Vegetation Management Guide

The Professional’s Choice for Stewardship, Support and Innovation.
As the leader in vegetation management Corteva Agriscience™ is committed to delivering effective solutions to professional vegetation managers for use on utility, roadside, rail and bareground rights-of-way.

Our dedicated industrial vegetation management specialists are available to support your vegetation management programs and ensure that our product solutions are delivering industry leading results.

As a long-standing industry supporter, we take great pride in continuing to be your trusted partner every step of the way.

TABLE OF CONTENTS

HERBICIDE PRODUCTS
WEED CONTROL
ClearView™ P. 2
Lontrel™ XC P. 4
Milestone™ P. 5
OcTTain™ XL P. 7
Sightline™ P. 9
Tordon™ 22K P. 12

BRUSH CONTROL
Aspect™ P. 13
ClearView™ Brush P. 15
Garlon™ RTU P. 18
Garlon™ XRT P. 21

NON-SELECTIVE CONTROL
Torpedo® EZ P. 23
LongRun™ P. 25
VP480 P. 27

ADJUVANT
Gateway™ P. 28

PRODUCT SOLUTIONS TO FIT YOUR NEEDS P. 29

STEWARDSHIP AND SUSTAINABLE VEGETATION MANAGEMENT P. 33

WATER QUALITY P. 37
Corteva Agriscience: Total Portfolio Solutions

Whether it’s weeds, brush, trees or non-selective control you are looking to achieve, Corteva Agriscience has a total portfolio solution to fit your needs.
ClearView™ herbicide is the industry standard selective herbicide for the professional vegetation manager, delivering consistent, high-performing, extended broadleaf weed and shrub control with flexible rates.

WHY USE CLEARVIEW?

• **High performing and consistent.**
  – Extended, selective control of broadleaf weeds on Canadian rights-of-way.
  – Controls 65 weed and brush species including Canada thistle, wild parsnip, baby’s breath, knapweed, and hawkweed.

• **Flexible.**
  – Multiple labeled rates for flexibility in application.
  – Use alone or in combination with other products for background control.
  – Formulated as a convenient water-dispersible granule, with low use rates.

• **Peace of mind.**
  – No grazing restrictions for livestock or wildlife.
  – Can be applied to the dripline of desirable trees.
  – Controls broadleaf weeds and brush without harming grass.

WEEDS CONTROLLED

• Absinth wormwood
• Baby’s breath
• Ball mustard
• Black henbane
• Bluebur
• Brown knapweed
• Canada fleabane
• Canada goldenrod¹
• Canada thistle
• Chickweed
• Clover (red, white)
• Common groundsel
• Common ragweed
• Corn spurry
• Cow cockle
• Cudweed
• Curly dock
• Dandelion
• Diffuse knapweed
• Field scabious
• Fireweed
• Flixweed
• Green smartweed
• Hemp-nettle
• Hoary alyssum
• Horse-nettle
• Japanese knotweed
• Lady’s-thumb
• Lamb’s-quarters¹
• Musk thistle
  (nodding thistle)
• Narrow-leaved
  hawk’s-beard
• Orange hawkweed
• Ox-eye daisy (pre-bud)
• Perennial pepperweed
• Perennial sow thistle
• Plumeless thistle
• Prickly lettuce
• Prostrate pigweed
• Purple loosestrife
• Pussytoes
• Russian thistle²
• Scentless chamomile
• Shepherd’s purse
• Spotted knapweed
• Stinkweed
• Stork’s-bill
• Sweet clover
• Tall buttercup
• Tansy
• Tartary buckwheat
• Volunteer alfalfa
• Volunteer canola³
• Western ragweed
• Western snowberry
  (buckbrush)
• Wild buckwheat¹
• Wild caraway
• Wild carrot
• Wild mustard
• Wild parsnip
• Wild rose
• Wild strawberry
• Yarrow²
• Yellow hawkweed
• Yellow star-thistle

