cereal crops may be grazed or cut for hay 16 days after treatment.
- Mature straw may be fed to livestock.
- Do not feed or graze underseeded forage crops in the year of treatment.

**STORAGE:**
- Store above -5 C.
- Shake well before use.

**QUICK TIPS:**
For optimal crop safety, spray in warm weather with moist soil. Avoid stressful growing conditions, and avoid applying within 2 – 3 days of temperatures at 4 C or below.
HERBICIDE

BROMOTRIL® II POST-EMERGENT

Get post-emergent control of tough broadleaf weeds with tank-mix flexibility and excellent crop safety in cereals and other crops.

ACTIVE INGREDIENT
Bromoxynil

CHEMISTRY GROUP
Group 6

APPLICATION RATES AND PACKAGING
- 0.49 – 0.57 L/ac or 40 – 34 ac/case
- 2 x 9.7 L jugs/case
- 116.4 L drum treats 240 acres

REGISTERED CROPS:

<table>
<thead>
<tr>
<th>Crop</th>
<th>Crop Leaf Stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alfalfa (seedling)</td>
<td>2 – 6 trifoliate</td>
</tr>
<tr>
<td>Alfalfa (established)</td>
<td>Spring: before the crop begins to shield the weeds</td>
</tr>
<tr>
<td>Barley, Oats, Triticale, Wheat (spring, durum)</td>
<td>2 leaf to early flag</td>
</tr>
<tr>
<td>Winter wheat</td>
<td>Fall: 2 – 4 leaf Spring: first growth to early flag</td>
</tr>
<tr>
<td>Corn (field, sweet) with drop pipes</td>
<td>Beyond 8 leaf</td>
</tr>
<tr>
<td>Canary seed (seed production only)</td>
<td>3 – 5 leaf</td>
</tr>
<tr>
<td>Fall rye</td>
<td>Spring: from first growth to early flag</td>
</tr>
<tr>
<td>Flax</td>
<td>2 – 4 inches in height</td>
</tr>
<tr>
<td>Forage millet, Sorghum</td>
<td>4 leaf to 8 inches</td>
</tr>
<tr>
<td>Seedling grasses (seed production only): Bromegrass, Fescue (creeping red, meadow), Orchard grass, Reed canarygrass, Russian wildrye, Timothy, Wheatgrass (crested, intermediate, slender, tall)</td>
<td>2 – 4 leaf (year of establishment only)</td>
</tr>
</tbody>
</table>

WEEDS CONTROLLED:

Seedling up to 4-leaf stage:
- American nightshade
- Bluebur
- Cocklebur
- Common ragweed
- Cow cockle¹
- Green smartweed
- Kochia²
- Lady’s thumb
- Pale smartweed
- Pigweed¹
- Russian thistle²
- Stinkweed¹
- Velvetleaf²
- Wild mustard¹

Seedling up to 8-leaf stage:
- Common buckwheat
- Common groundsel
- Lamb’s quarters
- Tartary buckwheat
- Wild buckwheat

¹ In normal conditions, it will be controlled up to 4-leaf stage. Plants beyond this stage are unlikely to be controlled; the higher rate generally gives better results.
² Spray before plants are 2 inches high.
³ Spray before plants are 3 inches high.
HOW IT WORKS:
BROMOTRIL® II is a contact herbicide. Leaves will yellow in 2 – 4 days with complete control in 7 – 14 days.

WATER VOLUME:
- Ground: 20 – 40 L/ac
- Air (wheat and barley only): 8 – 16 L/ac

RAINFASTNESS:
30 minutes

SUPPORTED TANK MIXES:
Herbicides:
- Spring wheat: 2,4-D ester, Avenge®, clodinafop-propargyl (LADDER® 240 EC), LADDER ALL IN™, MCPA ester, tralkoxydim (BISON® 400 L)
- Winter wheat: 2,4-D ester, MCPA ester, tralkoxydim (BISON® 400 L)
- Barley: 2,4-D ester, Avenge®, MCPA ester, tralkoxydim (BISON® 400 L)
- Oats: MCPA ester
- Corn: Accent®, Atrazine, Banvel®, Ultim®
- Fall rye: MCPA ester
- Flax: MCPA ester or MCPA-K
- Canary seed: MCPA ester
- Seedling grasses: MCPA ester

Fungicides:
- Bumper®

MIXING INSTRUCTIONS:
1. Fill spray tank ½ full with water.
2. Add required amount of BROMOTRIL® II. Begin agitation.
3. If tank mixing, add the recommended amount of the tank-mix partner product to the spray tank first, agitate and then add BROMOTRIL® II (unless otherwise directed by the BROMOTRIL® II and tank-mix partner label).
4. Add the remaining amount of water while agitation continues.

CROP ROTATIONS:
No restrictions.

PRE-HARVEST INTERVAL:
30 days

GRAZING RESTRICTIONS:
- Do not use treated crops for grazing of livestock or green feed until 30 days after application.
- Do not cut treated crops for forage until 30 days after application.

STORAGE:
Avoid freezing.

QUICK TIPS:
Avoid spraying if temperatures are above 25 C. Leaf scorching may occur in corn and flax if applied during or after adverse growing conditions, such as cool and wet or hot (above 27 C) and humid weather. For best results, spray when weeds are in the seedling stage.
**ACTIVE INGREDIENT**
Bromoxynil

**CHEMISTRY GROUP**
Group 6

**APPLICATION RATES AND PACKAGING**
- BROMOTRIL® II at 0.49 L/ac (40 ac/case) tank mixed with glyphosate at a rate of 175 g a.i./ac
- 2 x 9.7 L jugs/case
- 116.4 L drum treats 240 acres

**REGISTERED CROPS:**
Tank mixed with glyphosate, this pre-seed burn-off should only be used for minimum or zero-tillage cropping systems in wheat, barley and oats.

**WEEDS CONTROLLED:**

**Seedling up to 4-leaf stage:**
- American nightshade
- Bluebur
- Cocksfoot
- Common ragweed
- Cow cockle
- Green smartweed
- Kochia

**Seedling up to 8-leaf stage:**
- Common buckwheat
- Common groundsel
- Lamb's quarters

**Grassy weeds up to 6 inches:**
- Green foxtail
- Volunteer cereals

1 In normal conditions, it will be controlled up to 4-leaf stage. Plants beyond this stage are unlikely to be controlled; the higher rate generally gives better results.

2 Spray before plants are 2 inches high. Includes Group 2 and Group 9 resistant biotypes.

3 Spray before plants are 3 inches high.

**HOW IT WORKS:**
BROMOTRIL® II is a contact herbicide. Leaves will yellow in 2–4 days with complete control in 7–14 days. BROMOTRIL® II controls Group 2 and Group 9 (glyphosate) resistant biotypes.

**CROP STAGING:**
- Application can be made just prior to or immediately after seeding.
- Under no circumstances should application be made after crop emergence.

**WATER VOLUME:**
Ground: 20–40 L/ac
RAINFASTNESS:
30 minutes

SUPPORTED TANK MIXES:
Must be tank mixed with glyphosate at a rate of 175 g a.i./ac of glyphosate.

MIXING INSTRUCTIONS:
1. Fill spray tank ½ full with water.
2. Add required amount of BROMOTRIL® II. Begin agitation.
3. Add the recommended amount of glyphosate to the spray tank, agitate.
4. Add surfactant.
5. Add the remaining amount of water while agitation continues.

CROP ROTATIONS:
Only apply prior to wheat, barley and oats.

STORAGE:
Avoid freezing.

QUICK TIPS:
For best results, spray when weeds are in the seedling stage.
DAVAI™ 80 SL

Broadleaf and grassy weed control in a convenient package that allows for flexible tank-mix options in peas, dry beans and soybeans.

ACTIVE INGREDIENT  CHEMISTRY GROUP
Imazamox  Group 2

APPLICATION RATES AND PACKAGING
- 100 ml/ac
- 2 x 8 L case and 96 L drum
- Must be used with an appropriate surfactant (see label)

REGISTERED CROPS:
- Peas
- Dry beans
- Soybeans

WEEDS CONTROLLED:
Broadleaf weeds: cotyledon to 4 leaf; Grasses: 1 – 4 true leaf:
- Barnyard grass
- Cleavers
- Cow cockle
- Flixweed
- Green foxtail
- Green smartweed
- Japanese brome grass
- Lamb’s quarters
- Persian darnel
- Redroot pigweed
- Shepherd’s purse
- Stinkweed
- Volunteer barley
- Volunteer canary seed
- Volunteer canola (non-Clearfield® varieties)
- Stork’s bill
- Volunteer tame oats
- Volunteer wheat
- Wild buckwheat
- Wild mustard
- Wild oats
- Yellow foxtail

HOW IT WORKS:
DAVAI™ 80 SL is readily absorbed through both leaf and root uptake, and it is translocated in the plant to inhibit amino acid production and cell division. Plant growth is inhibited, and a few days after application, chlorosis and terminal bud death become evident. Leaves and stems become yellow and purple, and root growth may be inhibited. Crop competition is quickly reduced, although complete plant death is relatively slow.

CROP STAGING:

<table>
<thead>
<tr>
<th>Crop</th>
<th>Stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry beans, Soybeans</td>
<td>Emergence to 3 expanded trifoliolate leaves</td>
</tr>
<tr>
<td>Peas</td>
<td>1 – 6 true leaf stage</td>
</tr>
</tbody>
</table>

WATER VOLUME:
40 L/ac

RAINFASTNESS:
Avoid application when heavy rain is forecasted.
**SUPPORTED TANK MIXES:**
- ARROW ALL IN™
- ARROW® 240 EC
- PHANTOM® 240 SL
- Assure® II
- Basagran® Forté

**MIXING INSTRUCTIONS:**
1. Use 40 L/ac of water.
2. Use a 50-mesh (or coarser) filter screen.
3. Fill the spray tank ¾ full with water.
4. Add the required amount of DAVAI™ 80 SL herbicide solution directly into the sprayer through the tank opening.
5. Agitate until herbicide is thoroughly mixed.
6. Continue agitation and add the required amount of the tank-mix partner.
7. Continue agitation while adding the required amount of recommended adjuvant.
8. If excess foaming occurs, a silicone anti-foaming agent may be added (e.g. Halt®).
9. Complete filling the tank to the desired level with water.

**CROP ROTATIONS:**
- Barley
- Canary seed
- Canola
- Chickpeas
- Corn
- Peas
- Flax
- Lentils
- Oats
- Soybeans
- Clearfield® sunflowers
- Wheat (spring, durum)

**PRE-HARVEST INTERVALS:**
- Peas: 60 days
- Dry beans: 75 days
- Soybeans: 85 days

**GRAZING RESTRICTIONS:**
Do not graze treated crop. Peas may be fed to livestock 30 days after application.

**STORAGE:**
- Store above 5 C in original, tightly-closed container.
- Do not ship or store near food, feed, seed and fertilizers.
- Store in a cool, dry, locked, well-ventilated area without floor drain.
- Keep from freezing.

**QUICK TIPS:**
Cool weather conditions or drought will delay herbicidal activity and if prolonged, may result in poor weed control. Use of DAVAI™ 80 SL herbicide in hot, humid weather may result in temporary leaf yellowing, leaf flecking, bronzing or burning. The crop usually outgrows this condition within 10 days. When weeds are stressed due to drought, flooding, hot or prolonged cool temperatures (15 C or less), control can be reduced or delayed since weeds are not actively growing. Weeds escapes or regrowth may occur under prolonged stress conditions or low fertility. Do not make applications to weeds stressed longer than 20 days due to lack of moisture, as unsatisfactory control can result.

Always read and follow pesticide label directions.
HERBICIDE

ESTEEM™
Replacing Prestige™ XL, this herbicide provides targeted control of broadleaf weeds like thistle, cleavers and kochia in barley, spring wheat and durum wheat.

ACTIVE INGREDIENTS
Fluroxypyr 180 g/L,
MCPA ester 600 g/L
and clopyralid 360 g/L

CHEMISTRY GROUP
Group 4

APPLICATION RATES AND PACKAGING
- 1 co-pack case includes: 9.6 L jug fluroxypyr 180 + 11.01 L MCPA ester 600 + 3.34 L ADAMA clopyralid 360
- 30 (high rate) to 40 (low rate) acres per co-pack case

REGISTERED CROPS:
- Barley
- Wheat (spring, durum)

WEEDS CONTROLLED:
At the low rate of 40 ac/case or 605 ml/ac: (240 ml/ac of 180 g/L fluroxypyr 180; 280 ml/ac of 600 g/L MCPA ester 600; 84 ml/ac of 360 g/L of ADAMA clopyralid 360) will control:
Wild buckwheat, burdock, cleavers, Canada thistle (low infestations), cocklebur, field horsetail (top growth), volunteer flax, flixweed, kochia, lamb’s quarters, wild mustard, plantain (top growth), prickly lettuce, ragweeds, shepherd’s purse, stinkweed, stork’s bill, volunteer sunflowers, annual sunflowers, vetch, wild radish

At the high rate of 30 ac/case or 800 ml/ac: 320 ml/ac of 180 g/L fluroxypyr 180; 365 ml/ac of 600 g/L MCPA ester 600; 110 ml/ac of 360 g/L ADAMA clopyralid 360) will control:
Tartary buckwheat, Canada thistle (medium to high infestations, season long control), volunteer canola, chickweed, dandelions, common groundsel, hempnettle, roundleaf mallow, redroot pigweed, Russian pigweed, scentless chamomile, smartweed, annual sow-thistle, perennial sow-thistle (season long control)

HOW IT WORKS:
The components of ESTEEM™ move within the plant to control exposed and underground plant tissues. It mimics naturally occurring plant hormones which control weeds by disrupting normal plant growth patterns. Symptoms of effect include epinasty (twisting of the stems) and swollen nodes.

CROP STAGING:
3-leaf stage to just before flag emergence

WATER VOLUME:
- Ground: 20 – 40 L/ac or 5 – 10 gal/ac
- Aerial: 12 – 20 L/ac or 3 – 5 gal/ac

RAINFASTNESS:
4 hours
SUPPORTED TANK MIXES:
- BENGAL® WB
- BISON® 400 L
- LADDER® 240 EC
- LADDER ALL IN™
- Liquid Achieve™
- Horizon®
- Assert® 300 SC
- Puma®
- Avenge® 200-C
- Axial®
- BroadBand®
- Varro®

MIXING INSTRUCTIONS:
1. ½ fill the tank with clean water.
2. Add the required amount of MCPA ester and fluroxypyr, agitate thoroughly.
3. Add any tank-mix partners, agitate thoroughly.
4. Add the required amount of ADAMA clopyralid, agitate thoroughly.
5. Fill the tank and agitate again before using.

CROP ROTATIONS:
Barley, canola, flax, forage grasses, mustard, oats, rye and wheat can be seeded the following year

PRE-HARVEST INTERVAL:
Do not harvest treated crop within 60 days of application.

Grazing RESTRICTIONS:
Do not graze livestock within 7 days of application.

STORAGE:
Do not freeze.

Always read and follow pesticide label directions.
HERBICIDE

FORCEFIGHTER® M

It has 3 active ingredients and 2 modes of action to fight herbicide resistance and provide post-emergent control of broadleaf weeds in wheat and barley.

ACTIVE INGREDIENTS
Fluroxypyr, bromoxynil and MCPA ester

CHEMISTRY GROUPS
Group 4 (MCPA ester, fluroxypyr) and Group 6 (bromoxynil)

APPLICATION RATES AND PACKAGING
- 2 x 10 L bromoxynil/MCPA ester + 9.6 L fluroxypyr or 40 ac/case
- 2 x 120 L bromoxynil/MCPA ester + 115.2 L fluroxypyr treats 480 acres

REGISTERED CROPS:
- Wheat (spring, winter, durum)
- Barley

WEEDS CONTROLLED:
- American nightshade
- Bluebur
- Burdock
- Canada thistle\(^1\)
- Chickweed
- Cleavers (including Group 2 resistant biotypes)
- Cockelbur
- Common groundsel
- Cow cockle
- Flixweed
- Hempnettle
- Kochia (including Group 2 and glyphosate-resistant biotypes)
- Lady’s thumb
- Lamb’s quarters

\(^1\)Top growth control

HOW IT WORKS:
Quickly causes plants to stop growing. Convenient co-pack controls a wide range of weeds, including glyphosate-resistant and Group 2 resistant kochia, Group 2 resistant cleavers and Group 2 resistant wild mustard.

CROP STAGING:

<table>
<thead>
<tr>
<th>Crop</th>
<th>Stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wheat</td>
<td>2 leaf to early flag</td>
</tr>
<tr>
<td>Barley</td>
<td>2 leaf to early flag</td>
</tr>
</tbody>
</table>

WATER VOLUME:
Ground: 20 – 40 L/ac

RAINFASTNESS:
1 hour
SUPPORTED TANK MIXES:
Wheat:
- Tralkoxydim (BISON® 400 L)
- Clodinafop (LADDER® 240 EC, LADDER ALL IN™)
- Simplicity®
- Thifensulfuron/tribenuron for suppression of narrow-leaved hawk’s beard
- Refine® SG

Durum:
- Clodinafop (LADDER® 240 EC, LADDER ALL IN™)
- Simplicity®

Barley:
- Tralkoxydim (BISON® 400 L)
- Thifensulfuron/tribenuron for suppression of narrow-leaved hawk’s beard

MIXING INSTRUCTIONS:
1. Fill spray tank ½ full with water.
2. Add the required amount of FORCEFIGHTER® M and agitate thoroughly.
3. Add any tank-mix partners.
4. Fill the tank and agitate again before use.

CROP ROTATIONS:
Can be seeded the following year to barley, canola, flax, forage grasses, lentils, mustard, peas, rye and wheat.

PRE-HARVEST INTERVAL:
60 days

GRAZING RESTRICTIONS:
30 days

STORAGE:
Store in a heated facility. If product is frozen, bring to room temperature and agitate well before use.

QUICK TIPS:
FORCEFIGHTER® M’s activity is influenced by weather conditions. The optimal temperature is 12–24 C. Avoid application 3 days before or after frost. Do not apply before the 2-leaf stage as crop injury may occur. Use 10 gal/ac application volume when there is a heavy canopy or when most weeds are at an advanced stage of growth. Do not apply by air.

Always read and follow pesticide label directions.
A powerful glyphosate tank-mix partner for pre-seed burn-off that controls a wide range of annual broadleaf weeds including Group 2 and Group 9 resistant kochia, volunteer canola including glyphosate-resistant varieties, wild buckwheat, dandelion and narrow-leaved hawk’s beard.

**ACTIVE INGREDIENTS**
- Bromoxynil and florasulam

**CHEMISTRY GROUPS**
- Group 6 (bromoxynil)
- and Group 2 (florasulam)

**APPLICATION RATES AND PACKAGING**
- 50 ac/case
- 2 x 9.7 L jugs of bromoxynil + 1.6 L jug of florasulam

**REGISTERED PRE-SEED CROPS:**
- Barley
- Oats
- Wheat

**WEEDS CONTROLLED WHEN TANK-MIXED WITH GLYPHOSATE:**
Up to the 4-leaf stage, please refer to product labels for more detailed information.