¹ Suppression.
² Non ALS resistant biotypes.
³ All varieties except ALS resistant canola.
USE GUIDELINE

Rates and packaging
• ClearView herbicide has multiple rate structures on the label, allowing you the flexibility to choose the most suitable rate to fit your needs. 230 g/ha is the highest labelled rate; it will provide the most effective, longest lasting control. However the mid-rate of 170 g/ha is also very effective. One case will treat 16 ha at the 230 g/ha rate, or 21.6 ha at the 170 g/ha rate.
• ClearView requires the addition of Gateway™ adjuvant at 0.2% v/v.
• Individual plant applications: 2.3 g of ClearView, 20 mL of surfactant, in 10 L of water. Thoroughly wet, but not to the point of runoff.
• Water volume:
  – Broadcast: Apply in a minimum of 200 L/ha total solution.

When to apply
• Target weeds and shrubs will be controlled when they are actively growing and present at time of application.
  – Weeds: Apply to actively growing weeds, after emergence, prior to flowering.
  – Shrubs: Apply to actively growing shrubs, after full leaf expansion, but prior to the development of a waxy cuticle on the leaf of the shrubs.

Rainfast 2 hours

Bareground
• Labelled tank mixes: VP480, glyphosate and Arsenal herbicides
• Other tank mixes, such as OcTTain™ XL, Torpedo® EZ, EsplAnade and LongRun™ herbicides are supported under the PMRA tank-mix policy. Please contact your Corteva Agriscience™ representative.

Mixing instructions
1. Fill the spray tank ¾ full of clean water.
2. Add the required amount of ClearView herbicide with the agitation running. Pre-slurrying with water may be necessary where there is little or no agitation, or an injection system is being used.
3. If tank mixing, add the required amount of tank-mix partner with continued moderate agitation.
4. Add Gateway at 0.2% v/v or 2 L/1,000 L of spray solution.
5. Add antifoaming agent such as Halt.

Grazing There is no grazing restriction on livestock or wildlife grazing treated areas.

Optimizing performance
• Apply to actively growing weeds and shrubs. Avoid applying to plants under stress.
• Pre-slurrying ClearView is recommended.

Tree safety ClearView should NOT be used over the top of desirable trees. Application may be made up to the drip line (outermost edge of the branches) of desirable trees. Use additional caution around lateral root systems, shallow rooting species and those that propagate vegetatively through root shoots.

Please refer to Tree Safety, page 32 for additional information.
Lontrel™ XC herbicide provide professional vegetation managers with excellent control of Canada thistle and other broadleaf weeds in close proximity to most tree species.

WHY USE LONTREL XC?

- **Performance.** Control of tough broadleaf weeds such as Canada thistle.
- **Selective.** Targeted applications allow for control of undesirable species while being safe to grass and other desirable vegetation.

WEEDS CONTROLLED

- Alsike clover
- Canada thistle
- Common groundsel
- Common ragweed
- Kudzu
- Ox-eye daisy
- Perennial sow thistle
- Scentless chamomile
- Sheep sorrel
- Spotted knapweed
- Vetch
- Volunteer alfalfa
- Wild buckwheat

USE GUIDELINE

Rates and packaging

- Lontrel XC is packaged in 4 x 2.67 L jugs.
- Apply Lontrel XC at 0.25–0.50 L/ha depending on weeds present and level of Canada thistle control required. Refer to the Weeds Controlled table on the product label for appropriate application rate.
- For best results, apply in 200 L/ha total spray solution.

When to apply

- Apply to target weeds when they are actively growing.
- Only weeds present at the time of application will be controlled.

Rainfast

- 2 hours

Optimizing performance

- Apply to actively growing weeds. Avoid applying to plants under stress.
- Applications of Lontrel XC should be made when Canada thistle, perennial sow thistle and scentless chamomile are in the rosette to pre-bud stage of growth.
- Best results are obtained when Canada thistle is actively growing and soil moisture is adequate for rapid growth.
- Under dry soil conditions and poor growing conditions, Canada thistle control may be severely reduced.

Grazing

- There is no restriction for livestock grazing treated areas.
Milestone™ herbicide for the professional vegetation manager delivers highly selective control of invasive broadleaf weed species with low use rates, tank-mix flexibility and a liquid formulation.

**WHY USE MILESTONE?**

- **Invasive weed control.** Controls a wide range of invasive plants and broadleaf weeds.
- **Selective.** When applied at recommended rates, provides effective control of labeled weeds and does not harm grass and desirable plant species.
- **Tank mixability.** Excellent tank mix partner with Torpedo® EZ, EsplAnade, Arsenal, LongRun™, or VP480 herbicides for total vegetation control.

**WEEDS CONTROLLED**

- Absinth wormwood
- Canada fleabane
- Canada thistle
- Canadian goldenrod*
- Common ragweed
- Common tansy*
- Common yarrow*
- Cudweed
- Curly dock
- Dandelion*
- Diffuse knapweed*
- Fuller’s teasel
- Hairy buttercup
- Hairy fleabane
- Horsenettle
- Musk or nodding thistle
- Ox-eye daisy²
- Perennial sow thistle
- Plumeless thistle
- Prickly lettuce
- Scentless chamomile
- Spotted knapweed
- Tall buttercup
- Tall ironweed
- Tansy ragwort
- Tropical soda apple³
- Tropic croton
- Western ragweed
- Yellow star-thistle³

*Suppression.
1Apply to plants in the bolting stage of development.
2Apply to plants in the pre-bud stages of development.
3Apply to plants at the rosette through to bolting growth stage.
USE GUIDELINE

Rates and packaging
- One case treats 40 ha or 100 ac at the highest labelled rate (2 x 10 L jugs per case).
- For best results, apply Milestone™ herbicide at 0.5 L/ha.
- Individual plant applications: 5 mL of Milestone in 10 L of water. Thoroughly wet, but not to the point of runoff.
- Water volume:
  - Broadcast applications: Apply in a minimum of 200 L/ha total solution.

When to apply
- Apply to target weeds when they are actively growing.
- Only weeds present at the time of application will be controlled.
- Apply to actively growing weeds, after emergence, prior to flowering.

Rainfast 2 hours

Bareground
- Tank mix Milestone with VP480, Arsenal, EsplAnade or LongRun™ herbicides for applications where total vegetation control is desired. Refer to product label for rates.
- Other tank mixes, such as OcTTain™ XL and Torpedo® EZ herbicides, can be supported under the PMRA tank-mix policy. Please contact your Corteva Agriscience™ representative.

Tank mixes
- Registered tank mix with 2,4-D for enhanced spectrum of control.
- Milestone at 0.5 L/ha tank mixed with 2,4-D Amine will provide activity on the following additional species:
  - Annual sow thistle
  - Bluebur
  - Blue lettuce
  - Burdock (<4 leaf)
  - Bull thistle
  - Buttercup
  - Cocklebur
  - Common plantain
  - Common tansy
  - Curled dock (<4 leaf)
  - Dandelion
  - Flixweed
  - Goat's-beard
  - Gumweed
  - Hawkweed
  - Hoary cress
  - Peppergrass
  - Perennial sow thistle
  - Ragweed
  - Stinging nettle
  - Sweet clover

Refer to product label for complete use directions.

Optimizing performance
Apply to actively growing weeds. Avoid applying to plants under stress.

Grazing
There is no restriction on livestock and wildlife grazing treated areas.

Tree safety
Milestone should NOT be used over the top of desirable trees. Application may be made up to the drip line (outermost edge of the branches) of desirable trees. Use additional caution around lateral root systems, shallow rooting species and those that propagate vegetatively through layering.

Please refer to Tree Safety, page 32 for additional information.
OcTTain™ XL herbicide for the professional vegetation manager provides seasonal broadleaf control of tough weeds, including Group 2 and 9 resistant kochia up to 50 cm in height, with tank mix flexibility for roadside or bareground applications.