- American nightshade
- Bluebur
- Chickweed
- Cleavers
- Cockelbur
- Common groundsels
- Common ragweed
- Cow cockle
- Dandelion\(^2\)
- Green foxtail
- Hempnettle
- Horsetail
- Kochia (Group 2 and 9 resistant)\(^1\)
- Lady’s thumb
- Lamb’s quarters
- Narrow-leaved hawk’s beard
- Redroot pigweed
- Russian thistle
- Shepherd’s purse
- Smartweed
- Sow thistle (annual, perennial)
- Stinkweed
- Tansy mustard
- Tartary buckwheat
- Velvetleaf\(^3\)
- Volunteer canola (including glyphosate-resistant varieties)
- Volunteer cereals
- Wild buckwheat
- Wild mustard

\(^1\) Spray before plants are 2 inches high.

\(^2\) Top growth control up to 6 leaf.

\(^3\) Spray before plants are 3 inches high.

**HOW IT WORKS:**
The combination of bromoxynil and florasulam with glyphosate creates a powerful resistance management tool for pre-seed burn-off. Bromoxynil provides contact herbicide activity and controls Group 2 and Group 9 (glyphosate) resistant biotypes while florasulam, an ALS inhibitor, adds additional control of weeds like hempnettle and narrow-leaved hawk’s beard.

**WATER VOLUME:**
- Ground: 20 – 40 L/ac
- Do not apply by air.
RAINFASTNESS:
30 minutes

SUPPORTED TANK MIXES:
Glyphosate (DMA, IPA or K-salt formulation)

MIXING INSTRUCTIONS:
1. Fill spray tank ½ full with water.
2. Start spray tank agitation.
3. Add required amount of florasulam.
4. Add required amount of bromoxynil.
5. Add required amount of glyphosate.
6. Fill the tank with sufficient water.

Note: Do not add a surfactant to this tank mixture.

CROP ROTATIONS:
Pre-seed: Barley, oats, wheat (spring, durum, winter)

PRE-HARVEST INTERVAL:
Do not harvest the treated crop within 60 days after application.

GRAZING RESTRICTIONS:
Livestock may be grazed on treated crop 30 days following application.

STORAGE:
Do not store at temperatures below freezing.

QUICK TIPS:
Remember not to mix different glyphosate salts (DMA, IP or K+) together. Always put the florasulam in the tank first. Do not apply if there is heavy dust on the leaves. Shallow seeding may increase chance of injury.
HERBICIDE

LADDER® 240 EC

Get effective grassy weed control in spring and durum wheat that is tank mixable with nearly 30 broadleaf herbicides.

ACTIVE INGREDIENT
Clodinafop-propargyl

CHEMISTRY GROUP
Group 1

APPLICATION RATES AND PACKAGING
· 93 ml/ac for registered grassy weeds except Persian darnel
· 117 ml/ac for Persian darnel control
· 3.68 L of LADDER® 240 EC + 4 L of Adjuvant 80
· 11.04 L of LADDER® 240 EC + 12 L of Adjuvant 80

REGISTERED CROPS:
Wheat (spring, durum)

WEEDS CONTROLLED:

<table>
<thead>
<tr>
<th>Timing</th>
<th>Growth Stage</th>
<th>Additional Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barnyard grass</td>
<td>1 – 5 leaf stage on main stem</td>
<td>For optimum control, apply before tillering and while barnyard grass is actively growing.</td>
</tr>
<tr>
<td>Foxtail (green, yellow)</td>
<td>1 – 5 leaf stage on main stem</td>
<td>For optimum control, apply prior to emergence of the 3rd tiller and while foxtail is actively growing.</td>
</tr>
<tr>
<td>Persian darnel</td>
<td>1 – 5 leaf stage on main stem</td>
<td>For optimum control, apply before tillering and while Persian darnel is actively growing.</td>
</tr>
<tr>
<td>Volunteer canary seed</td>
<td>1 – 6 leaf stage on main stem</td>
<td>Prior to emergence of 4th tiller.</td>
</tr>
<tr>
<td>Volunteer oats</td>
<td>3 – 6 leaf stage on main stem</td>
<td>Prior to emergence of 4th tiller.</td>
</tr>
<tr>
<td>Wild oats</td>
<td>1 – 6 leaf stage on main stem</td>
<td>Prior to emergence of 4th tiller.</td>
</tr>
</tbody>
</table>

HOW IT WORKS:
LADDER® 240 EC is quickly absorbed by the leaves and rapidly moves to the growing points of leaves and stems. Grassy weeds stop growing within 48 hours of application. Complete control, depending on growing conditions, crop competition and species of weed, will occur within 14 – 21 days.

CROP STAGING:
· 1 – 6 leaf stage, prior to the emergence of the 4th tiller.
· When tank mixing with another product, always refer to the label of the tank-mix partner for additional restrictions.

WATER VOLUME:
· Ground: 20 – 40 L/ac
· Aerial: 12 L/ac
RAINFASTNESS:
30 minutes

SUPPORTED TANK MIXES:

Herbicides:
- 2,4-D amine
- Ally®
- Attain®
- Bromoxynil + 2,4-D ester (THRASHER® II)
- Bromoxynil + MCPA ester (BADGE® II)
- Bromoxynil (BROMOTRIL® II)
- Curtail® M
- Dichlorprop-D
- DyVel®
- Estaprop®
- Fluroxypyr + MCPA ester (RUSH M®, Trophy®)
- Lontrel® 360
- Lontrel® 360 + MCPA ester 500
- Lontrel® 360 + Refine Extra® 75DF
- MCPA 300SL sodium salt
- MCPA amine
- MCPA ester
- Mecoprop
- OUTSHINE®
- Prestige™
- Refine Extra®
- Target®
- Turboprop® 600

Insecticides:
- Decis®
- Lambda-cyhalothrin (SILENCER® 120 EC, Matador®)

Fungicides:
- Propiconazole (BUMPER®, Tilt®)

MIXING INSTRUCTIONS:
1. Fill spray tank 1/2 full with desired water quantity.
2. When using a tank-mix partner, add the tank-mix partner first and agitate for 2–3 minutes.
3. Add LADDER® 240 EC and agitate 2–3 minutes.
4. Add Adjuvant 80 and agitate for 1–2 minutes, and then add remaining water.
5. Maintain constant agitation during mixing and spraying operations.

CROP ROTATIONS:
No restrictions the year following treatment.

PRE-HARVEST INTERVAL:
60 days

GRAZING RESTRICTIONS:
Do not graze livestock within 3 days of spraying.

STORAGE:
No temperature restrictions.

QUICK TIPS:
When using a tank-mix partner, always add the tank-mix herbicide first. Consult both labels for further instructions.
HERBICIDE

LADDER ALL IN™

Specially formulated to contain 80 g/L of clodinafop-propargyl and comes in a pack of 2 identical jugs with a surfactant worked into the formulation, so you can spend less time mixing and more time on the field.

ACTIVE INGREDIENT
Clodinafop-propargyl

CHEMISTRY GROUP
Group 1

APPLICATION RATES AND PACKAGING
- 283 – 324 ml/ac
- 2 x 5.66 L jugs
- 90.6 L drum

Specially formulated to contain 80 g/L of clodinafop-propargyl and comes in a pack of 2 identical jugs with a surfactant worked into the formulation, so you can spend less time mixing and more time on the field.

REGISTERED CROPS:
Wheat (spring, durum)

WEEDS CONTROLLED:

<table>
<thead>
<tr>
<th>Weed</th>
<th>Stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barnyard grass</td>
<td>1–5 leaf stage on main stem</td>
</tr>
<tr>
<td>Foxtail (green, yellow)</td>
<td>1–5 leaf stage on main stem</td>
</tr>
<tr>
<td>Persian darnel</td>
<td>1–5 leaf stage on main stem</td>
</tr>
<tr>
<td>Voluntary canary seed</td>
<td>1–6 leaf stage on main stem</td>
</tr>
<tr>
<td>Volunteer oats (tame)</td>
<td>3–6 leaf stage on main stem</td>
</tr>
<tr>
<td>Wild oats</td>
<td>1–6 leaf stage on main stem</td>
</tr>
</tbody>
</table>

HOW IT WORKS:
LADDER ALL IN™ is absorbed by the leaves and is rapidly translocated to the growing points of leaves and stems. Yellowing in 1–3 weeks. Complete control in 3–5 weeks after application.

CROP STAGING:
Prior to emergence of 4th tiller.

WATER VOLUME:
- 20 – 40 L/ac when applied alone.
- Minimum 40 L/ac when tank mixed with broadleaf herbicides.

RAINFASTNESS:
30 minutes
HERBICIDE

LADDER ALL IN™

SUPPORTED TANK MIXES:

Herbicides:
- 2,4-D amine
- Ally® 2
- Approve®
- Attain™
- Benchmark®
- Bromoxynil (BROMOTRIL® II)
- Bromoxynil + 2,4-D ester (THRASHER® II)
- Bromoxynil + MCPA ester (BADGE® II)
- Curtail® M
- Dicamba
- Dichlorprop-D
- Dycleer® + Starane™ Herbicide
- Dyvel®
- Estaprop® Plus
- Florasulam 50 SC (PRIORITY®)
- Fluroxypyr + 2,4-D ester (RUSH® 24)
- FORCEFIGHTER® M
- HOTSHOT®
- Infinity®
- Koril® 235
- Lontrel™ 360
- MCPA amine
- MCPA ester
- MCPA sodium salt 300
- Mecrop-P
- Mextrol® 450
- OUTSHINE®
- Prestige™
- Pulsar®
- Refine® SG
- RUSH M®
- Target®
- Trophy®
- Turboprop® 600

Insecticides:
- Decis®
- Lambda-cyhalothrin (SILENCER® 120 EC)

Fungicides:
- Propiconazole (BUMPER®)

MIXING INSTRUCTIONS:
1. Clean spray tank and ½ fill with clean water. Start agitation or bypass system.
2. If a broadleaf herbicide, insecticide or fungicide is to be used, add the product FIRST prior to adding LADDER ALL IN™ and agitate for 2 – 3 minutes.
3. Add correct amount of LADDER ALL IN™. Agitate for 3 – 5 minutes before adding remainder of water and then maintain constant agitation.
4. After any break in spraying operations, agitate thoroughly before spraying again.
5. Use the spray suspension as soon as it is prepared.
6. If an oil film starts to build up in the tank, drain tank and then clean with a detergent.

PRE-HARVEST INTERVAL:
60 days

GRAZING RESTRICTIONS:
Observe a minimum of 3 days before grazing livestock on treated crops.

STORAGE:
Store away from food, feed and fertilizer.

QUICK TIPS:
Avoid application when heavy rain is forecasted. Use higher application rate when targeting Persian darnel or in cases of heavy grassy weed infestation. LADDER ALL IN™ contains an internal adjuvant; do not add an external surfactant.

Always read and follow pesticide label directions.
This selective post-emergent herbicide gives you control of hard-to-kill annual broadleaf weeds in spring wheat, durum wheat and spring barley.

**ACTIVE INGREDIENTS**
Florasulam, fluroxypyr and MCPA ester

**CHEMISTRY GROUPS**
Group 2 (florasulam) and Group 4 (fluroxypyr and MCPA ester)

**APPLICATION RATES AND PACKAGING**
- 40 ac/case
- 2 x 8 L and 1 x 9.33 L MCPA 2 ester

**REGISTERED CROPS:**
- Barley
- Wheat (spring, durum)

**WEEDS CONTROLLED:**
- Burdock
- Cleavers (including ALS-resistant biotypes)
- Cocklebur
- Common chickweed
- Flixweed
- Hempnettle (including ALS-resistant biotypes)
- Kochia (including ALS-resistant biotypes)
- Lamb’s quarters
- Plantain
- Prickly lettuce
- Ragweed
- Redroot pigweed
- Russian pigweed
- Shepherd’s purse
- Smartweed
- Stinkweed
- Stork’s bill
- Sunflower (annual)
- Vetch
- Volunteer canola (all varieties)
- Volunteer flax
- Wild buckwheat
- Wild mustard
- Wild radish

**HOW IT WORKS:**
OUTSHINE®, applied early and thoroughly to the main flush of actively growing broadleaf weeds, quickly causes plants to stop growing, even if typical symptoms of dying weeds are not noticeable for 1–2 weeks after application.

**CROP STAGING:**
2-leaf expanded to 6-leaf stage.

**WATER VOLUME:**
Ground: minimum 40 L/ac

**RAINFASTNESS:**
2 hours
SUPPORTED TANK MIXES:
Barley:
- Assert®
- Axial®

Wheat (spring, durum):
- Assert®
- Axial®
- Everest®
- LADDER® 240 EC
- LADDER ALL IN™
- Simplicity™

MIXING INSTRUCTIONS:
1. Fill spray tank ½ full with water and begin agitation.
2. Add the required amount of OUTSHINE®.
3. Add the required amount of MCPA 2 ester.
4. Continue filling the tank with sufficient water to spray 40 L/ac of mixture.
5. Use caution near susceptible crops or desirable plants.
6. Product has the potential to leach; avoid excessive irrigation.

CROP ROTATIONS:
- Can be seeded the following year to barley, canola, oats, peas, wheat, or fields to be summerfallowed.
- Do not use in successive years at the same site.

PRE-HARVEST INTERVAL:
Do not harvest treated crop within 60 days of application.

GRAZING RESTRICTIONS:
Do not graze livestock within 7 days of application.

STORAGE:
- Store in original containers in secure, dry, heated storage.
- If product is frozen, bring to room temperature and agitate before use.

QUICK TIPS:
2 unique modes of action and 3 active ingredients provide resistance management and high performance.
HERBICIDE

PHANTOM® 240 SL

Get early post-emergent broadleaf weed control in peas, dry beans, alfalfa and soybean crops with residual control to eliminate early season weed competition.

ACTIVE INGREDIENT
Imazethapyr

CHEMISTRY GROUP
Group 2

APPLICATION RATES AND PACKAGING
- 85 ml/ac or 80 ac/case
- 2 x 3.3 L jugs/case

REGISTERED CROPS:
- Alfalfa, established (for seed)
- Alfalfa, seedling (forage, seed)
- Chickling vetch (for seed)
- Dry beans (pinto, pink, red)
- Field peas
- Grassy peas
- Soybeans (Manitoba only)

WEEDS CONTROLLED:
Check label as weeds controlled vary by crop.

Broadleaf weeds up to and including 4-leaf stage:
- Chickweed
- Cleavers
- Hempnettle
- Redroot pigweed
- Shepherd’s purse
- Smartweed
- Stinkweed
- Volunteer canola (non-Clearfield®)
- Wild buckwheat1
- Wild mustard

Grassy weeds:
- Green foxtail
- Wild oats2

1 Suppression only.
2 Apply between the 2- and 4-leaf stage.

HOW IT WORKS:
PHANTOM® 240 SL is readily absorbed through both leaf and root uptake, and it is translocated in the plant to inhibit amino acid production and cell division. Plant growth is inhibited, and a few days after application, chlorosis and terminal bud death become evident. Leaves and stems become yellow and purple, and root growth may be inhibited. Crop competition is quickly reduced, although complete plant death is relatively slow.

WATER VOLUME:
- Ground: 40 – 160 L/ac
- Do not apply by air.

RAINFASTNESS:
6 hours or reduced control may occur on foliar application.
CROP STAGING:
For best results, spray when weeds are in the seedling stage.

<table>
<thead>
<tr>
<th>Crop</th>
<th>Crop Stage</th>
<th>Soil Zone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alfalfa, established (seed production only)</td>
<td>Apply before alfalfa reaches 12 inches.</td>
<td>N/A</td>
</tr>
<tr>
<td>Alfalfa, seedling (forage or seed)</td>
<td>After the 1st trifoliate leaf.</td>
<td>Black, grey wooded and irrigated brown soils.</td>
</tr>
<tr>
<td>Chickling vetch (for seed), Grassy peas</td>
<td>5 – 7 leaf</td>
<td>N/A</td>
</tr>
<tr>
<td>Dry beans (pinto, pink, red)</td>
<td>Up to and including the 2nd trifoliate leaf.</td>
<td>Black, grey wooded and irrigated brown soils.</td>
</tr>
<tr>
<td>Field peas</td>
<td>Up to the 6th trifoliate leaf.</td>
<td>Black and grey wooded soils.</td>
</tr>
<tr>
<td>Soybeans (Manitoba only)</td>
<td>1 – 3 leaf</td>
<td>N/A</td>
</tr>
</tbody>
</table>

1 Do not use in the last year of seed production.

SUPPORTED TANK MIXES:
- DAVAI™ 80 SL
- ARROW® 240 EC
- Basagran® Forté
- Glyphosate
- Gramoxone
- Linuron
- SQUADRON®

MIXING INSTRUCTIONS:
1. Fill the spray tank ½ – ¾ full with water.
2. Add the required amount of PHANTOM® 240 SL while agitating the spray solution.
3. While agitating, add non-ionic surfactant containing at least 80% active ingredient (e.g. Agral®, Ag-Surf®) at the rate of 0.25% (2.5 L of surfactant per 1,000 L of spray solution).
4. Fill the remainder of the tank with water.

CROP ROTATIONS:
Research studies have shown the following crops can be safely grown in black and grey wooded soil zones the year following application:
- Alfalfa
- Clearfield® canola (imazethapyr and imazamox tolerant)
- Field peas
- Lentils
- Spring barley
- Spring wheat

PRE-HARVEST INTERVALS:
- Dry beans: 75 days
- Field peas, chickling vetch, grassy peas: 60 days
- Soybeans: 85 days

GRAZING RESTRICTIONS:
- Do not graze or harvest seedling alfalfa within 14 days of treatment.
- Do not graze or harvest field peas for feed within 30 days of treatment.
- Do not graze other treated crops or cut for feed prior to crop maturity.

STORAGE:
Do not store below freezing.

QUICK TIPS:
Consult your local provincial guidelines or other herbicide labels for potential tank-mix partners.

Always read and follow pesticide label directions.
This is the ideal glyphosate tank-mix partner to keep fields free of weeds in chemfallow and post-harvest applications. It controls a wide range of annual broadleaf and grassy weeds.

**ACTIVE INGREDIENT**
Florasulam

**CHEMISTRY GROUP**
Group 2

**APPLICATION RATES AND PACKAGING**
- PRIORITY® at 0.04 L/ac or 320 ac/case +
glyphosate at 0.5 L/ac at 360 g a.i.
- 2 x 6.4 L jugs/case

**APPLICATION TIMING:**
- Chemfallow: Apply when weeds are actively growing in 1 – 4 leaf stage.
- Post-harvest: Apply from late September to freeze-up.
- Low-disturbance seeding system: Apply just prior to seeding.
- Other seeding systems: Apply 1 week prior to seeding.

**WEEDS CONTROLLED BY PRIORITY® + GLYPHOSATE:**

Controlled (2 – 4 leaf stage):
- Canada fleabane
- Cleavers
- Common chickweed
- Common ragweed
- Cow cockle
- Dandelion
- Downey brome
- Flixweed
- Giant foxtail
- Green foxtail
- Hempnettle
- Lady’s thumb
- Lamb’s quarters
- Narrow-leaved hawk’s beard
- Persian darnel
- Redroot pigweed
- Russian thistle
- Shepherd’s purse
- Smartweed
- Stinkweed
- Volunteer barley
- Volunteer canola
- Volunteer flax
- Volunteer wheat
- Wild buckwheat
- Wild mustard
- Wild oats

**WEEDS SUPPRESSED BY PRIORITY® + GLYPHOSATE:**
- Kochia
- Annual sow thistle
- Perennial sow thistle

1 180 g of active ingredient per acre.
2 Less than 3 inches in height.
3 Mature plants up to 12 inches in diameter, rosettes and seedlings.
4 Including all herbicide-tolerant canola varieties.
5 Up to 5 leaves.
6 Applications made at advanced stages will be less effective.

**HOW IT WORKS:**
PRIORITY® inhibits the production of the ALS enzyme, quickly causing plants to stop growing and become discoloured (red, yellow, purple) at the growing point and spreading to the entire plant within 1 – 3 weeks.
WATER VOLUME:
- Ground: 20 – 40 L/ac
- Do not apply by air.

RAINFASTNESS:
30 minutes

SUPPORTED TANK MIXES:
- Tank mix PRIORITY® herbicide at a rate of 0.04 L/ac with 180 g a.i./ac of glyphosate DMA, IPA or K salt formulation (0.5 L at 360 g equivalent).
- For improved control of larger annual weeds and control of established perennial weeds, PRIORITY® may be tank mixed with a higher rate of glyphosate.
- ADAMA supports the use of any glyphosate salt (DMA, IPA or K+).

MIXING INSTRUCTIONS:
1. Fill spray tank 1/2 full with water.
2. Start spray tank agitation.
3. Add the required amount of PRIORITY®.
4. Add tank-mix partner and continue to agitate.
5. Fill the tank with sufficient water to spray 40 L/ac of mixture.

Note: Do not add a surfactant to this tank mixture.

CROP ROTATIONS:
- Chemfallow: When applied prior to August 1, barley, canola, oats, peas and wheat (spring, durum, winter) can be seeded the following year.
- Chemfallow after August 1 and post-harvest: Barley, oats and wheat (spring, durum, winter) can be seeded the following year.

PRE-HARVEST INTERVAL:
Do not harvest the treated crop within 60 days of application.

GRAZING RESTRICTIONS:
Livestock may be grazed on treated crops 7 days following application.

STORAGE:
- Store in original containers in secure, dry, heated storage.
- PRIORITY® will freeze at -10 C. If product is frozen, bring to room temperature and agitate before use.

QUICK TIPS:
PRIORITY® can be mixed with the glyphosate of your choice. Remember not to mix different glyphosate salts (DMA, IPA or K+) together.

GROWING CONDITIONS:
Marginal soil fertility, saline soils, extended periods of waterlogged-soil conditions, drought or seedling diseases can delay seedling development and emergence resulting in reduced crop stands. Fields with these conditions may show initial crop discoloration and be at greater risk of herbicide injury. In most cases crops will outgrow the symptoms but in severe situations especially where herbicide may have leached into the root zone may result in a reduced crop stand, yield, quality or delayed maturity may occur.

Always read and follow pesticide label directions.
QUICK TIPS:
Do not apply if there is heavy dust on the leaves. Do not apply prior to heavy rainfall as leaching to root zone may occur. Shallow seeding increases chance of injury.

GROWING CONDITIONS:
Marginal soil fertility, saline soils, extended periods of waterlogged-soil conditions, drought or seedling diseases can delay seedling development and emergence resulting in reduced crop stands. Fields with these conditions may show initial crop discoloration and be at greater risk of herbicide injury. In most cases crops will outgrow the symptoms but in severe situations especially where herbicide may have leached into the root zone may result in a reduced crop stand, yield, quality or delayed maturity may occur.
RUSH® 24

It has 2 Group 4 active ingredients to control a wide spectrum of tough broadleaf weeds like kochia, cleavers and wild buckwheat (including Group 2 resistant biotypes) in spring wheat, durum wheat and barley, with excellent grassy weed tank mixability. It also has lots of tank-mix options for grassy weed control.

ACTIVE INGREDIENTS
Fluroxypyr and 2,4-D ester

CHEMISTRY GROUP
Group 4

APPLICATION RATES AND PACKAGING
- 180 ml/ac fluroxypyr + 260 ml/ac 2,4-D Ester 700 or 40 ac/case
- 1 x 9.6 L fluroxypyr jug + 1 x 9.8 L 2,4-D Ester 700 jug
- 115.2 L fluroxypyr + 117.6 L 2,4-D Ester treats 480 acres

REGISTERED CROPS:
- Barley
- Wheat (spring, durum)

WEEDS CONTROLLED:
2 – 4 leaf stage unless otherwise noted:
- Bluebur
- Burdock
- Cleavers
- Cocklebur
- Field horsetail
- Flixweed
- Goat’s beard
- Hoary cress
- Kochia
- Lamb’s quarters
- Prickly lettuce
- Ragweed
- Shepherd’s purse
- Stinkweed
- Sunflower (annual)
- Sweet clover
- Vetch
- Volunteer canola
- Volunteer flax
- Wild buckwheat
- Wild mustard
- Wild radish

For even tougher broadleaf weed control, add an additional 81 ml/ac 2,4-D ester:
- Blue lettuce
- Dandelion
- Docks
- Dog mustard
- Field bindweed
- Field peppergrass
- Gumweed
- Russian thistle
- Smartweed
- Stork’s bill (1 – 8 leaf)
- Hairy galinsoga
- Hedge bindweed
- Lady’s thumb
- Leafy spurge
- Narrow-leaved hawk’s beard (1 – 2 leaf)
- Oak-leaved goosefoot
- Redroot pigweed
- Round-leaved mallow
- Tansy
- Tartary buckwheat
- Wild buckwheat (1 – 8 leaf)

WEEDS SUPPRESSED:
- Annual sow thistle
- Canada thistle
- Common chickweed (up to 3 inches)
- Hempnettle (2 – 6 leaf)
- Perennial sow thistle

1 Top growth control only.
2 Including biotypes resistant to Group 2 herbicides that inhibit the ALS enzyme.
3 Including all herbicide-resistant canola varieties.
4 Spring rosettes.

HOW IT WORKS:
Group 4 herbicides disrupt normal plant growth regulation, resulting in twisting and cupping of leaves and death of susceptible plants in 2 – 10 days.
**CROP STAGING:**
- 4 leaf up to the emergence of the flag leaf.
- Application before the 4-leaf stage of wheat and barley may lead to yield loss.

**WATER VOLUME:**
- Ground: 40 L/ac

**RAINFASTNESS:**
- 2 hours

**SUPPORTED TANK MIXES:**
- Wheat only:
  - Clodinafop (LADDER® 240 EC, LADDER ALL IN™)
  - Everest®
  - Fenoxaprop
  - Simplicity™

- Wheat and barley:
  - Assert®
  - Tralkoxydim (BISON® 400 L)

1 Additional 2,4-D ester is not recommended when mixing RUSH® 24 and Simplicity™.

**MIXING INSTRUCTIONS:**
1. Fill the spray tank ½ full with water. With agitation running, add the required volume of fluroxypyr, followed by the required volume of 2,4-D ester.
2. Fill tank with remaining water.
3. If tank mixing with a grassy weed herbicide, read both labels and follow the more stringent directions for tank mixing.

**CROP ROTATIONS:**
- Barley
- Canola
- Flax
- Forage grass
- Lentils
- Mustard
- Oats
- Peas
- Rye
- Wheat

**PRE-HARVEST INTERVAL:**
- 60 days

**GRAZING RESTRICTIONS:**
- Do not feed or cut forage grasses for hay.
- Do not permit lactating dairy animals to graze cereal fields within 7 days of application. Do not harvest cereal crops for forage or cut hay within 30 days of application.
- Withdraw meat animals from treated fields at least 3 days before slaughter.

**STORAGE:**
- Avoid freezing.

**QUICK TIPS:**
Get optimal weed control by applying between temperatures of 12 – 24 C. Reduced activity will occur when temperatures are below 8 C or above 27 C. Frost 3 days before or after application may reduce weed control and crop tolerance. Weed control may be reduced during stress conditions.

Always read and follow pesticide label directions.
RUSH M®

This post-emergent herbicide gives you superior control of tough broadleaf weeds like chickweed, cleavers and wild buckwheat in spring wheat, durum wheat and barley.

**ACTIVE INGREDIENT**  
Fluroxypyr and MCPA ester

**CHEMISTRY GROUP**  
Group 4

**APPLICATION RATES AND PACKAGING**
- 240 ml/ac fluroxypyr + 380 ml/ac MCPA ester 600 or 20 ac/case
- 1 x 4.8 L fluroxypyr jug + 1 x 7.5 L MCPA ester 600
- 76.8 L fluroxypyr and 120 L MCPA ester treats 320 acres

**REGISTERED CROPS:**
- Barley
- Wheat (spring, durum)

**WEEDS CONTROLLED:**
2 – 4 leaf stage unless otherwise noted:
- Burdock
- Cleavers (1 – 4 whorls)
- Cocklebur
- Common ragweed
- Hempnettle (2 – 6 leaf)
- Kochia (including ALS-resistant biotypes)
- Lamb’s quarters
- Mustards (except dog and tansy)
- Prickly lettuce
- Redroot pigweed
- Shepherd’s purse
- Stinkweed
- Sunflower (annual)
- Vetch
- Volunteer canola
- Volunteer flax (½ – 5 inches)
- Wild mustard
- Wild radish

**WEEDS SUPPRESSED:**
- Smartweed (green)
- Stork’s bill (1 – 8 leaf)
- Wild buckwheat (1 – 8 leaf)

**HOW IT WORKS:**
Systemic Group 4 herbicides disrupt normal plant growth regulation, resulting in death of susceptible plants.

**CROP STAGING:**
3 leaf up to the full emergence of the flag leaf.

**WATER VOLUME:**
40 L/ac

**RAINFASTNESS:**
None specified.
SUPPORTED TANK MIXES:
Wheat and barley:
- Assert®
- Fenoxaprop
- Clodinaflop (LADDER® 240 EC, LADDER ALL IN™) (wheat only)
- Tralkoxydim (BISON® 400 L)

MIXING INSTRUCTIONS:
1. Fill the spray tank ½ full with water and start agitation.
2. Add the required amount of RUSH M® and continue agitation.
3. Add the required amount of MCPA ester and continue agitation.
4. Fill tank with sufficient water to spray 40 L/ac of mixture.

CROP ROTATIONS:
Fields can be summerfallowed, or the following crops can be grown 1 year after application:
- Barley
- Canola
- Flax
- Forage grass
- Lentils
- Mustard
- Oats
- Peas
- Rye
- Wheat

PRE-HARVEST INTERVAL:
60 days

GRAZING RESTRICTIONS:
- Do cut hay within 7 days of application.
- Do not permit any grazing within 7 days of application.

STORAGE:
- Store in original container in dry, heated storage.
- If frozen, bring to room temperature and agitate before use.

QUICK TIPS:
The optimal temperature range is 12 – 24 C. Reduced activity will occur when temperatures are below 8 C or above 27 C. Frost 3 days before or after application may reduce weed control and crop tolerance. Weed control may be reduced during stress conditions.
SQUADRON®

This broad-spectrum herbicide is registered for grassy and broadleaf weed control in a wide range of crops, most notably lentils, peas, chickpeas, faba beans, soybeans and potatoes. It can work alone or in combination with recommended tank mixes.

ACTIVE INGREDIENT
Metribuzin

CHEMISTRY GROUP
Group 5

APPLICATION RATES AND PACKAGING
· 1 case – 4 x 5 kg jugs, treats 60 – 240 acres
· Please refer to the label for application rates as these vary based on crop, soil type and application methods.

REGISTERED CROPS:
· Asparagus (established)
· Chickpeas
· Dryland winter wheat
· Faba beans
· Field peas
· Highbush blueberries (newly seeded)
· Lentils
· Potatoes (including sprinkler irrigation)
· Processing peas
· Shelterbelts
· Soybeans
· Spring barley
· Spring wheat

WEEDS CONTROLLED:
· Annual bluegrass
· Ball mustard
· Barnyard grass
· Bromegrass
· Common chickweed
· Common groundsel
· Corn spurry
· Cow cockle
· Downy brome
· Flixweed
· Green foxtail
· Green smartweed
· Goose grass
· Hempnettle
· Kochia
· Lady’s thumb
· Lamb’s quarters
· Night-flowering catchfly
· Persian darnel
· Redroot pigweed
· Russian thistle
· Shepherd’s purse
· Stinkweed
· Tartary buckwheat
· Volunteer non-triazine-tolerant canola
· Wild buckwheat
· Wild mustard
· Wild oats
· Wormseed mustard
· Yellow foxtail

1 Control at 80 g/ac post-emergence.
2 Suppression at 80 g/ac post-emergence.
3 Control at 110 g/ac post-emergence.
4 Control at 150 g/ac post-emergence.
5 Control at 225 – 300 g/ac post-emergence.
6 Pre-seed incorporated with Treffan™ EC or Rival® herbicide.
7 Suppression only in chickpeas and lentils as post-emergence application.
HOW IT WORKS:
Metribuzin inhibits the photosynthesis of grassy and broadleaf weeds. Used pre-emergent, susceptible weeds and crop seedlings emerge through treated soil, but 2 – 5 days later the weeds show chlorosis and necrosis. Plants treated post-emergent show chlorosis and necrosis between leaf veins, followed by wilting and death.

SOIL TYPES AND RESTRICTIONS:
The recommended use rates of SQUADRON® are dependent upon soil texture and the organic matter content of the soil being treated: coarse, medium and fine.

The following chart outlines the soil textures included in each of the soil texture groupings:

<table>
<thead>
<tr>
<th>Coarse</th>
<th>Medium</th>
<th>Fine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loamy sand,</td>
<td>Loam, Silt loam, Silt, Sandy</td>
<td>Silty clay loam, Silty clay,</td>
</tr>
<tr>
<td>Sandy loam</td>
<td>clay loam, Sandy clay</td>
<td>Clay loam, Clay</td>
</tr>
</tbody>
</table>

- On variable soils with coarse sandy areas, some crop injury may occur on the sandy areas if the rate used is for the finer soil type.
- Sandy loam and silty clay loam soils are transitional soils and may be classified as medium-textured soils in some regions.
- Do not use this product on muck soils. If SQUADRON® is applied to muck soils, subsequent crops may be injured.
- Do not use on coarse soils with less than 2% organic matter.

SUPPORTED TANK MIXES:
Spring wheat and spring barley (post-emergent):
- MCPA amine
- 2,4-D amine
- Banvel® II
- Dicamba
- Target® Liquid

Field peas (post-emergent):
- MCPA sodium salt
- PHANTOM® 240 SL
- Venture® L

Lentils, soybeans, faba beans and field peas (pre-seed incorporated):
- Treflan™ EC
- Broadstrike Dual®
- Dual II Magnum®
- Frontier®
- Linuron
- Trifluralin

Potatoes (pre-seed incorporated and pre-emergence through irrigation system):
- Eptam® 8-E
- Bravo® 500
- Glyphosate
- Gramoxone

RAINFASTNESS:
6 hours after foliar application
APPLICATION TIMING AND CROP STAGING:

<table>
<thead>
<tr>
<th>Crop</th>
<th>Crop Stage</th>
<th>Application Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barley</td>
<td>2 – 5 leaf</td>
<td>Post-emergence</td>
</tr>
<tr>
<td>Wheat</td>
<td>2 – 5 leaf</td>
<td>Post-emergence</td>
</tr>
<tr>
<td>Peas</td>
<td>Pea vines must be less than 6 inches long at time of post-emergent application.</td>
<td>Post-emergence or pre-seed incorporated (spring and fall)</td>
</tr>
<tr>
<td>Chickpeas</td>
<td>1 – 3 above ground nodes</td>
<td>Post-emergence</td>
</tr>
<tr>
<td>Lentils</td>
<td>Vines must be less than 6 inches long or in 3 – 5 node stage.</td>
<td>Post-emergence or pre-seed incorporation (fall)</td>
</tr>
<tr>
<td>Soybeans</td>
<td>Before seeding</td>
<td>Pre-seed incorporation (spring)</td>
</tr>
<tr>
<td>Fababeans</td>
<td>Before seeding</td>
<td>Pre-seed incorporated (spring and fall)</td>
</tr>
<tr>
<td>Potatoes</td>
<td>First use on a potato variety should be limited to a small test area to ensure varietal tolerance.</td>
<td>Post-emergence or pre-seed incorporated. Refer to the label for sprinkler irrigation application.</td>
</tr>
</tbody>
</table>

CROP ROTATIONS:
Rotational crops such as onions, celery, peppers, cole crops, lettuce and spinach, sugar beets, table beets and turnips, pumpkins and squash, cucumbers and melons, tobacco and non-triazine-tolerant canola (rapeseed) are sensitive to SQUADRON® and may be injured if seeded in soil treated with SQUADRON® during the year of application or the following crop year.

Fall seeded or cover crops such as wheat, oats and rye may be injured when seeded within the same season as the application of SQUADRON®.

GRAZING:
- Do not graze treated wheat or barley for 30 days after application.
- Do not graze peas, chickpeas or lentils for 70 days after application.
Always read and follow pesticide label directions.
HERBICIDE

THRASHER® II
Provides excellent dual modes of action for control of 26 tough broadleaf weeds (including Group 2 resistant Kochia) in wheat and barley.

ACTIVE INGREDIENTS
Bromoxynil and 2,4-D ester

CHEMISTRY GROUPS
Group 4 (2,4-D ester) and Group 6 (bromoxynil)

APPLICATION RATES AND PACKAGING
- 500 ml/ac or 40 ac/case
- 2 x 10 L jugs/case
- 120 L drum treats 240 acres

REGISTERED CROPS:
- Barley
- Wheat (spring, durum)

WEEDS CONTROLLED:
4-leaf stage unless otherwise noted:
- American nightshade
- Ball mustard
- Bluebur
- Cocklebur
- Common buckwheat (8 leaf)
- Common groundsel (8 leaf)
- Common ragweed
- Cow cockle
- Flixweed
- Green smartweed
- Kochia (2 inches high or 1–12 leaf)
- Lady’s thumb
- Lamb’s quarters (8 leaf)
- Night-flowering catchfly
- Pale smartweed
- Redroot pigweed
- Russian thistle (2–12 leaf)
- Shepherd’s purse
- Stinkweed (8 leaf)
- Tansy ragwort (8 leaf)
- Triazine-resistant pigweed
- Velvetleaf (3 inches high)
- Volunteer canola
- Volunteer sunflower
- Wild buckwheat (8 leaf)
- Wild mustard (8 leaf)

1 Weeds can be controlled up to the recommended stage.

HOW IT WORKS:
A combination of systemic and contact activity with weeds yellowing within 2–4 days and exhibiting abnormal growth (twisting and cupping of leaves) in 2–10 days.

CROP STAGING:
4 leaf to early flag leaf.