WHY USE OCTTAIN XL?

• **Performance.** Controls a wide range of broadleaf weeds, including Group 2 and 9 resistant kochia up to 50 cm in height.

• **Flexible.** Can be used as a stand-alone treatment, or tank mixed with products such as ClearView™, Milestone, Torpedo® EZ and VP480 herbicides.

• **Economical.** Cost-effective weed control for vegetation managers.

### WEEDS CONTROLLED

- Bluebur
- Blue lettuce¹
- Burdock
- Canola (all varieties)
- Cleavers³
- Cocksfoot
- Dandelion²
- Docks⁴
- Dog mustard⁴
- Field bindweed¹
- Field horsetail¹
- Field peppergrass
- Flixweed
- Goat’s-beard
- Gumweed⁴
- Hairy galinsoga
- Hedge bindweed
- Hemp-nettle
- Hoary cress¹
- Kochia³
- Lady’s-thumb
- Lamb’s-quarters
- Mustards (except green & grey tansy)
- Oak-leaved goosefoot⁴
- Plantain
- Prickly lettuce
- Ragweed
- Redroot pigweed
- Round-leaved mallow⁶
- Russian thistle
- Shepherd’s purse
- Smartweed
- Stinkweed
- Stork’s-bill
- Sweet clover
- Tansy mustard
- Tartary buckwheat
- Vetch
- Volunteer flax
- Volunteer sunflower
- Wild buckwheat
- Wild radish
- Russian thistle

### WEEDS SUPPRESSED

- Annual sow thistle
- Canada thistle¹
- Chickweed³
- Perennial sow thistle¹
- Redroot pigweed

¹Top growth control only.
²Spring rosettes.
³Including Group 2 and 9 resistant biotypes.
⁴1- to 6-leaf.
## USE GUIDELINE

### Rates and packaging
- 2 x 9 L case (5.8 to 11.25 ha/case).
- 36 cases per pallet.

### Broadcast foliar applications
- 1.6 L/ha for control of smaller kochia and other broadleaf weeds in non-crop areas.
- 3.1 L/ha for control of larger kochia (up to 50 cm) and other broadleaf weeds in non-crop areas.

### Spot applications with hose and handgun or backpack sprayers
- 16-31 mL in 10 L of spray solution.
- 1,600-3,100 mL in 1,000 L of spray solution.

### When to apply
- When weeds are actively growing, optimally between 12 C and 24 C.
- Control will be reduced if frost occurs three days before or after application.
- When applying to large kochia (20-50 cm) use the 3.1 L/ha rate.

### Rainfast
- 1 hour

### Tank mixes
- For bareground control, tank mixes such as VP480, Torpedo® EZ, Arsenal, EspAnade and LongRun™ herbicides are supported in non-cropland areas under the PMRA tank mix policy. Please contact your Corteva Agriscience™ representative.

### Mixing instructions
1. Fill the spray tank with 1⁄2 to 3⁄4 of the required amount of water.
2. Continue agitation throughout the mixing and spraying procedure.
3. Add any required water conditioners.
4. Add any tank-mix partners that are a dry formulation.
5. Add any tank-mix partners that are liquid formulation.
6. Add the required amount of OcTTain™ XL.
7. Add any required adjuvant or surfactants.
8. Complete filling the sprayer tank with water.

*Note: When tank mixing with Torpedo® EZ, the addition of Agral® 90 surfactant at 0.25% to 1% or equivalent non-ionic surfactant is required. If mixing issues are experienced, higher rates of 0.5% to 1.0% have been found to be beneficial in keeping multiple products in solution. Note: Gateway™ or Hasten adjuvants are not recommended when mixing Torpedo® EZ with OcTTain XL. Agral 90 must be used.*

### Grazing
- There is no restriction on livestock and wildlife grazing treated areas.

### Re-entry intervals for applicators applying in non-crop areas
- Re-entry interval for applicators – Until sprays have dried.
**Sightline™ Herbicide**

Sightline™ herbicide for the professional vegetation manager delivers broad-spectrum control of broadleaf weeds, including ALS and glyphosate resistant kochia, in a convenient, all-in-one package.