WATER VOLUME:
- Ground: 20 – 40 L/ac
- Aerial: 12 – 16 L/ac

RAINFASTNESS:
1 hour
SUPPORTED TANK MIXES:
Wheat (spring, durum) and barley:
- Avenge®
- Tralkoxydim (BISON® 400 L)

Wheat (spring, durum) only:
- Clodinafop (LADDER® 240 EC, LADDER ALL IN™)
- Everest®

MIXING INSTRUCTIONS:
1. Fill the spray tank ½ full with water.
2. Add the required amount of THRASHER® II and agitate thoroughly.
3. Fill the tank with remaining water and agitate again before use.

CROP ROTATIONS:
No restrictions the year after application.

PRE-HARVEST INTERVAL:
30 days

GRAZING RESTRICTIONS:
- Do not permit livestock to graze fields within 30 days of application.
- Do not harvest, forage or cut for hay within 30 days of application.
- Withdraw meat animals from treated fields at least 3 days before slaughter.

STORAGE:
- Will solidify at temperatures below -20 C but will become usable at temperatures above 0 C.
- Shake well before using.

QUICK TIPS:
For best results when there is a heavy crop canopy, or when the majority of the weeds are cow cockle, smartweed or pigweed, use higher water volumes. Spray when weeds are in the seedling stage. Apply in good growing conditions. Application must be made before the crop canopy shields the weeds.

Always read and follow pesticide label directions.
HERBICIDE

TOPLINE®

It controls a wide spectrum of broadleaf weeds with excellent wild buckwheat, cleavers and chickweed control. It also gives you multiple modes of action in wheat, barley and oat crops.

ACTIVE INGREDIENTS
Florasulam and MCPA ester

CHEMISTRY GROUPS
Group 2 (florasulam) and Group 4 (MCPA ester)

APPLICATION RATES AND PACKAGING
- 40 ml/ac florasulam + 230 ml/ac MCPA ester, or 40 ac/case
- 1 x 1.6 L florasulam jug + 1 x 9.33 L MCPA ester jug/case

REGISTERED CROPS:
- Barley
- Oats
- Wheat (spring, durum)

WEEDS CONTROLLED:
1–4 leaf stage:
- Ball mustard
- Burdock
- Common chickweed
- Cleavers
- Cow cockle
- Flixweed
- Hempnettle
- Lamb’s quarters
- Redroot pigweed
- Russian pigweed
- Prickly lettuce
- Ragweed
- Shepherd’s purse
- Smartweed
- Stinkweed
- Sunflower (annual)
- Volunteer canola
- Wild buckwheat
- Wild mustard

Suppressed:
- Annual sow thistle
- Canada thistle
- Dandelion
- Plantain
- Perennial sow thistle
- Stork’s bill

1 For heavy infestations, add 47 ml/ac of MCPA ester for improved control.
2 Including all herbicide-resistant varieties.
3 Seedlings and overwintered rosettes less than 6 inches.
4 Top growth control only.

HOW IT WORKS:
The Group 2 herbicide inhibits the production of the ALS enzyme in plants. This enzyme is essential for the production of certain amino acids required for plant growth. The Group 4 herbicide disrupts normal plant growth regulation, resulting in death of susceptible plants.

CROP STAGING:
Expanded 2-leaf up to the 6-leaf stage.

WATER VOLUME:
Ground: 40 L/ac
RAINFASTNESS:
2 hours

SUPPORTED TANK MIXES:
Wheat and barley:
- Assert®
- Axial®

Wheat only:
- Everest®
- Simplicity™
- Clodinafop (LADDER® 240 EC, LADDER ALL IN™)

MIXING INSTRUCTIONS:
1. After filling the spray tank ½ full with water, and with agitation running, add the required amount of florasulam, followed by the required amount of MCPA ester.
2. Fill tank with remaining water.

Note: Do not add a surfactant to this mixture.

CROP ROTATIONS:
Wheat, barley, oats, canola and peas may be grown the year following an application.

PRE-HARVEST INTERVAL:
60 days

GRAZING RESTRICTIONS:
- Do not cut for feed or hay or allow lactating dairy animals to graze treated crops or within 7 days of application.
- Withdraw meat animals from treated feed 3 days prior to marketing.

STORAGE:
- Store in dry, heated area.
- If frozen, bring to room temperature and agitate before use.

QUICK TIPS:
TOPLINE® is well suited to dark brown, black and grey soil zones where cleavers, hempnettle, wild buckwheat and volunteer canola are main concerns.
## INSECTICIDE

<table>
<thead>
<tr>
<th>Insecticide</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>PYRINEX® 480 EC</td>
<td>55</td>
</tr>
<tr>
<td>SILENCER® 120 EC</td>
<td>57</td>
</tr>
<tr>
<td>SOMBRERO® 600 FS</td>
<td>59</td>
</tr>
</tbody>
</table>

Always read and follow pesticide label directions.
BUGS HAVE NOWHERE TO HIDE
PYRINEX® 480 EC

Get flexible, broad-spectrum insect control in cereals, canola and many other field and specialty crops.

ACTIVE INGREDIENT
Chlorpyrifos

CHEMISTRY GROUP
Group 1B

APPLICATION RATES AND PACKAGING
Common field crop rates:
- 234 – 600 ml/ac or 42 – 17 ac/10 L jug: consult the label for specific application rates
- 2 x 10 L jugs/case
- 205 L drum (rates vary)

REGISTERED CROPS:
- Canola
- Cereals (wheat, barley, oats)
- Corn (field, sweet)
- Flax
- Lentils
- Potatoes
- Sunflowers
- Wide variety of fruits, vegetables and specialty crops

PYRINEX® 480 EC is registered on almost 30 crops; refer to the label for more information.

KEY INSECTS CONTROLLED:
- Alfalfa looper
- Army cutworm
- Armyworm
- Bertha armyworm
- Black cutworm
- Brown wheat mite
- Cabbage maggot
- Colorado potato beetle (larvae)
- Darksided cutworm
- Diamondback moth (larvae)
- Filbert aphid
- Grasshoppers
- Lygus bugs
- Mountain pine beetle
- Onion maggot
- Orange wheat blossom midge (wheat only)
- Pale western cutworm
- Potato flea beetle
- Redbacked cutworm
- Russian wheat aphid
- Seed weevil
- Strawberry cutworm (crown borer)
- Tarnished plant bug
- Variegated cutworm

HOW IT WORKS:
An organophosphate insecticide that controls insects through contact, ingestion and vapour inhalation.

APPLICATION TIMING AND CROP STAGING:
The need and timing of an application should be based on the presence of pests at vulnerable developmental stages and significant populations, as determined by local monitoring. Consult the label for specific crop and insect timing.

WATER VOLUME:
- Ground: 20 – 80 L/ac
- Air: 4 – 12 L/ac

RAINFASTNESS:
4 – 6 hours
SUPPORTED TANK MIXES:
PYRINEX® 480 EC can be tank mixed with the herbicides listed for wheat, oats and barley. When tank mixing, first add the herbicide to the spray tank and then add PYRINEX® 480 EC.

- 2,4-D amine
- 2,4-D ester
- Avenge®
- Banvel® + 2,4-D amine
- BUMPER®
- Dicamba
- Fenoxoprop-p-ethyl (BADGE® II, Buctril® M)
- MCPA amine
- MCPA ester
- OVERALL® 240 SC

MIXING INSTRUCTIONS:
1. Fill spray tank with water to ⅔ of final spray volume.
2. If tank mixing, add required amount of herbicide or fungicide.
3. Add required amount of PYRINEX® 480 EC with agitation.
4. Fill tank with water to the final desired volume.
5. Keep agitator running during mixing and application.

CROP ROTATIONS:
No restrictions the following year.

PRE-HARVEST INTERVALS:
- Canola: 21 days
- Cereals (wheat, barley, oats): 60 days
- Corn (field, sweet): 70 days
- Flax: 21 days
- Lentils: 21 days
- Potatoes: 70 days
- Sunflowers: 42 days

Consult label for further PHI on special crops.

GRAZING RESTRICTIONS:
Cereals grown as a cover crop and treated with PYRINEX® 480 EC insecticide should not be harvested for human or animal consumption within 60 days of application.

STORAGE:
- Do not store near heat or open flame.
- Avoid storage at high temperatures.
- Do not freeze.

QUICK TIPS:
Avoid application under hot temperatures. Get the best control of wheat midge and cutworms by applying insecticide in the evening (after 7 p.m.) or morning (before 8 a.m.). Use enough water to get thorough coverage of the intended soil, plant or pest target. Wait 24 hours before re-entry.
INSECTICIDE

SILENCER® 120 EC

SILENCER® 120 EC controls a wide range of insects in field, tree fruit and horticulture crops.

ACTIVE INGREDIENT
Lambda-chyalothrin

CHEMISTRY GROUP
Group 3

APPLICATION RATES AND PACKAGING
- 17 – 51 ml/ac or 220 – 74 ac/3.785 L jug; consult the label for specific application rates
- 4 x 3.785 L jugs/case

REGISTERED CROPS:
- Alfalfa
- Beans
- Canola
- Cereals (wheat, barley, oats)
- Chickpeas
- Corn (field)
- Flax
- Lentils
- Peas
- Potatoes
- Soybeans
- Sunflowers
- Timothy
- Variety of fruits, vegetables and specialty crops

SILENCER® 120 EC is registered for use on more than 30 crops; refer to the label for more information.

KEY INSECTS CONTROLLED:
- Alfalfa weevil
- Apple aphid
- Apple brown bug
- Apple leaf midge
- Armyworm (Pseudoaletia unipuncta)
- Bean aphid
- Bean leaf beetle
- Bertha armyworm
- Black vine weevil (adults)
- Bud (clipper) weevil
- Cabbage looper
- Cabbage seedpod weevil (adults)
- Carrot rust fly (Psila rosae)
- Carrot weevil (Listronotus oregonsis)
- Cherry maggot
- Codling moth
- Colorado potato beetle
- Corn borer
- Corn earworm
- Corn earworm (Helicoverpa zea)
- Crucifer flea beetle
- Cutworms
- Darksided cutworm
- Diamondback moth larvae
- European asparagus aphids
- European corn borer (Ostrinia nubilalis)
- Fall armyworm
- Fruit tree leafroller
- Grasshoppers
- Green peach aphid
- Imported cabbageworm
- Lygus bug
- Meadow spittle bug
- Mealy plum aphid
- Oblique banded leafroller
- Onion thrips
- Oriental fruit moth
- Pale apple leafroller
- Pea aphid
- Pea leaf weevil (Sitona lineate)
- Pear psylla (nymphs, adults)
- Plum curculio
- Potato flea beetle
- Potato leafhopper
- Prairie tent caterpillar
- Soybean aphids
- Spotted tentiform leafminer
- Sunflower beetle
- Swede midge (Contarinia nasturtii)
- Tarnished plant bug
- Tuber flea beetle
- Ugly nest caterpillar
- Corn earworm
- Western bean cutworm
- White apple leafhopper
- Winter moth
- Woolly apple aphid
INSECTICIDE

SILENCER® 120 EC

HOW IT WORKS:
Fast-acting stomach and contact insecticide.

APPLICATION TIMING AND CROP STAGING:
The need and timing of an application should be based on the presence of pests at vulnerable developmental stages and significant populations, as determined by local monitoring. Consult the label for specific crop and insect timing.

WATER VOLUME:
- Ground: 40 – 80 L/ac
- Aerial: 4 – 16 L/ac

RAINFASTNESS:
Not applicable.

SUPPORTED TANK MIXES:
Herbicides:
- Clodinafop (LADDER® 240 EC, LADDER ALL IN™)
- Tralkoxydim (BISON® 400 L)

Fungicides:
- Propiconazole (BUMPER®)
- Headline® EC

MIXING INSTRUCTIONS:
Confirm compatibility in advance by premixing small proportional quantities of water with SILENCER® 120 EC and the tank-mix partner.

CROP ROTATIONS:
No restrictions the year following treatment.

PRE-HARVEST INTERVALS:
- Corn (silage, field): 14 days
- Legumes (soybeans, beans, peas, faba beans, chickpeas, lentils): 21 days
- Oilseeds: 7 days
- Potatoes: 7 days
- Sunflowers: 7 days
- Timothy: 14 days
- Wheat, barley, oats: 28 days
- Wheat for forage: 14 days

GRAZING RESTRICTIONS:
Do not graze livestock within 3 days of application.

STORAGE:
Store above 0 C.

QUICK TIPS:
Apply below temperatures of 25 C. Apply in the evening or early morning when temperatures are cool to get the best control. Wait 24 hours before re-entry.

Always read and follow pesticide label directions.
**SOMBRERO® 600 FS**

This seed treatment gives you long-lasting, early season control of tough insect pests – including wireworms and flea beetles – in cereals, oilseeds, soybeans and corn.

**ACTIVE INGREDIENT**
Imidacloprid

**CHEMISTRY GROUP**
Group 4

**PACKAGING**
- 8 x 1.54 L

**REGISTERED CROPS:**
- Barley
- Canola¹
- Corn¹
- Mustard¹
- Oats
- Soybeans
- Wheat (durum, spring, winter)

¹Registered for use on this seed in commercial seed treatment facilities only.

**KEY INSECTS CONTROLLED:**
- Bean leaf beetle
- Corn flea beetle
- Flea beetle
- Seedcorn maggot
- Soybean aphid
- Wireworms

**HOW IT WORKS:**
SOMBRERO® 600 FS contains a proven, highly-effective seed treatment insecticide that gives you broad-spectrum control of above and below ground pests. Once treated seed is planted, the active ingredient in SOMBRERO® 600 FS is released and forms a protective barrier around the seed. As the plant grows, systemic action transports SOMBRERO® 600 FS throughout the developing stem and leaves, ensuring lasting insect control and giving the crop the defense to grow to its potential.

**APPLICATION RATES:**
A colourant MUST be added in accordance with the PCP Act and the Seeds Act Regulations.

<table>
<thead>
<tr>
<th>Crop</th>
<th>Insect</th>
<th>Rate</th>
<th>Application Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corn, Field corn for seed production</td>
<td>Wireworms</td>
<td>21.3 ml/80,000 seeds</td>
<td>Dilute in sufficient water to achieve uniform coverage on the seed. Ensure seed is adequately coloured. Other polymers and coating materials may be required.</td>
</tr>
<tr>
<td>Field corn for seed production</td>
<td>Corn flea beetle</td>
<td>80 ml/80,000 seeds</td>
<td>Use the higher rate for early seeding, when insect populations are expected to be high, and to extended control period for aphids. Dilute in sufficient liquid to achieve uniform coverage on the seed.</td>
</tr>
<tr>
<td>Wheat (durum, spring, winter), Barley, Oats</td>
<td>Wireworms</td>
<td>17 – 50 ml/100 kg seed</td>
<td>Use the higher rate for early seeding, when insect populations are expected to be high, and to extended control period for aphids. Dilute in sufficient liquid to achieve uniform coverage on the seed.</td>
</tr>
<tr>
<td>Soybeans</td>
<td>Soybean aphid, Bean leaf beetle, Seedcorn maggot, Wireworm</td>
<td>104 – 208 ml/100 kg seed</td>
<td>In areas where flea beetle populations are high, use the higher application rate.</td>
</tr>
<tr>
<td>Canola/Mustard</td>
<td>Flea beetle</td>
<td>667 – 1333 ml/100 kg seed</td>
<td>In areas where flea beetle populations are high, use the higher application rate.</td>
</tr>
</tbody>
</table>
WATER VOLUME:
Dilute in sufficient liquid to achieve uniform coverage on the seed.

TANK MIXES WITH FUNGICIDES:
- Raxil® T
- Raxil® MD
- Raxil® Pro
- Apron Maxx® RTA®
- Apron Maxx® RFC
- Insure® Cereal
- Insure® Pulse
- Rancona® Apex
- Vibrance® Quattro

MIXING INSTRUCTIONS:
1. Add fungicide.
2. Add coating agents.
3. Add SOMBRERO® 600 FS.

STORAGE:
- Do not store SOMBRERO® 600 FS at low temperatures.
- Prior to and during application, SOMBRERO® 600 FS must be thoroughly agitated to ensure uniform mixing of the product.
- Due to viscosity of the material, it should be kept at 10 C prior to and during application. Do not apply direct heat to container.

USE RESTRICTIONS:
1. Do not use treated seed for food, feed or oil processing.
2. Do not graze or feed livestock on treated areas for 4 weeks after seeding.
3. Mustard greens grown or harvested from SOMBRERO® 600 FS treated seed can’t be used for human consumption.
4. Treated canola, rapeseed or mustard (condiment type only) seed stored for periods exceeding 6 months may decrease in germination at a faster rate than untreated seed. Treated seed stored for more than 6 months should be tested for germination before seeding. Do not store treated seed above 25 C or in direct sunlight.
5. This chemical demonstrates the properties and characteristics associated with chemicals detected in ground water. Using it in areas where soils are permeable, or the water table is shallow, may result in ground water contamination.

QUICK TIPS:
For optimal insect control, make sure to get good seed coverage.
For resistance management, rotate SOMBRERO® 600 FS with different groups that control the same pests in a field.
Always read and follow pesticide label directions.
DISEASES ARE DONE FOR FUNGICIDE
**FUNGICIDE**

**BUMPER®**

This broad-spectrum systemic fungicide protects against yield and quality losses due to leaf disease.

**ACTIVE INGREDIENT**

Propiconazole

**CHEMISTRY GROUP**

Group 3

**APPLICATION RATES AND PACKAGING**

- 60 ml/ac or 80 ac/4.8 L jug in wheat and barley for early season control
- 120 ml/ac or 40 ac/4.8 L jug at the full rate
- 2 x 4.8 L jugs/case
- For fruit and specialty crops, 120 – 180 ml/ac (see label for details)

**REGISTERED CROPS:**

- Barley
- Canary seed
- Canola
- Corn
- Dry edible beans
- Oats
- Soybeans
- Wheat (spring, winter, durum)
- Variety of specialty crops
- Scalds
- Tan spots

**KEY DISEASES CONTROLLED:**

- Blackleg
- Frogeye leaf spot
- Net and spot blotches
- Powdery mildew
- Rusts
- Septoria spots and blotches
- Scalds
- Tan spots

**HOW IT WORKS:**

Broad-spectrum, systemic activity with excellent leaf surface protection and translocation within the plant for additional disease prevention.

**APPLICATION TIMING AND CROP STAGING:**

<table>
<thead>
<tr>
<th>Crop</th>
<th>Diseases</th>
<th>Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td>½ rate at 60 ml/ac</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Barley</td>
<td>Net blotch</td>
<td>Early: Growth stage 12 – 23, as early as the 2-leaf stage.</td>
</tr>
<tr>
<td>Wheat</td>
<td>Septoria leaf spot, Tan spot</td>
<td></td>
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<tr>
<td>Full rate at 120 ml/ac</td>
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<tr>
<td>Barley</td>
<td>Leaf and stem rust, Septoria leaf spot, Powdery mildew, Scald, Spot blotch</td>
<td>Early: Growth stage 29 – 37, at the first sign of disease, usually at the beginning of stem elongation.</td>
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<tr>
<td>Oats</td>
<td>Crown rust, Septoria leaf blotch</td>
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<tr>
<td>Wheat</td>
<td>Leaf and stem rust, Powdery mildew, Septoria glume blotch, Septoria leaf spot, Stripe rust, Tan spot</td>
<td>Later: Growth stage 49 – 55, before head is ½ emerged.</td>
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<tr>
<td>Canary seed</td>
<td>Septoria leaf mottle</td>
<td>At emergence of the flag leaf.</td>
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<tr>
<td>Canola</td>
<td>Blackleg</td>
<td>Rosette stage, between 2nd true leaf and bolting.</td>
</tr>
<tr>
<td>Corn</td>
<td>Eye spot, Grey leaf spot, Helminthosporium leaf spot, Northern corn leaf blight, Rusts, Southern corn leaf blight</td>
<td>When disease first appears.</td>
</tr>
<tr>
<td>Soybeans (for seed)</td>
<td>Frogeye leaf spot, Aerial web blight</td>
<td>When disease first appears. Under severe disease pressure, make a 2nd application 14 days after the first.</td>
</tr>
<tr>
<td>Dry edible beans</td>
<td>Rust</td>
<td>At the first detection of disease and a 2nd application 14 – 21 days later.</td>
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FRUIT AND SPECIALTY CROP USES:

<table>
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<tr>
<th>Crop</th>
<th>Diseases</th>
<th>PHI</th>
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<tbody>
<tr>
<td>Cranberries</td>
<td>Cottonball <em>Monilinia oxycocci</em></td>
<td>45 days</td>
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<tr>
<td>Kentucky bluegrass grown for seed</td>
<td>Powdery mildew</td>
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<tr>
<td>Lowbush blueberries</td>
<td>Monilinia blight (mummy berry)</td>
<td>60 days</td>
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<tr>
<td>Highbush blueberries</td>
<td>Mummy berry <em>Monilinia vaccinii-corymbosi</em></td>
<td>60 days</td>
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<tr>
<td>Peaches, Nectarines, Plums, Apricots</td>
<td>Brown rot blossom blight, Fruit brown rot</td>
<td>3 days</td>
</tr>
<tr>
<td>Sweet and sour cherries</td>
<td>Brown rot blossom blight, Fruit brown rot, Cherry leaf spot <em>Blumeriella jaapii</em></td>
<td>3 days</td>
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<tr>
<td>Plums, Sour cherries</td>
<td>Black knot <em>Apiosporina morbosa</em> (suppression only)</td>
<td>3 days</td>
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<tr>
<td>Rutabagas</td>
<td>Powdery mildew</td>
<td>21 days</td>
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<tr>
<td>Asparagus</td>
<td>Rust <em>Puccinia asparagi</em></td>
<td>8 months</td>
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<tr>
<td>Saskatoon berries</td>
<td>Entomosporium leaf and berry spot, Saskatoon juniper rust</td>
<td>38 days</td>
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<tr>
<td>Western red cedar</td>
<td>Keithia foliar blight</td>
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<tr>
<td>Strawberries</td>
<td>Leaf spot</td>
<td>1 day</td>
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</tbody>
</table>

WATER VOLUME:
- Ground: minimum 80 L/ac
- Aerial: 16 – 20 L/ac

RAINFASTNESS:
- 1 hour

SUPPORTED TANK MIXES:
Herbicides:
- Wheat and barley: 2,4-D amine, 2,4-D ester, Bromoxynil + MCPA ester *(BADGE® II)*, Bromoxynil *(BROMOTRIL® II)*, MCPA amine, MCPA ester
- Wheat only: Clodinafop *(LADDER® 240 EC, LADDER ALL IN™)*

Insecticides:
- Lambda-cyhalothrin *(SILENCER® 120 EC)*
- Ripcord™

MIXING INSTRUCTIONS:
1. Fill spray tank ½ full with water and gently agitate.
2. Add the required amount of BUMPER® and agitate thoroughly.
3. Continue filling the tank with water until the tank is ¾ full and, if applicable, add the required amount of tank-mix partner.
4. Complete filling the spray tank with water, maintaining agitation during mixing and spraying operations.

CROP ROTATIONS:
No restrictions.

PRE-HARVEST INTERVALS:
- Beans: 28 days
- Canola: 60 days
- Cereal crops (wheat, barley, oats): 45 days
- Corn: 14 days
- Soybeans: 50 days

GRAZING RESTRICTIONS:
Do not graze livestock within 3 days of spraying.

STORAGE:
No temperature restrictions.

QUICK TIPS:
BUMPER® should be applied as a preventative disease control measure. Established diseases are more difficult to control and may have already reduced crop vigour.

Always read and follow pesticide label directions.
OVERALL® 240 SC
Effective sclerotinia stem rot and alternaria black spot control in alfalfa and canola.

**ACTIVE INGREDIENT**
Iprodione

**CHEMISTRY GROUP**
Group 2

**APPLICATION RATES AND PACKAGING**
- 0.85 L/ac or 10 ac/8.4 L jug
- 1.25 L/ac or 6.72 ac/8.4 L jug
- 2 x 8.4 L jugs/case
- 100.8 L drum (rates vary)

**REGISTERED CROPS:**
- Alfalfa (grown for seed)
- Canola

**KEY DISEASES CONTROLLED:**
- Alternaria black spot
- Sclerotinia stem rot

**HOW IT WORKS:**
Systemic fungicide with contact activity that is used as a protective and eradicant fungicide.

**APPLICATION TIMING AND CROP STAGING:**

<table>
<thead>
<tr>
<th>Crop</th>
<th>Diseases</th>
<th>Timing</th>
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</thead>
<tbody>
<tr>
<td>Alfalfa (grown for seed)</td>
<td>Sclerotinia stem rot</td>
<td>Apply as a single application of 0.85 – 1.25 L/ac when the crop is in the 20 – 50% bloom stage.</td>
</tr>
<tr>
<td>Canola</td>
<td>Sclerotinia stem rot, Alternaria black spot (suppression)</td>
<td>Apply 0.85 – 1.25 L/ac at the 20 – 50% bloom stage. Best protection is achieved at 20 – 30% bloom. This will be prior to petals beginning to fall, and will allow for the maximum number of petals to be protected. OVERALL® 240 SC can be applied until the 50% bloom stage. This will be when the canola crop is at its maximum yellow colour, and prior to significant petal fall.</td>
</tr>
<tr>
<td>Canola</td>
<td>Alternaria black spot (control)</td>
<td>Apply at the early green pod stage with the 1.25 L/ac rate, or as split applications of 0.43 L/ac at 20 – 50% bloom followed by 0.43 L/ac at early green pod stage. If a spray of 0.85 – 1.25 L/ac has been applied at 20 – 50% bloom, this will also control sclerotinia stem rot.</td>
</tr>
</tbody>
</table>
WATER VOLUME:
- Ground: minimum 40 L/ac
- Aerial: minimum 18 L/ac

RAINFASTNESS:
- Delay spraying if rainfall is imminent.
- Do not apply immediately after a rainfall.

SUPPORTED TANK MIXES:
None registered.

MIXING INSTRUCTIONS:
1. Put ½ the required water volume in the tank.
2. Stir in OVERALL® 240 SC and add the remainder of the water.
3. Ensure mixing is complete.
4. Agitate thoroughly before each application and continue to agitate during spraying.
5. A prepared spray mixture should be used as soon as possible in the same day, especially if the water used for mixing is alkaline (greater than pH of 7). A pH reducer agent such as LI 700® at 0.125% v/v could be used.

CROP ROTATIONS:
No restrictions.

PRE-HARVEST INTERVALS:
Alfalfa: 38 days
Canola: 38 days

GRAZING RESTRICTIONS:
Do not use treated alfalfa for animal feed.

STORAGE:
Protect from frost.

QUICK TIPS:
Use forecasting tools to predict the need for fungicide applications.
TOPNOTCH™
Unique azoxystrobin and propiconazole formulation to provide broad-spectrum disease control in cereals and pulses.

ACTIVE INGREDIENTS
Azoxystrobin and propiconazole

CHEMISTRY GROUPS
Group 3 (propiconazole) and Group 11 (azoxystrobin)

PACKAGING
· 2 x 8.6 L jugs/case

REGISTERED AND SUPPORTED CROPS:
· Barley
· Dry beans
· Field peas
· Lentils
· Oats
· Rye
· Soybeans
· Triticale
· Wheat
· Durum wheat

KEY DISEASES CONTROLLED:
· Anthracnose
· Ascochyta
· Barley leaf rust
· Blackleg
· Mycosphaerella blight
· Net and spot blotches
· Powdery mildew
· Scald
· Septoria spot
· Stripe rust
· Tan spot
· Wheat leaf rust
· White mould*

HOW IT WORKS:
Used as both a curative and preventative fungicide, TOPNOTCH™ has broad-spectrum, systemic and contact activity.

APPLICATION TIMING AND CROP STAGING:

<table>
<thead>
<tr>
<th>Crop</th>
<th>Diseases</th>
<th>Application Timing</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barley</td>
<td>Barley net blotch, Barley scald, Septoria leaf spot, Stripe rust, Barley leaf rust, Tan spot</td>
<td>Apply once between stem elongation and half-head emergence (Growth stage 29 – 55).</td>
<td>0.21 L/ac</td>
</tr>
<tr>
<td>Dry beans</td>
<td>Anthracnose, Mycosphaerella blight, Powdery mildew, White mould*</td>
<td>Apply at first sign of disease.</td>
<td>0.31 – 0.62 L/ac</td>
</tr>
<tr>
<td>Field peas</td>
<td>Anthracnose, Mycosphaerella blight, Powdery mildew, White mould*</td>
<td>Apply at first sign of disease.</td>
<td>0.31 – 0.62 L/ac</td>
</tr>
<tr>
<td>Lentils</td>
<td>Anthracnose, Mycosphaerella blight, Powdery mildew, White mould*</td>
<td>Apply at first sign of disease.</td>
<td>0.31 – 0.62 L/ac</td>
</tr>
<tr>
<td>Oats</td>
<td>Barley net blotch, Crown rust, Septoria leaf spot</td>
<td>Apply once between stem elongation and half-head emergence (Growth stage 29 – 55).</td>
<td>0.21 L/ac</td>
</tr>
</tbody>
</table>

*Suppression only
**Crop Diseases Application Timing Rate**

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<tr>
<th>Crop</th>
<th>Diseases</th>
<th>Application Timing</th>
<th>Rate</th>
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</thead>
<tbody>
<tr>
<td>Rye</td>
<td>Septoria leaf spot, Barley scald, Tan spot</td>
<td>Apply once between stem elongation and half-head emergence (Growth stage 29 – 55).</td>
<td>0.21 L/ac</td>
</tr>
<tr>
<td>Soybeans</td>
<td>Anthracnose, Mycosphaerella blight, Powdery mildew, White mould*</td>
<td>Apply at first sign of disease.</td>
<td>0.31 – 0.62 L/ac</td>
</tr>
<tr>
<td>Triticale</td>
<td>Septoria leaf spot, Tan spot</td>
<td>Apply once between stem elongation and half-head emergence (Growth stage 29 – 55).</td>
<td>0.21 L/ac</td>
</tr>
<tr>
<td>Wheat</td>
<td>Septoria leaf spot, Tan spot, Stripe rust, Wheat leaf rust</td>
<td>Apply once between stem elongation and half-head emergence (Growth stage 29 – 55).</td>
<td>0.21 L/ac</td>
</tr>
<tr>
<td>Durum wheat</td>
<td>Septoria leaf spot, Tan spot, Stripe rust</td>
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</tbody>
</table>

*Suppression only

**WATER VOLUME:**
- Ground: minimum 40 L/ac
- Aerial: 18 L/ac

**RAINFASTNESS:** None specified.

**SUPPORTED TANK MIXES:**

**Herbicides:**
- BRAZEN™ 100 EC
- Broadband®
- Clodinafop-propargyl (LADDER® 240 EC, Horizon®)

**Insecticides:**
- Lambda-cyhalothrin (SILENCER® 120 EC, Matador®)

**Fungicides:**
- Quadris®
- Quadris®

**MIXING INSTRUCTIONS:**
1. Fill spray tank ½ – ¾ full with water.
2. With agitator running, add required amount of TOPNOTCH™ and continue agitating while adding remainder of the water.
3. Begin application after Topnotch is completely dispersed into the mix water, and maintain agitation during spraying operation.

**CROP ROTATIONS:**
Do not plant any other crop intended for food, grazing or any component of animal feed or bedding within 105 days of application.

**PRE-HARVEST INTERVALS:**
- Cereals: 45 days
- Field peas, beans, soybeans: 15 days
- Lentils: 30 days

**GRAZING RESTRICTIONS:**
No restrictions.

**STORAGE:**
Do not store below 0 C.

**QUICK TIPS:**
Good spray coverage and canopy penetration are important to achieve the best results.

Always read and follow pesticide label directions.
## CONTROL TIPS BY CROP

### Cereals

- **WHEAT**: 72
- **DURUM WHEAT**: 73
- **WINTER WHEAT**: 74
- **BARLEY**: 75
- **OATS**: 76
- **FIELD CORN**: 77

### Legumes / Pulses

- **SOYBEANS**: 78
- **DRY BEANS**: 79
- **PEAS**: 80
- **LENTILS**: 81
- **CHICKPEAS**: 82

### Oilseeds

- **CANOLA**: 83
- **FLAX**: 84
- **SUNFLOWERS**: 84

### Horticultural

- **POTATOES**: 85

⚠️ Always read and follow pesticide label directions.
# Control Tips by Crop

## AT A GLANCE

<table>
<thead>
<tr>
<th>Weeds</th>
<th>Wheat</th>
<th>Durum Wheat</th>
<th>Winter Wheat</th>
<th>Barley</th>
<th>Oats</th>
<th>Field Corn</th>
<th>Soybeans</th>
<th>Dry Beans</th>
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## diseases

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<tr>
<th>DISEASES</th>
<th>Wheat</th>
<th>Durum Wheat</th>
<th>Winter Wheat</th>
<th>Barley</th>
<th>Oats</th>
<th>Field Corn</th>
<th>Soybeans</th>
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### Control Tips by Crop

#### Wheat

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1 Fields treated with PRIORITY® + glyphosate in the spring may be seeded to wheat. Summerfallow fields treated with PRIORITY® + glyphosate may be seeded to wheat the following spring.
2 Stubble treated with PRIORITY® + glyphosate may be seeded to wheat the following spring.

Always read and follow pesticide label directions.
# DURUM WHEAT

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¹ Fields treated with PRIORITY® + glyphosate in the spring may be seeded to durum wheat. Summerfallow fields treated with PRIORITY® + glyphosate may be seeded to durum wheat the following spring.

² Stubble treated with PRIORITY® + glyphosate may be seeded to durum wheat the following spring.
### CONTROL TIPS BY CROP

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<td>•</td>
</tr>
<tr>
<td>SOMBRERO® 600 FS</td>
<td>•</td>
<td>•</td>
<td></td>
<td></td>
<td></td>
<td>•</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DISEASE CONTROL</th>
<th>Powdery Mildew</th>
<th>Septoria Leaf Spot</th>
<th>Stripe Rust</th>
<th>Tan Spot</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUMPER®</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td></td>
</tr>
<tr>
<td>TOPNOTCH™</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
</tbody>
</table>

¹ Fields treated with PRIORITY® + glyphosate in the spring may be seeded to barley. Summerfallow fields treated with PRIORITY® + glyphosate may be seeded to barley the following spring.

² Stubble treated with PRIORITY® + glyphosate may be seeded to barley the following spring.
# OATS

## WEED CONTROL

<table>
<thead>
<tr>
<th>Product</th>
<th>Pre-seed</th>
<th>Pre-seed Incorporated</th>
<th>In-crop</th>
<th>Pre-harvest</th>
<th>Post-harvest</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARMORY™ 240</td>
<td></td>
<td></td>
<td>○²</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BADGE® II</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BROMOTRIL® II</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BROMOTRIL® II + glyphosate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HOTSHOT® + glyphosate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PRIORITY® + glyphosate</td>
<td>○¹</td>
<td></td>
<td></td>
<td></td>
<td>○³</td>
</tr>
<tr>
<td>TOPLINE®</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## INSECT CONTROL

<table>
<thead>
<tr>
<th>Product</th>
<th>Aphid</th>
<th>Armyworm</th>
<th>Bertha</th>
<th>Armyworm</th>
<th>Cutworm</th>
<th>Grasshopper</th>
<th>Wireworm</th>
</tr>
</thead>
<tbody>
<tr>
<td>PYRINEX® 480 EC</td>
<td></td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>SILENCER® 120 EC</td>
<td></td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>SOMBRERO® 600 FS</td>
<td></td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td>●</td>
</tr>
</tbody>
</table>

## DISEASE CONTROL

<table>
<thead>
<tr>
<th>Product</th>
<th>Septoria Leaf Spot</th>
<th>Septoria Leaf Blotch</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUMPER®</td>
<td></td>
<td>○</td>
</tr>
<tr>
<td>TOPNOTCH™</td>
<td></td>
<td>○</td>
</tr>
</tbody>
</table>

1. Fields treated with PRIORITY® + glyphosate in the spring may be seeded to oats. Summerfallow fields treated with PRIORITY® + glyphosate may be seeded to oats the following spring.
2. Corn Spurry control, apply when oats are 3 – 6 inches in height.
3. Stubble treated with PRIORITY® + glyphosate may be seeded to oats the following spring.