**WHY USE SIGHTLINE?**

- **Broad spectrum.** The widest spectrum for extended control of broadleaf weeds, invasive plants and shrubs.
- **Kochia control.** Exceptional post-emergent control of kochia, including ALS and glyphosate resistant biotypes.
- **Bareground.** Can be tank mixed with VP480 and Torpedo® EZ herbicides or other non-selective products to achieve total vegetation control.
- **Multiple modes of action.** Three different active ingredients and two modes of action in one box.

**WEEDS CONTROLLED**

- Absinth wormwood
- Baby’s breath
- Ball mustard
- Black henbane
- Bluebur
- Brown knapweed
- Canada fleabane
- Canada goldenrod
- Canada thistle
- Chickweed
- Clover (red, white)
- Common groundsel
- Common ragweed
- Common tansy
- Corn spurry
- Cow cockle
- Cudweed
- Curly dock
- Dandelion
- Diffuse knapweed
- Field scabious
- Flixweed
- Green smartweed
- Hemp-nettle
- Hoary alyssum
- Horsenettle
- Japanese knotweed
- Kochia
- Lady’s-thumb
- Lamb’s-quarters
- Musk thistle
- Narrow-leaved hawk’s-beard
- Orange hawkweed
- Ox-eye daisy (pre-bud)
- Pasture sage
- Perennial pepperweed
- Perennial sow thistle
- Plumeless thistle
- Prairie wild rose
- Prickly lettuce
- Prostrate pigweed
- Purple loosestrife
- Pussytoes
- Russian thistle
- Scentless chamomile
- Shepherd’s purse
- Spotted knapweed
- Stinkweed
- Stork’s-bill
- Sweet clover
- Tall buttercup
- Tarter buckwheat
- Volunteer alfalfa
- Volunteer canola
- Western ragweed
- Western snowberry (buckbrush)
- Wild buckwheat
- Wild caraway
- Wild carrot
- Wild mustard
- Wild parsnip
- Wild rose
- Wild strawberry
- Yarrow
- Yellow hawkweed
- Yellow star-thistle

1 Suppression.

Torpedo® is a registered trademark of Valent U.S.A. LLC.
USE GUIDELINE

Rates and packaging
• One case treats 8 ha or 20 ac at the highest rate.
• Case components: Sightline™ herbicide A – 1.84 kg, Sightline B – 6.72 L
• Sightline requires the addition of Gateway™ adjuvant at 0.2% v/v.
• Broadcast applications: Apply in a minimum of 200 L/ha total solution.
• Individual plant applications: 2.3 g of Sightline A, 8.4 mL of Sightline B, and 20 mL of surfactant in 10 L of water. Thoroughly wet, but not to the point of runoff.

When to apply
• Apply to target weeds and shrubs when they are actively growing.
• Only weeds and shrubs present at the time of application will be controlled.
  – Weeds: Apply to actively growing weeds, after emergence, prior to flowering.
  – Shrubs: Apply to actively growing shrubs, after full leaf expansion, but prior to the development of a waxy cuticle on the leaf of the shrubs.
• Kochia: For best results, apply to young plants once the majority of the kochia population has emerged, prior to seed set.

Rainfast
2 hours

Bareground
• Tank mix Sightline with VP480 herbicide or another glyphosate for applications where total vegetation control is desired. Refer to product label for rates.
• Other tank mixes, such as Torpedo® EZ, Arsenal, EsplAnade or LongRun™ herbicides are supported under the PMRA tank-mix policy. Please contact your Corteva Agriscience™ representative.
Mixing instructions

Use 135–230 g/ha Sightline A herbicide tank mixed with 0.42–0.84 L/ha Sightline B herbicide. Note that the highest rate of Sightline B (0.84 L/ha) is required for control of kochia (2- to 8-leaf stage).