Always read and follow pesticide label directions.
## FIELD CORN

### WEED CONTROL

<table>
<thead>
<tr>
<th></th>
<th>Pre-seed</th>
<th>Pre-seed Incorporated</th>
<th>In-crop</th>
<th>Pre-harvest</th>
<th>Post-harvest</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,4-D Ester 700</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BADGE® II</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>BROMOTRIL® II</td>
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### INSECT CONTROL

<table>
<thead>
<tr>
<th></th>
<th>Armyworm</th>
<th>European Corn Borer</th>
<th>Corn Earworm</th>
<th>Cut-worm</th>
<th>Flea Beetle</th>
<th>Wireworm</th>
</tr>
</thead>
<tbody>
<tr>
<td>PYRINEX® 480 EC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SILENCER® 120 EC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SOMBRERO® 600 FS (seed treatment)</td>
<td></td>
<td></td>
<td></td>
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### DISEASE CONTROL

<table>
<thead>
<tr>
<th></th>
<th>Eyespot</th>
<th>Northern Corn Leaf Blight</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUMPER® (seed corn)</td>
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</tr>
</tbody>
</table>
## SOYBEANS

### WEED CONTROL

<table>
<thead>
<tr>
<th>Pre-seed</th>
<th>Pre-seed Incorporated</th>
<th>In-crop</th>
<th>Pre-harvest</th>
<th>Post-harvest</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,4-D Ester 700</td>
<td></td>
<td></td>
<td></td>
<td>▪</td>
</tr>
<tr>
<td>ARMORY™ 240</td>
<td></td>
<td></td>
<td>▪</td>
<td></td>
</tr>
<tr>
<td>ARROW® 240 EC</td>
<td></td>
<td>▪</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ARROW ALL IN™</td>
<td></td>
<td></td>
<td>▪</td>
<td></td>
</tr>
<tr>
<td>DAVAI™ 80 SL</td>
<td></td>
<td></td>
<td>▪</td>
<td></td>
</tr>
<tr>
<td>PHANTOM® 240 SL (Manitoba only)</td>
<td></td>
<td>▪</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SQUADRON®</td>
<td></td>
<td>▪</td>
<td>▪</td>
<td></td>
</tr>
</tbody>
</table>

### INSECT CONTROL

<table>
<thead>
<tr>
<th>Aphid</th>
<th>Cutworm</th>
<th>Grasshopper</th>
<th>Lygus Bug</th>
<th>Wireworm</th>
</tr>
</thead>
<tbody>
<tr>
<td>SILENCER® 120 EC</td>
<td>▪</td>
<td>▪</td>
<td>▪</td>
<td>▪</td>
</tr>
<tr>
<td>SOMBRERO® 600 FS</td>
<td>▪</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

### DISEASE CONTROL

<table>
<thead>
<tr>
<th>Anthracnose</th>
<th>Frogeye</th>
<th>Leaf Spot</th>
<th>Mycosphaerella Blight</th>
<th>Powdery Mildew</th>
<th>Sclerotinia Stem Rot</th>
<th>White Mould</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUMPER®</td>
<td></td>
<td></td>
<td>▪</td>
<td>▪</td>
<td>▪</td>
<td></td>
</tr>
<tr>
<td>TOPNOTCH™</td>
<td>▪</td>
<td>▪</td>
<td>▪</td>
<td>▪</td>
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<td>▪</td>
</tr>
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</table>

Always read and follow pesticide label directions.
## DRY BEANS

### WEED CONTROL

<table>
<thead>
<tr>
<th>Product</th>
<th>Pre-seed</th>
<th>Pre-seed Incorporated</th>
<th>In-crop</th>
<th>Pre-harvest</th>
<th>Post-harvest</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARMORY™ 240</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ARROW® 240 EC¹</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ARROW ALL IN™¹</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PHANTOM® 240 SL¹</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

### INSECT CONTROL

<table>
<thead>
<tr>
<th>Product</th>
<th>Aphid</th>
<th>Cutworm</th>
<th>European Corn Borer</th>
<th>Lygus Bug</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>SILENCER® 120 EC</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

### DISEASE CONTROL

<table>
<thead>
<tr>
<th>Product</th>
<th>Anthracnose</th>
<th>Mycosphaerella Blight</th>
<th>Powdery Mildew</th>
<th>Sclerotinia Stem Rot/White Mould</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOPNOTCH™</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

¹ For a listing of specific crops, refer to the product page.
## CONTROL TIPS BY CROP

### PEAS

<table>
<thead>
<tr>
<th>WEED CONTROL</th>
<th>Pre-seed</th>
<th>Pre-seed Incorpo rated</th>
<th>In-crop</th>
<th>Pre-harvest</th>
<th>Post-harvest</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARMORY™ 240</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>ARROW® 240 EC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>ARROW ALL IN™</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>DAVAI™ 80 SL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>PHANTOM® 240 SL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>PRIORITY® + glyphosate</td>
<td>●¹</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SQUADRON®</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>●</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>INSECT CONTROL</th>
<th>Aphid</th>
<th>Cutworm</th>
<th>Grasshopper</th>
<th>Pea Weevil</th>
</tr>
</thead>
<tbody>
<tr>
<td>SILENCER® 120 EC</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DISEASE CONTROL</th>
<th>Anthracnose</th>
<th>Mycosphaerella Blight</th>
<th>Powdery Mildew</th>
<th>Sclerotinia Stem Rot/White Mould</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOPNOTCH™</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
</tbody>
</table>

¹ Prior to August 1, summerfallow fields treated with PRIORITY® + glyphosate may be seeded to peas the following spring.

² Tank mix with Treflan™ EC or Rival® EC. See label for details.

Always read and follow pesticide label directions.
**CONTROL TIPS BY CROP**

# LENTILS

## WEED CONTROL

<table>
<thead>
<tr>
<th>Product</th>
<th>Pre-seed</th>
<th>Pre-seed Incorpor.</th>
<th>In-crop</th>
<th>Pre-harvest</th>
<th>Post-harvest</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARMORY™ 240</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>•</td>
</tr>
<tr>
<td>ARROW® 240 EC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>•</td>
</tr>
<tr>
<td>ARROW ALL IN™</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>•</td>
</tr>
<tr>
<td>SQUADRON®</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

1 Tank mix with Treflan™ EC or Rival® EC. See label for details.

## INSECT CONTROL

<table>
<thead>
<tr>
<th>Product</th>
<th>Aphid</th>
<th>Cutworm</th>
<th>Grasshopper</th>
<th>Lygus Bug</th>
</tr>
</thead>
<tbody>
<tr>
<td>PYRINEX® 480 EC</td>
<td>•</td>
<td>•</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SILENCER® 120 EC</td>
<td>•</td>
<td>•</td>
<td>•</td>
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</table>

## DISEASE CONTROL

<table>
<thead>
<tr>
<th>Product</th>
<th>Anthracose</th>
<th>Mycosphaerella Blight</th>
<th>Powdery Mildew</th>
<th>Sclerotinia Stem Rot/White Mould</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOPNOTCH™</td>
<td>•</td>
<td>•</td>
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</tr>
</tbody>
</table>

*81*
# Control Tips by Crop

## Chickpeas

### Weed Control

<table>
<thead>
<tr>
<th>Product</th>
<th>Pre-Seed</th>
<th>Pre-Seed Incorporated</th>
<th>In-Crop</th>
<th>Pre-Harvest</th>
<th>Post-Harvest</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARMORY™ 240</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>ARROW® 240 EC</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>ARROW ALL IN™</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SQUADRON®</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

### Insect Control

<table>
<thead>
<tr>
<th>Product</th>
<th>Aphid</th>
<th>Cutworm</th>
<th>Grasshopper</th>
</tr>
</thead>
<tbody>
<tr>
<td>SILENCER® 120 EC</td>
<td>•</td>
<td>•</td>
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</tr>
</tbody>
</table>

Always read and follow pesticide label directions.
## CANOLA

### WEED CONTROL

<table>
<thead>
<tr>
<th>Product</th>
<th>Pre-seed</th>
<th>Pre-seed Incorporated</th>
<th>In-crop</th>
<th>Pre-harvest</th>
<th>Post-harvest</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARMORY™ 240</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✔</td>
</tr>
<tr>
<td>ARROW® 240 EC</td>
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<td></td>
<td></td>
<td>✔</td>
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<tr>
<td>ARROW ALL IN™</td>
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<td></td>
<td></td>
<td></td>
<td>✔</td>
</tr>
<tr>
<td>PRIORITY® + glyphosate</td>
<td></td>
<td></td>
<td></td>
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<td>✔ 1</td>
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### INSECT CONTROL

<table>
<thead>
<tr>
<th>Product</th>
<th>Armyworm</th>
<th>Bertha</th>
<th>Armyworm</th>
<th>Cabbage Seedpod Weevil</th>
<th>Cutworm</th>
<th>Diamondback Moth</th>
<th>Flea Beetle</th>
<th>Grasshopper</th>
<th>Lygus Bug</th>
</tr>
</thead>
<tbody>
<tr>
<td>PYRINEX® 480 EC</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
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<tr>
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<td>✔</td>
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<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>SOMBRERO® 600 FS (seed treatment)</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
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</table>

### DISEASE CONTROL

<table>
<thead>
<tr>
<th>Product</th>
<th>Alternaria</th>
<th>Black Spot</th>
<th>Blackleg</th>
<th>Sclerotinia Stem Rot</th>
</tr>
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<tr>
<td>BUMPER®</td>
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</tr>
<tr>
<td>OVERALL® 240 SC</td>
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<td>✔</td>
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</tbody>
</table>

1 Prior to August 1, summerfallow fields treated with PRIORITY® + glyphosate may be seeded to canola the following spring.
## FLAX

**WEED CONTROL**

<table>
<thead>
<tr>
<th></th>
<th>Pre-seed</th>
<th>Pre-seed Incorporated</th>
<th>In-crop</th>
<th>Pre-harvest</th>
<th>Post-harvest</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARMORY™ 240</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ARROW® 240 EC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ARROW ALL IN™</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BADGE® II</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BROMOTRIL® II</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**INSECT CONTROL**

<table>
<thead>
<tr>
<th></th>
<th>Bertha</th>
<th>Armyworm</th>
<th>Cutworm</th>
<th>Grasshopper</th>
</tr>
</thead>
<tbody>
<tr>
<td>PYRINEX® 480 EC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SILENCER® 120 EC</td>
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## SUNFLOWERS

**WEED CONTROL**

<table>
<thead>
<tr>
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<th>Pre-seed</th>
<th>Pre-seed Incorporated</th>
<th>In-crop</th>
<th>Pre-harvest</th>
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**INSECT CONTROL**

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## CONTROL TIPS BY CROP

### POTATOES

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1Mix with Eptam® 8-E emulsifiable herbicide. This tank mix can be applied pre-emergence, and it can also be applied through a sprinkler irrigation system.
CONTROL TIPS BY WEED

CANADA FLEABANE ........................................... 90
CANADA THISTLE ............................................ 91
CLEAVERS ..................................................... 92
COMMON RAGWEED ........................................ 93
DANDELION .................................................... 94
GREEN FOXTAIL ............................................. 95
LAMB’S QUARTERS .......................................... 96
NARROW-LEAVED HAWK’S BEARD .................... 97
REDROOT PIGWEED .......................................... 98
VOLUNTEER CANOLA ....................................... 99
WILD BUCKWHEAT ......................................... 100
WILD OATS ................................................... 101

Always read and follow pesticide label directions.
DETECT ADVANCING WEEDS
## CONTROL TIPS BY WEED

### AT A GLANCE

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<tr>
<th>REGISTERED HERBICIDES</th>
<th>Canada Fleabane</th>
<th>Canada Thistle</th>
<th>Cleavers</th>
<th>Common Ragweed</th>
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CANADA FLEABANE

TYPE:
- Winter annual
- Broadleaf

IDENTIFICATION:
Plants can reach heights up to 5 feet. They have hairy, erect stems with few branches, and they range in size from 4 – 7 inches high. Seedlings begin as a basal rosette with leaves that are soft, hairy and bright green but becoming harsh on older leaves once the plant has bolted. Basal and lower stem leaves are narrowly oval, rarely more than a ½ inch wide and tapering to a narrow stalk, with a few, scattered, shallow teeth or without teeth. Middle and upper leaves are linear, very narrow and usually without teeth. Flower heads are ¼ inch across and very numerous on short branches near the top of the main stem. Ray florets are white while disc florets are yellowish and very fluffy at maturity.

CONTROL TIPS:
- Scouting is essential to controlling Canada fleabane.
- In no till systems, a pre-seed burn-off of glyphosate and an effective tank-mix partner is recommended.

<table>
<thead>
<tr>
<th>REGISTERED HERBICIDES</th>
<th>Barley</th>
<th>Oats</th>
<th>Wheat</th>
<th>Durum Wheat</th>
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Photos:
L: CC BY SA 3.0 Image courtesy of Dalgial bit.ly/2fIXJVG
R: CC BY SA 3.0 Image courtesy of GTBacchus bit.ly/2fzv0ri

Always read and follow pesticide label directions.
CANADA THISTLE

TYPE:
· Perennial
· Broadleaf

IDENTIFICATION:
Plants are from 12 inches to 5 feet tall with several branches. Leaves are a shiny, deep green color and arranged alternately on the stem and branches. Some biotypes have thin, flat leaves with short, fine spines, arranged sparsely around a slightly toothed edge. Most plants have leaves that are thick and leathery with deep and irregular serrated margins and long sturdy spines. Stems have few spines, if any.

CONTROL TIPS:
· Canada thistle is a persistent weed that requires a multi-year combination of chemical and cultural control practices. Root starvation is important to controlling plants. In addition, prevention of plant establishment and spread is essential.
· Use effective crop rotations with strong competitors to Canada thistle.
· Top growth can be suppressed in a number of crops by herbicides; however, roots and shoots can grow into new plants.

<table>
<thead>
<tr>
<th>REGISTERED HERBICIDES</th>
<th>Barley</th>
<th>Field Corn</th>
<th>Flax</th>
<th>Oats</th>
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Photo: R: CC BY SA Image courtesy of lostinfog bit.ly/2fNEHRD
CONTROL TIPS BY WEED

CLEAVERS

TYPE:
- Winter annual
- Broadleaf

IDENTIFICATION:
The seedling has oblong cotyledons, a square stem with downward pointing hairs and true leaves in whorls. When mature, the stems are square with short, bristly, downward-pointing hooks growing on corners, and they are generally 24–47 inches long and trailing. The leaves are in whorls, in groups of 6–8. They are pointed at the tip, roughened and 1–3 inches long. The flowers are white, small and produced in axils of upper leaves.

CONTROL TIPS:
- Apply an effective herbicide tank mix at the 1–2 whorl stage. Past that point, cleavers will not be controlled consistently. Seed early or delay seeding until weeds emerge in cleaver-infested fields.
- Use herbicides and tillage after weed germination in the fall to control winter annual cleavers.
- Include cereals and annual and perennial forages in your rotation to reduce plant populations.

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1 For a listing of specific crops, refer to the product page.

Photo: L: CC BY SA 3.0 Image courtesy of Franz Xaver bit.ly/2fz8rTJ

Always read and follow pesticide label directions.
COMMON RAGWEED

TYPE:
- Annual
- Broadleaf

IDENTIFICATION:
Plants grow from 3 – 7 feet tall and branch frequently when population densities are low. It has a shallow taproot that produces a fibrous root system. Its hairy stems are green to light pinkish red. The leaves are up to 6 inches long and 4 inches across, and they have an opposite or alternate arrangement along the stem. The leaves are compound, deeply cut into a number of lobes and usually much wider at the base than the tip. Many of the upper stems terminate in one or more cylindrical flower spikes about ½ – 4 inches long. Flowers are initially green but turn yellowish green or brown as they mature and develop into seed clusters.

CONTROL TIPS:
- Control plants that emerge prior to seeding with tillage or pre-seed burn-off herbicide applications.
- Scout fields 2 weeks after the first post-emergence application. Control escapes or plants that emerge after the initial post-emergence application with a second application.
- Apply post-emergence herbicides before plants exceed 4 – 6 inches tall.

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<th>Field Corn</th>
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¹ With tank-mix partner. See label for details.

Photo: L: CC BY SA 3.0 Image courtesy of Brunga bit.ly/2ggpeKe
DANDELION

TYPE:
- Perennial
- Broadleaf

IDENTIFICATION:
The plants are almost stemless with deep, fleshy taproots. The leaves are in a rosette, 3–10 inches long, variable in shape and lobed. The flowers are bright yellow and are produced on a hollow, upright stem that is 12–18 inches in height.

CONTROL TIPS:
- Because dandelion has a simple taproot, tillage can be effective for control. Tillage must be deep enough to cut the root 4 inches below the crown.
- Herbicide and a glyphosate partner can be applied pre-seed or post-harvest to control established dandelions, but pre-harvest treatments are the most effective.
- While dandelion grows best in moist areas in full sun, it can survive some shade and dry conditions once established.

REGISTERED HERBICIDES

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¹Spring rosette only.

Always read and follow pesticide label directions.
GREEN FOXTAIL

TYPE:
· Annual
· Grassy

IDENTIFICATION:
Plants are 8 – 24 inches high. Look for green cylindrical heads that are 1 – 4 inches long and appear soft and bristly. Its leaf blades are hairless, rough and flat, with a pointed blade from 2 – 10 inches long. Stems are smooth and hairless. During seedling stage, look for fine, upward-pointing barbs on the leaf margins and surface. Flowers are densely grouped in a bristly, elongated panicle.

CONTROL TIPS:
· Scout fields frequently for this weed; under hot conditions, green foxtail can grow quickly and escape the herbicide application window.
· At approximately 34,000 seeds per plant, it’s a heavy seed producer; however, it’s a poor competitor. Healthy crop stand establishment due to proper fertilization and early seeding will help your crop outcompete this weed. Barley and canola compete well with green foxtail.
· Using slightly higher seeding rates will further reduce green foxtail’s competition. In addition, weed populations will generally decline with reduced or no-till systems.

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<thead>
<tr>
<th>REGISTERED HERBICIDES</th>
<th>Barley</th>
<th>Dry Beans</th>
<th>Canola</th>
<th>Chickpeas</th>
<th>Flax</th>
<th>Lentils</th>
<th>Oats</th>
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1 For a listing of specific crops, refer to the product page.

Photos: L: CC BY SA 3.0 Image courtesy of Kropsoq bit.ly/2gG9ILvb
R: CC BY SA 3.0 Image courtesy of Rusbak bit.ly/2fNP1rdbit.ly
LAMB’S QUARTERS

TYPE:
- Annual
- Broadleaf

IDENTIFICATION:
The stems are erect, 24 – 35 inches high, smooth and longitudinally grooved. They are often red or light green striped. The leaves are alternate, variable in shape, 1 – 3 inches long, stalked, coarsely toothed and covered with white mealy particles, especially on the lower surface. The flowers are small and green, and they are present in the leaf axils and at the top of the stems.

CONTROL TIPS:
- Late seeding can provide some control because the weed tends to germinate early in the season and its seedlings can be killed through soil preparation or with a burn-off herbicide prior to seeding.
- Plant to narrow rows and with higher seeding rates to increase crop competition.
- Because the plant’s seeds persist in the soil, removing escapes before seed set is useful for long-term management.

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<tr>
<th>REGISTERED HERBICIDES</th>
<th>Barley</th>
<th>Chickpeas</th>
<th>Field Corn</th>
<th>Dry Beans</th>
<th>Flax</th>
<th>Lentils</th>
<th>Oats</th>
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1 With tank-mix partner. See label for details.
2 For a listing of specific crops, refer to the product page.

Always read and follow pesticide label directions.
NARROW-LEAVED HAWK’S BEARD

TYPE:
- Winter annual
- Broadleaf

IDENTIFICATION:
The stems are erect, up to 3 feet tall, branched and leafy. Basal leaves are up to 6 inches long and 2 inches wide, with leaf margins varying from a few small teeth to deep lobes. Stem leaves are long and narrow and less than ½ inch wide. Flower heads are bright yellow.

CONTROL TIPS:
- The plant is a prolific seed producer, capable of generating up to 50,000 seeds; therefore, it’s important to focus on the prevention of seed production and the establishment of a competitive crop stand.
- Seed a competitive crop into a warm, moist seedbed as soon as possible.
- Depending on the life cycle (whether summer annual or winter annual), this weed can be controlled by fall- or spring-applied herbicides.

<table>
<thead>
<tr>
<th>REGISTERED HERBICIDES</th>
<th>Barley</th>
<th>Oats</th>
<th>Wheat</th>
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Photos:
L: CC BY SA 3.0 Image courtesy of Julcatai bit.ly/2gG3sMV
R: CC BY SA 3.0 Image courtesy of Christian Fischer bit.ly/2gG5Hqr
CONTROL TIPS BY WEED

REDROOT PIGWEED

TYPE:
· Annual
· Broadleaf

IDENTIFICATION:
The plants have a long, fleshy, reddish to pink taproot and stems that are erect, light green, branched, 23 – 35 inches high, rough and angular. The leaves are alternate, stalked, dull green, oval-shaped, rough and 3 – 4 inches long. Plants have numerous flowers that are small, green and crowded into dense, finger-like spikes.

CONTROL TIPS:
· Crops established before soils warm and warm weather sets in are very competitive with this weed.
· Watch growth stages carefully under hot conditions because the plant can quickly advance beyond the recommended stages for herbicide application.

REGISTERED HERBICIDES

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<th>HERBICIDES</th>
<th>Barley</th>
<th>Dry Beans</th>
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¹ For a listing of specific crops, refer to the product page.

 Always read and follow pesticide label directions.
CONTROL TIPS BY WEED

VOLUNTEER CANOLA

TYPE:
· Annual
· Broadleaf

IDENTIFICATION:
Both the Brassica napus and Brassica rapa varieties of volunteer canola have erect stems that grow up to 3 feet tall and are bluish green in colour. B. napus leaves are dark green, smooth, hairless and sessile, while B. rapa leaves are lighter green, clasping and hairy on the underside the petiole. Flowers are pale yellow, small and appear on the raceme.

CONTROL TIPS:
· The vast majority of seed in the canola seed bank is eliminated in the first 2 years after canola is grown, so growing at least 1 and preferably 2 or 3 crops between each canola crop can greatly reduce the volunteer population.
· Scout rotation fields for volunteer canola that are not controlled by herbicide application. Early detection allows time for control before seed set.
· Apply herbicides early. Spraying volunteer canola at the 2 – 4 leaf stage is much more effective than at the 5 – 6 leaf stage.

REGISTERED HERBICIDES

| 2,4-D Ester 700 | • | • | • | • | • |
| BADGE® II | • | • | • | • | • |
| DAVAI™ 80 SL | • | • |
| ESTEEM™ | • | • |
| FORCEFIGHTER® M | • | • |
| HOTSHOT® + glyphosate | • | • | • | • |
| OUTSHINE® | • | • |
| PHANTOM® 240 SL (volunteer canola – non-Clearfield®) | •1 | • | • |
| PRIORITY® + glyphosate | • | • | • |
| RUSH® 24 | • | • |
| RUSH M® | • | • |
| SQUADRON® (volunteer non-triazine resistant canola) | •1 | • | • | • | • | • |
| THRASHER® II | • | • |
| TOPLINE® | • | • |

1 For a listing of specific crops, refer to the product page.

Photo: L: CC BY SA 4.0 Image courtesy of Judgefloro bit.ly/2gJDrNV

99
WILD BUCKWHEAT

TYPE:
- Annual
- Broadleaf

IDENTIFICATION:
The stems are slightly angular, 12 – 35 inches long, trailing on the ground or twining on other plants and freely branching at the base. The leaves are heart-shaped, pointed, ½ – 3 inches long, alternate and smooth. The flowers are greenish-white, small and appear in leaf axils or at the tips of branches.

CONTROL TIPS:
- When scouting, check moist, low-lying areas for patches of wild buckwheat.
- A pre-seed burn-off is recommended with no till systems.
- Scout fields early because this weed is most sensitive to herbicides during its initial growth stages.

REGISTERED HERBICIDES

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<th>Registered Herbicides</th>
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<th>Field Corn</th>
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1 For a listing of specific crops, refer to the product page.

Always read and follow pesticide label directions.
**WILD OATS**

**TYPE:**
- Annual
- Grassy

**IDENTIFICATION:**
Plants grow up to 5 feet tall with smooth, erect stems. The head is an open panicle with spikelets typically containing 2 – 3 florets (and occasionally up to 7). The panicle may contain up to 250 seeds, ranging from black, brown, grey, yellow to white. At the seedling stage, the plant has a counter-clockwise leaf twist and no auricles, with hairs on the leaf margins.

**CONTROL TIPS:**
- When scouting, check low spots in fields for wild oats, and an eye out for herbicide-resistant patches.
- Summerfallow increases the number of seeds that break dormancy, and weeds will emerge after each tillage operation. Fall tillage also helps reduce wild oat populations.

### REGISTERED HERBICIDES

<table>
<thead>
<tr>
<th>Herbicide</th>
<th>Barley</th>
<th>Dry Beans</th>
<th>Canola</th>
<th>Chickpeas</th>
<th>Flax</th>
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<th>Oats</th>
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1 For a listing of specific crops, refer to the product page.

Photo: L: CC BY SA 3.0 Image courtesy of Eggmoon bit.ly/2fNMQWb
CONTROL TIPS BY INSECT

APHID ........................................................... 106
ARMYWORM .................................................. 107
BERTHA ARMYWORM ................................. 108
CABBAGE SEEDPOD WEEVIL ...................... 109
COLORADO POTATO BEETLE ...................... 110
CORN EARWORM ........................................... 111
CUTWORM .................................................... 112
DIAMONDBACK MOTH ................................. 113
EUROPEAN CORN BORER ............................ 114
FLEA BEETLE .............................................. 115
GRASSHOPPER ........................................... 116
LYGUS BUG ............................................... 117
WHEAT MIDGE ............................................ 118
WIREWORM ............................................... 119

⚠ Always read and follow pesticide label directions.
KNOW YOUR OPPONENT
## Control Tips by Insect

### At a Glance

<table>
<thead>
<tr>
<th>Registered Insecticides</th>
<th>Aphid</th>
<th>Armyworm</th>
<th>Bertha Armyworm</th>
<th>Cabbage Seedpod Weevil</th>
<th>Colorado Potato Beetle</th>
<th>Corn Earworm</th>
<th>Cutworm</th>
<th>Diamondback Moth</th>
<th>European Corn Borer</th>
<th>Flea Beetle</th>
<th>Grasshopper</th>
<th>Lygus Bug</th>
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IDENTIFICATION:
There are many different types of aphid. Contact provincial ag officials for assistance with identification.

CONTROL TIPS:
- Controlling volunteer wheat 2 – 3 weeks before seeding may help reduce aphid populations in the vicinity of cereal crops.
- Early seeding can help to avoid infestations because the crops mature before the pest levels exceed economic thresholds. As plants mature, they are less attractive to aphids.

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<thead>
<tr>
<th>REGISTERED INSECTICIDES</th>
<th>Barley</th>
<th>Chickpeas</th>
<th>Dry Beans</th>
<th>Lentils</th>
<th>Oats</th>
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1 For a listing of specific crops, refer to the product page.
ARMYWORM

IDENTIFICATION:
There are a number of different types of armyworms. Contact provincial ag officials for assistance with identification.

CONTROL TIPS:
• Treatment may be confined to infested areas. If armyworms are migrating from adjacent cereal or corn fields, spraying an insecticide along the field border may be sufficient.
• Insecticides should be applied in the evening since armyworms prefer to feed at night.

REGISTERED INSECTICIDES

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<tr>
<th>Insecticide</th>
<th>Barley</th>
<th>Canola</th>
<th>Corn</th>
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Photo: Public Domain
IDENTIFICATION:
Eggs are the size of a pinhead and white in colour when laid. The eggs darken as the larvae develop inside. Young larvae are ¼ inch in size and pale green in colour. Older larvae may remain pale green, but most are brown to black with yellow stripes running the length of the body. Full-grown larvae are 1.5 inches long and resemble a black caterpillar.

CONTROL TIPS:
- Allow beneficial insects to prey on bertha armyworms by only spraying when economic thresholds are reached.
- Apply insecticide early in the morning or late evening when the larvae are actively feeding.
- Fall cultivation can kill many bertha armyworm pupae by mechanical damage.

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<th>REGISTERED INSECTICIDES</th>
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<th>Wheat</th>
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Photos:
L: Image courtesy of Canola Council of Canada
R: CC BY 3.0 “Mamestra Configurata” Image courtesy of David Gent, USDA bit.ly/2gpEB0v

Always read and follow pesticide label directions.
CONTROL TIPS BY INSECT

CABBAGE SEEDPOD WEEVIL

IDENTIFICATION:
The adults are ash-grey to black in colour and less than ¼ inch in length. Like all weevils, it has a snout that resembles an elephant’s trunk. The larvae are white, C-shaped and legless and can be found only within the pod.

CONTROL TIPS:
- Control cruciferous weeds (i.e. mustard, stinkweed) and volunteer canola plants that can act as hosts.
- The earliest flowering canola crops tend to have the highest risk from cabbage seedpod weevil and should be monitored very closely.
- Ensure that adults are actively feeding in the field prior to spraying.

REGISTERED INSECTICIDES

Canola

SILENCER® 120 EC •

Photos:
L: CC BY 2.0 “Ceutorhynchus obstrictus” Image courtesy of S. Rae bit.ly/2fJYMIf
R: CC BY 2.0 “Cabbage Seedpod Weevil – Ceutorhynchus obstrictus” Image courtesy of Line Sabroe bit.ly/2gzF0jW
IDENTIFICATION:
Larvae are brick red in colour with a black head and legs. They become orange and develop two rows of black dots on the sides of their bodies when they are near maturity. Full-grown larvae are about a ½ inch long. The adult Colorado potato beetle is yellowish orange with 10 black stripes along the length of its yellow wing covers (5 black stripes on each wing cover). It has yellow with black markings on its head and thorax, and it is about a ½ inch long.

CONTROL TIPS:
- Look for orange-coloured eggs or newly-hatched larvae on the undersides of leaves. Older, bright orange larvae will be more visible near the top of the plant and on the upper surface of the leaves.
- Time the first treatment when 15 – 30% of the first egg masses have begun to hatch.

REGISTERED INSECTICIDES

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<th>Insecticide</th>
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<td>SILENCER® 120 EC</td>
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Photos:
L: Public Domain
R: CC BY SA 2.5 Image courtesy of Stephan Czuratis bit.ly/2gqMd5r

Always read and follow pesticide label directions.
IDENTIFICATION:
Eggs are dome-shaped and about ½ inch in diameter. Larvae vary in colour from bright green to pink, brown or black with a lighter underside. They have alternating light and dark bands along the body. The head is usually yellow but can also be brown to orange; legs are black and the skin is coarse with many thorn-like projections. Mature larvae reach a length of 1.5 – 2 inches.

CONTROL TIPS:
· Earlier-seeded corn may have a chance to escape the peak infestations of corn earworm if it silks early enough.
· Fields should be inspected for the presence of adults and larvae when the corn crop is flowering.
IDENTIFICATION:
There are many different types of cutworm. Contact provincial ag officials for assistance with identification.

CONTROL TIPS:
- The key to minimizing damage is early detection. Scout fields and inspect seedlings every 3–4 days during the first few weeks of crop development, looking for bare areas, holes or notches in foliage and plants that are wilting, toppling over or completely cut off.
- Foliar insecticide treatment is most effective when applied to the soil soon after cutworms have hatched.
- Cutworms are most active in the evening, so insecticides applied at night or in the evening are more effective.

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<thead>
<tr>
<th>REGISTERED INSECTICIDES</th>
<th>Barley</th>
<th>Canola</th>
<th>Chickpeas</th>
<th>Field Corn</th>
<th>Dry Beans</th>
<th>Flax</th>
<th>Lentils</th>
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¹ For a listing of specific crops, refer to the product page.
IDENTIFICATION:
Eggs are pale green or yellow in colour and very small and disc-shaped. Larvae are light green to yellowish-green with a brown head and are approximately 1/4 inch long. The adult is a small, light greyish-brown moth about 1/2 inch long. It is best identified by the white, diamond-shaped markings along its back that are visible when the wings are at rest.

CONTROL TIPS:
· Eliminate volunteer canola and cruciferous weeds that act as the initial food source for the spring generation.
· The adult diamondback moth population can be monitored using pheromone traps to warn of a possible infestation.
· Beat the plants to dislodge the larvae when monitoring for this pest.

REGISTERED INSECTICIDES

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<th>Canola Insecticide</th>
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Photos:
L: CC BY SA 2.5 “Plutella xylostella” Image courtesy of Olaf Leillinger bit.ly/2fYrNh9
R: Image courtesy of Canola Council of Canada
IDENTIFICATION:
Egg masses are flat, creamy white and layered over each other, making the egg mass appear similar to fish scales. Mature larvae are creamy white to pale grey with 2 small spots per abdominal segment. The spots are approximately 1 inch in length and have a black head. Adults are light-brown moths, approximately 1 inch long, with dark wavy lines running across each forewing. Male moths are darker and smaller than females.

CONTROL TIPS:
- Shredding debris after harvest is an effective way to destroy borers overwintering in stalks and stubble. Leave as little stalk as possible.
- Adult European corn borers hide in grass and weeds during the day, so a good herbicide program will keep many moths out of the fields. Keep weedy field edges and fencerows clipped to avoid harbouring the moths.
- Corn should be scouted for holes in the leaves during July. Use an economic threshold calculator to determine if you need to spray.

REGISTERED INSECTICIDES

<table>
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<tr>
<th>REGISTRANT INSECTICIDES</th>
<th>Field Corn</th>
<th>Dry Beans</th>
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1 For a listing of specific crops, refer to the product page.

Photo: CC BY 2.0 “European Corn Borer” Image courtesy of NY State IPM Program, Cornell University, bit.ly/2fYw6cr

Always read and follow pesticide label directions.
IDENTIFICATION:
There are a number of different types of flea beetle. Contact provincial ag officials for assistance with identification.

CONTROL TIPS:
- Increasing seeding rates can help reduce the impact of flea beetle damage.
- Scout fields daily for signs of flea beetle feeding. Be especially vigilant when temperatures are above 14 C.
- Be aware that flea beetles can move long distances, especially under hot and windy conditions. Even if there was no previous canola in the immediate area, flea beetles can still become a problem.

REGISTERED INSECTICIDES

<table>
<thead>
<tr>
<th>Registered Insecticides</th>
<th>Canola</th>
<th>Corn</th>
<th>Potatoes</th>
</tr>
</thead>
<tbody>
<tr>
<td>PYRINEX® 480 EC</td>
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<tr>
<td>SILENCER® 120 EC</td>
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<tr>
<td>SOMBRERO® 600 FS</td>
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</tr>
</tbody>
</table>

Photos:
L: Image courtesy of Canola Council of Canada
R: Image courtesy of Canola Council of Canada
IDENTIFICATION:
There are a number of different types of grasshopper. Contact provincial ag officials for assistance with identification.

CONTROL TIPS:
- Crops should be seeded as early as possible. Older plants that are growing vigorously can withstand more grasshopper feeding than younger plants, which are not well established. Although early seeding will not prevent crop damage entirely, it will reduce the amount of damage and allow more time to obtain and apply insecticides.
- Look for grasshoppers after 2 – 3 years of hot, dry summers and dry falls, as this can often precede an outbreak. Dry weather increases the likelihood of egg and larva survival and development.
- Both nymphs and adults can be very damaging. Begin scouting along field margins in June and continue until the end of August.

REGISTERED INSECTICIDES

<table>
<thead>
<tr>
<th></th>
<th>Barley</th>
<th>Canola</th>
<th>Chickpeas</th>
<th>Flax</th>
<th>Lentils</th>
<th>Oats</th>
<th>Peas</th>
<th>Soybeans</th>
<th>Wheat</th>
<th>Durum Wheat</th>
<th>Winter Wheat</th>
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</thead>
<tbody>
<tr>
<td>PYRINEX® 480 EC</td>
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<td>SILENCER® 120 EC</td>
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</table>

Always read and follow pesticide label directions.
IDENTIFICATION:
Adult lygus bugs are about ⅛ inch long. They have relatively long antennae and legs. They vary from pale green to reddish brown to black. They range from fairly uniform in colour to a mottled appearance. Lygus bugs have a distinctive triangle or V-shaped marking in the upper centre of their backs and membranous wing tips. Immature lygus bugs (nymphs) are approximately ¼ inch long and are light green and wingless.

CONTROL TIPS:
- Monitor fields closely, especially in areas where overwintering populations may be high. Since the oldest bugs are responsible for the most damage, it’s important to not only count numbers but also determine what part of the life cycle the majority are in.
- Keep an eye on fields adjacent to alfalfa fields, where overwintering lygus bug populations may be high.
- The best method for scouting for lygus bugs in canola is sweep net monitoring, which should be done under the right weather conditions (sunny, low wind and temperatures above 15 C).

REGISTERED INSECTICIDES

<table>
<thead>
<tr>
<th>Registered Insecticides</th>
<th>Canola</th>
<th>Dry Beans</th>
<th>Lentils</th>
<th>Soybeans</th>
</tr>
</thead>
<tbody>
<tr>
<td>PYRINEX® 480 EC</td>
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<td></td>
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<tr>
<td>SILENCER® 120 EC</td>
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<td>●</td>
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</tbody>
</table>

Photos:
L: CC BY 2.0 Image courtesy of Katja Schulz bit.ly/2gpOM5i
R: Public Domain
IDENTIFICATION:
The adult midge is a very small, fragile, orange-coloured fly about half the size of a mosquito and approximately ⅛ inch long. Two black eyes cover much of its head. The midge has three pairs of legs that are long relative to its body size. Its wings are oval-shaped, transparent and fringed with fine hairs. Larvae are orange and grow up to ⅛ inch in length.

CONTROL TIPS:
· Avoid continuous wheat cropping because it favours the buildup of midge populations.
· Late evening or early morning are the best times to control the adults, as the females are most active in cool nighttime temperatures (but above 15 C) and when the wind is less than 10 km/hr.
· Good coverage is critical for control, so make sure the water volume is adequate when spraying. Check the label for recommended water volumes.

REGISTERED INSECTICIDES

<table>
<thead>
<tr>
<th>PYRINEX® 480 EC</th>
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</thead>
<tbody>
<tr>
<td>Wheat</td>
</tr>
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</table>

Photos:
L: CC BY SA 2.0 “Sitodiplosis mosellana” Image courtesy of Gilles San Martin bit.ly/2gQ0Yjm
R: CC BY SA 4.0 Image courtesy of srbernard bit.ly/2fYxITt

Always read and follow pesticide label directions.
IDENTIFICATION:
Larvae are slender with hard, smooth jointed bodies. They are usually reddish-brown, but can also be yellow or white. There are 3 pairs of legs behind the head, and you will notice a notch at the tail segment. Full-grown larvae range from ½ – 1½ inches in length.

CONTROL TIPS:
- Seed treatments like SOMBRERO® 600 FS protect seedlings when they are most vulnerable. It is also important for good seed bed preparation for quick, even germination.
- Early seeding, but not too early where cool temperatures could delay emergence.
- Recommended seeding rates to achieve optimal plant populations per square foot.
- Optimal seeding depth, seeds too deep will struggle to get out of the ground thus weakening them and leaving them vulnerable to wireworms.

REGISTERED INSECTICIDES

<table>
<thead>
<tr>
<th></th>
<th>Barley</th>
<th>Corn</th>
<th>Oats</th>
<th>Soybeans</th>
<th>Wheat</th>
<th>Durum Wheat</th>
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<tbody>
<tr>
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Photo: CC BY 2.0 Image courtesy of Katja Schulz bit.ly/2g6ZBlV
# Control Tips by Disease

<table>
<thead>
<tr>
<th>Disease</th>
<th>Page</th>
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</thead>
<tbody>
<tr>
<td>Alternaria Black Spot</td>
<td>124</td>
</tr>
<tr>
<td>Anthracnose</td>
<td>125</td>
</tr>
<tr>
<td>Ascochyta</td>
<td>126</td>
</tr>
<tr>
<td>Blackleg</td>
<td>127</td>
</tr>
<tr>
<td>Eyespot</td>
<td>128</td>
</tr>
<tr>
<td>Frogeye Leaf Spot</td>
<td>129</td>
</tr>
<tr>
<td>Mycosphaerella Blight</td>
<td>130</td>
</tr>
<tr>
<td>Northern Corn Leaf Blight</td>
<td>131</td>
</tr>
<tr>
<td>Powdery MildeW</td>
<td>132</td>
</tr>
<tr>
<td>Sclerotinia Stem Rot/White Mould</td>
<td>133</td>
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<tr>
<td>Septoria Leaf Spot</td>
<td>134</td>
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<tr>
<td>Stripe Rust</td>
<td>135</td>
</tr>
<tr>
<td>Tan Spot</td>
<td>136</td>
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</table>

Always read and follow pesticide label directions.
RECOGNIZE THE SIGNS
## REGISTERED FUNGICIDES

<table>
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<tr>
<th>Disease</th>
<th>BUMPER®</th>
<th>OVERALL&lt;sup&gt;®&lt;/sup&gt; 240 SC</th>
<th>TOPNOTCH&lt;sup&gt;™&lt;/sup&gt;</th>
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<td>Alternaria Black Spot</td>
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<tr>
<td>Anthracnose</td>
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<td>Ascochyta</td>
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<td>Blackleg</td>
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<td>Northern Corn Leaf Blight</td>
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<td>Septoria Leaf Spot</td>
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<td>Stripe Rust</td>
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<tr>
<td>Tan Spot</td>
<td>✔️</td>
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</table>
IDENTIFICATION:
Black spots occur on leaves, stems and pods. As the spots enlarge, they may develop a greyish to white centre and may appear like a target. Spots vary from grey to purplish to black and are sometimes surrounded by a yellow zone.

CONTROL TIPS:
- An aerial fungicide application applied at 95% flowering provides economical control of this disease.
- Timely swathing will reduce damage when alterneria black spot is present in a crop.
- Not growing cruciferous crops for several years is recommended, but it may not be totally effective because of the widespread occurrence of the pathogens of this disease.

REGISTERED FUNGICIDES

<table>
<thead>
<tr>
<th>CANOLA</th>
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<tr>
<td>OVERALL® 240 SC</td>
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</table>
IDENTIFICATION:
Symptoms include irregular brown spots on stems and pods, and infected areas may develop tiny black spines (setae), which can be seen with a 10X hand lens. Infected leaves may develop brown veins and curl up.

CONTROL TIPS:
- Plant disease-free, treated seed, and follow a diverse crop rotation of at least 3 years between lentils and field peas.
- To treat crop infected prior to pod development, use a recommended foliar fungicide.

REGISTERED FUNGICIDES

<table>
<thead>
<tr>
<th></th>
<th>Dry Beans</th>
<th>Field Peas</th>
<th>Lentils</th>
<th>Soybeans</th>
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<tbody>
<tr>
<td>TOPNOTCH™</td>
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</tbody>
</table>

Photos:
L: CC BY 2.0 Image courtesy of Scot Nelson bit.ly/2yjypCi
R: Public Domain
IDENTIFICATION:
Ascochyta appears as light-grey or tan-coloured spots and lesions on leaves, pods and stems of infected pulses. On leaves, spots are usually white or purplish, with indefinite margins and round or irregular shapes. On stems, lesions are long and purple, and develop tiny, black pepper-like spots in the centre.

CONTROL TIPS:
- Plant certified, treated, disease-free seed, preferably when soil temperatures are warm, to help reduce seed-borne infection.
- Follow a 3-year rotation, and plant diverse crops in the 2-year rest period (e.g. cereal, oilseed and other pulses). Use a 4-year rotation for fava beans and other pulse crop that have residue resistant to breakdown.
- Foliar fungicides applied during the early flowering stage can help reduce losses if symptoms are widespread.

<table>
<thead>
<tr>
<th>REGISTERED FUNGICIDES</th>
<th>Dry Beans</th>
<th>Field Peas</th>
<th>Lentils</th>
<th>Soybeans</th>
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<tr>
<td>TOPNOTCH™</td>
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</table>

Photos:
L: CC BY SA 2.5 Image courtesy of James Lindsey bit.ly/2yjOB6N
R: CC BY 3.0 Image courtesy of Clemson University bit.ly/2xBbuPq

Always read and follow pesticide label directions.
IDENTIFICATION:
The first symptoms appear on the cotyledons or leaves as round-to-irregular (½ – 1 inch) white to yellow-brown lesions that contain numerous small black dots (pycnidia). As the season progresses, the fungus may spread to the stem and crown of the plant, producing a canker that can girdle the stem. Severely infected plants ripen prematurely and have a black to grey discolouration at the base of the stem or crown.

CONTROL TIPS:
· Maintain a good crop rotation that has at least 3 years between canola crops.
· Plant less susceptible varieties of canola. Most varieties are rated on a 1–5 (resistant to highly susceptible) scale.
· Avoid confusing blackleg leaf lesions (which are speckled) with downy mildew lesions (which are not).

REGISTERED FUNGICIDES

<table>
<thead>
<tr>
<th>Canola</th>
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<tr>
<td>BUMPER®</td>
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<tr>
<td>TOPNOTCH™</td>
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</tbody>
</table>

Photos: Images courtesy of Canola Council of Canada
IDENTIFICATION:
The disease produces characteristic round or oval spots, less than ¼ inch wide with a tan/brown centre and a brown or purple margin. A translucent yellow halo forms around the margin, and when held to the sun, the lesions resemble an eye. Leaf blighting may occur when these lesions join, killing large portions of leaf tissue.

CONTROL TIPS:
- Clean plowing of crop debris can help to reduce disease severity.
- Select resistant hybrids when the disease has previously been severe in your area.
- Rotate corn with other non-host crops. Usually one year out of corn will reduce the inoculum adequately to grow another corn crop, but it may take longer under reduced tillage conditions.

Photos:
L: CC BY 3.0 US Image courtesy of Mary Burrows, Montana State University bit.ly/2fzLT5f

Always read and follow pesticide label directions.
IDENTIFICATION:
Lesions are less than ¼ inch in diameter with a tan centre and a dark red/brown border. Older lesions coalesce, and leaves may appear ragged or with a slight slit in the centre of the lesion.

CONTROL TIPS:
- Use resistant soybean varieties to reduce disease severity.
- Rotate soybean crops with non-hosts, such as corn or wheat.

Photos:
L: CC BY 2.0 Image courtesy of Scot Nelson bit.ly/2gGoXgC
R: Public Domain
IDENTIFICATION:
Early symptoms are small, purple lesions with indefinite margins. Lesions on
the stem are also purple, and may extend ¾ inch above and below the point
of leaf attachment. Older lesions on leaves coalesce, and leaves may dry up
but remain attached. Other symptoms include small, purple lesions on pods,
shrunken pods or seeds and fallen blossoms.

CONTROL TIPS:
· Use disease-free seed, and treat seed with a recommended fungicide
to prevent introduction to new areas.
· Infected crop residue should be cultivated under immediately
following harvest.
· Follow a 5-year crop rotation, and plant peas as far away as possible
from previously infected fields.

REGISTERED FUNGICIDES

<table>
<thead>
<tr>
<th></th>
<th>Dry Beans</th>
<th>Field Peas</th>
<th>Lentils</th>
<th>Soybeans</th>
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<tr>
<td>TOPNOTCH™</td>
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Photos:
L: CC BY SA 2.5 Image courtesy of James Lindsey bit.ly/2gdEqdx
R: Public Domain

Always read and follow pesticide label directions.
IDENTIFICATION:
The disease appears as long, elliptical, 1 – 6 inches, greyish-green or tan streaks. Lesions most often begin on the lower leaves. As the disease develops, individual lesions may join, forming large blighted areas. In some cases, the entire leaf may become blighted or “burned.”

CONTROL TIPS:
- Good crop rotation is key to managing this disease.
- Use tillage to reduce in-field inoculum.
- In reduced tillage systems, use a diverse crop rotation and choose resistant corn hybrids.

REGISTERED FUNGICIDES

<table>
<thead>
<tr>
<th>Field Corn</th>
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</thead>
<tbody>
<tr>
<td>BUMPER® (seed corn)</td>
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</tbody>
</table>
**POWDERY MILDEW**

**IDENTIFICATION:**
The characteristic symptom of the disease is the production of a fluffy-white to grey fungal growth that often begins on the lower leaves and can move rapidly up the plant on leaves, sheaths, stems and heads under favourable conditions. Leaves develop elongated yellow streaks or areas that may turn brown and die prematurely. Severely diseased plants may lodge or result in poor grain fill. Older, light-grey areas of fungal growth often have small black spots.

**CONTROL TIPS:**
- Reduce disease risk by removing crop residue through tillage and using a crop rotation that limits wheat or other susceptible cereals from being seeded in the field for a minimum of 2 years.
- Thresholds for fungicide applications differ depending on the age of the crop. For example, early-season powdery mildew control is warranted when 5–10% of the lower leaves are infected, and taking action may limit later infection.
- Excess nitrogen levels can contribute to the development of mildew.

<table>
<thead>
<tr>
<th>REGISTERED FUNGICIDES</th>
<th>Barley</th>
<th>Dry Beans</th>
<th>Lentils</th>
<th>Peas</th>
<th>Soybeans</th>
<th>Wheat</th>
<th>Durum Wheat</th>
<th>Winter Wheat</th>
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<tr>
<td>BUMPER®</td>
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<td>TOPNOTCH™</td>
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Photos:
L: CC BY SA 3.0 Image courtesy of Rude bit.ly/2g3kPaA
R: CC BY 3.0 Image courtesy of Clemson University bit.ly/2gT69Pn

Always read and follow pesticide label directions.
IDENTIFICATION:
Sclerotinia stem rot is characterized by bleached stem lesions and hard black bodies (sclerotia) of white mould fungus inside the stems. Infections that start on dead blossoms spread to adjacent tissues, resulting in dead branches or dead plants. The rotted stems usually have a bleached appearance.

CONTROL TIPS:
- Use clean, certified seed and crop rotations of at least 4 years. Include non-host crops such as corn, wheat, barley or oats in fields with a history of sclerotinia.
- Row spacing has been shown to influence this disease in soybeans, with narrow rows resulting in more sclerotinia stem rot. Avoid seeding soybeans in narrow rows in fields with a history of this disease.
- Keep fields free of broadleaf weeds since many are alternate hosts for this disease.

<table>
<thead>
<tr>
<th>REGISTERED FUNGICIDES</th>
<th>Canola</th>
<th>Dry Beans</th>
<th>Lentils</th>
<th>Peas</th>
<th>Soybeans</th>
</tr>
</thead>
<tbody>
<tr>
<td>OVERALL® 240 SC</td>
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</table>

Photos: Images courtesy of Canola Council of Canada
IDENTIFICATION:
Initial infections from Septoria leaf spot appear as small, light green-to-yellow spots between the veins of the lower leaves. These spots elongate to form irregular reddish-brown lesions. Embedded in these lesions are small, dark-brown to black fungal bodies (pycnidia) that can be seen with the use of a hand lens.

CONTROL TIPS:
- Ploughing down cereal residues and removing volunteer wheat will reduce the survivability of Septoria fungi.
- Balanced fertility programs are important since high rates of fertilizer and early seeding may result in dense foliage going into the winter, which can increase disease levels. Septoria leaf spot may develop under snow cover in winter wheat.
- Foliar-applied fungicides will reduce losses, but crops should be monitored closely around flag leaf emergence and sprayed when only small spots are present on upper leaves.

REGISTERED FUNGICIDES

<table>
<thead>
<tr>
<th>REGISTERED FUNGICIDES</th>
<th>Barley</th>
<th>Oats</th>
<th>Wheat</th>
<th>Durum Wheat</th>
<th>Winter Wheat</th>
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<tbody>
<tr>
<td>BUMPER®</td>
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¹ Also controls Septoria glume blotch.

Photos:
L: CC BY 2.0 Image courtesy of Bayer CropScience bit.ly/2fJ72VR
R: CC BY 2.0 Image courtesy of Clemson University bit.ly/2gTazpq

Always read and follow pesticide label directions.
IDENTIFICATION:
Stripe rust is characterized by small, round, blister-like lesions that are yellow-orange in colour and merge to form stripes. It commonly affects leaf blades and can occasionally be observed on heads when the disease is very severe. Infection of the leaf sheaths or stems is rare.

CONTROL TIPS:
- Early seeding of spring crops will allow them to ripen before major amounts of stripe rust inoculum typically become available in mid-summer.
- Once stripe rust is detected, a fungicide application is the only method to control the spread of the disease.
- Rotating out of cereal crops will help to break down the green bridge effect, reducing disease development considerably.

REGISTERED FUNGICIDES

<table>
<thead>
<tr>
<th>Registered Fungicides</th>
<th>Barley</th>
<th>Wheat</th>
<th>Durum Wheat</th>
<th>Winter Wheat</th>
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<tbody>
<tr>
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<td>TOPNOTCH™</td>
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Photos:
L: Public Domain
R: CC BY SA 3.0 Image courtesy of Rasbak bit.ly/2fOd9vj
IDENTIFICATION:
Tan spot begins on the lower leaves as small, tan-brown flecks that enlarge into oval- or lens-shaped tan lesions, $\frac{1}{4} - \frac{5}{8}$ inch wide with a small, dark brown centre. A bright yellow zone or halo surrounds the tan lesion.

CONTROL TIPS:
- Allow several years between susceptible crops.
- Foliar-applied fungicides will reduce losses, but crops should be monitored closely around flag leaf emergence and sprayed when only small spots are present on upper leaves.
- Burying crop residue may reduce disease severity.

<table>
<thead>
<tr>
<th>REGISTERED FUNGICIDES</th>
<th>Barley</th>
<th>Wheat</th>
<th>Durum Wheat</th>
<th>Winter Wheat</th>
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<td>BUMPER®</td>
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<td>TOPNOTCH™</td>
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Always read and follow pesticide label directions.
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<tr>
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<th>Metric Unit</th>
<th>Multiply by</th>
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<td>inch</td>
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</tr>
<tr>
<td><strong>AREA</strong></td>
<td>square metre (m²)</td>
<td>1.2, 2.5</td>
<td>square yard</td>
<td>0.84, 0.4</td>
</tr>
<tr>
<td>hectare (ha)</td>
<td></td>
<td></td>
<td>acres</td>
<td></td>
</tr>
<tr>
<td><strong>VOLUME</strong></td>
<td>litre (L)</td>
<td>0.22</td>
<td>Imperial gallon</td>
<td>4.55</td>
</tr>
<tr>
<td></td>
<td>litre (L)</td>
<td>0.27</td>
<td>U.S. gallon</td>
<td>3.79</td>
</tr>
<tr>
<td><strong>PRESSURE</strong></td>
<td>kilopascals (kPa)</td>
<td>0.14</td>
<td>psi</td>
<td>6.9</td>
</tr>
<tr>
<td><strong>WEIGHT</strong></td>
<td>gram (g)</td>
<td>0.04, 2.2</td>
<td>oz</td>
<td>28.35, 0.45</td>
</tr>
<tr>
<td>kilogram (kg)</td>
<td></td>
<td></td>
<td>lb</td>
<td></td>
</tr>
<tr>
<td><strong>AGRICULTURAL</strong></td>
<td>litres per hectare (L/ha)</td>
<td>0.09</td>
<td>Imperial gallons per acre</td>
<td>11.23</td>
</tr>
<tr>
<td></td>
<td>litres per hectare (L/ha)</td>
<td>0.11</td>
<td>U.S. gallons per acre</td>
<td>9.35</td>
</tr>
<tr>
<td></td>
<td>litres per hectare (L/ha)</td>
<td>0.36</td>
<td>quarts per acre</td>
<td>2.81</td>
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<tr>
<td></td>
<td>litres per hectare (L/ha)</td>
<td>0.71</td>
<td>pints per acre</td>
<td>1.41</td>
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<tr>
<td></td>
<td>millilitres per hectare (ml/ha)</td>
<td>0.015</td>
<td>Imperial fl. oz per acre</td>
<td>70.17</td>
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<tr>
<td></td>
<td>millilitres per hectare (ml/ha)</td>
<td>0.014</td>
<td>U.S. fl. oz per acre</td>
<td>73.05</td>
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<tr>
<td></td>
<td>kilograms per hectare (kg/ha)</td>
<td>0.89</td>
<td>lb per acre</td>
<td>1.12</td>
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<tr>
<td></td>
<td>grams per hectare (g/ha)</td>
<td>0.014</td>
<td>oz per acre</td>
<td>0.70</td>
</tr>
</tbody>
</table>

**EXAMPLE:** To convert centimetres to inches, multiply by 0.39; conversely, to convert inches to centimetres, multiply by 2.54.
# Phenoxy Use Rates

Recommended rates have been rounded to whole numbers.

<table>
<thead>
<tr>
<th>Formulation (ml per acre)</th>
<th>Acres Treated per 10 L jug</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>300</td>
</tr>
<tr>
<td>Active Ounces per Acre</td>
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</tr>
<tr>
<td>1</td>
<td>94</td>
</tr>
<tr>
<td>2</td>
<td>187</td>
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<tr>
<td>3</td>
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</tr>
<tr>
<td>8</td>
<td>749</td>
</tr>
<tr>
<td>9</td>
<td>842</td>
</tr>
<tr>
<td>10</td>
<td>936</td>
</tr>
</tbody>
</table>
CONTACT INFO

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Canadian Special Crops Association
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specialcrops.mb.ca
Some herbicide labels list a specific mixing sequence. In absence of specific directions, a recommended sequence for adding pesticide formulations to a tank partially filled with water is the **W-A-L-E-S method**. Each ingredient must be uniformly mixed before adding the next component. For example, a soluble powder must be completely dissolved before adding the next component. Adjuvants are added in the same sequence as pesticides: ammonium sulfate is a soluble powder, oil adjuvants are emulsifiable concentrates and most surfactants are solutions. Within each group, usually add the pesticide before the adjuvant. For example, add a soluble-powder pesticide before ammonium sulfate.

Know the benefits and risks of tank mixing before you make an application. In some cases, compatibility of two or more chemicals is based on the order in which they are added to the tank mix.

Tank mixing can lead to a variety of mishaps if not done correctly. Being aware of the benefits and risks while following the proper guidelines is critical to ensuring the success of any tank mix procedure and application.

This information is presented in good faith for your reference. Always read and follow product label directions before tank mixing.
WHAT DOES ALTERNATIVE MEAN TO US?

It means the freedom to make your own choice. At ADAMA, we choose to simplify the lives of farmers and retailers — because agriculture is complicated enough. That’s why we’ve made this guide easy to use, with straightforward info on our products and helpful tips on the pests they take down. Use it to make your own crop protection choices.

If you’re ready to see how simple success can be, we’ve got your alternative.
It’s that simple.