1. Fill the spray tank ¾ full of clean water.
2. Add the required amount of Sightline A herbicide with the agitation running.
   - Pre-slurrying with water may be necessary where there is little or no agitation, or an injection system is being used.
3. Add the required amount of Sightline B herbicide with moderate agitation running.
4. Add Gateway at 0.2% v/v or 2 L/1,000 L of spray solution.
5. Add antifoaming agent, such as Halt, if required.

Note: When tank mixing with Torpedo® EZ herbicide, the addition of Agral® 90 surfactant at 0.25% to 1% or equivalent non-ionic surfactant is required. If mixing issues are experienced, higher rates of 0.5% to 1.0% have been found to be beneficial in keeping multiple products in solution. Note: Gateway or Hasten adjuvants are not recommended when mixing Torpedo® EZ with Sightline. Agral 90 must be used.

Optimizing performance

- Apply to actively growing weeds and shrubs. Avoid applying to plants under stress.
- Kochia: For longer lasting results on bareground sites, apply when the majority of the population has emerged. Plants not emerged at the time of application will not be controlled.
- Pre-slurrying Sightline A is recommended.

Tree safety

Sightline should NOT be used over the top of desirable trees. Application may be made up to the drip line (outermost edge of the branches) of desirable trees. Use additional caution around lateral root systems, shallow rooting species and those that propagate vegetatively through root shoots.

Please refer to Tree Safety, page 32 for additional information.
Tordon™ 22K herbicide for the professional vegetation manager provides the longest lasting control of deep-rooted, hard-to-control leafy spurge and toadflax.

WHY USE TORDON 22K?
• Extended control. Provides the longest lasting control of leafy spurge and toadflax.
• Easy to use. Liquid formulation packaged in convenient 10 L jugs.

WEEDS CONTROLLED
• Canada thistle
• Diffuse knapweed
• Field bindweed
• Leafy spurge
• Pasture sage
• Perennial sow thistle
• Poverty weed
• Russian knapweed
• Scentless chamomile
• Spotted knapweed
• Toadflax
• Perennial sow thistle
• Poverty weed
• Russian knapweed
• Scentless chamomile
• Spotted knapweed
• Toadflax

USE GUIDELINE

Rates and packaging
• Tordon 22K is packaged in 2 x 10 L jugs.
• Apply Tordon 22K at 1.1-4.5 L/ha. Use enough water to wet the weeds without run-off, 400-800 L of spray per treated hectare is usually required.
• For the control of leafy spurge, field bindweed and toadflax only, a spot treatment rate of 90 mL/100 m² may be used, provided no more than 50% of a hectare is treated.

When to apply
• Apply to target weeds when they are actively growing.
• Only weeds present at the time of application will be controlled.

Rainfast
2 hours

Optimizing performance
• Do not apply to soils that are very permeable (textures of sandy loam to sand) throughout the entire profile and that also have an underlying shallow aquifer.
• Do not treat areas intended to be used for cultivated sensitive crops or other desirable plants in sequential years. Clippings from grass or crops that have been treated with Tordon 22K should not be used for composting or mulching, nor should the manure from animals grazing treated areas or fed treated forage be used around susceptible plants.
• Avoid application when heavy rain is forecast.

Grazing
• There is no restriction for livestock grazing treated areas.
• Do not permit lactating dairy animals to graze fields within 7 days after application.

Tree safety
Tordon 22K should NOT be used over the top of desirable trees. Application should remain 1.5x the height of off target trees away. Use additional caution around lateral root systems, shallow rooting species and those that propagate vegetatively through layering.

Please refer to Tree Safety, page 32 for additional information.
Aspect™ herbicide provides vegetation managers with extended control of woody species and broadleaf weeds.

**WHY USE ASPECT HERBICIDE?**

- **Trusted results.** Consistent, reliable extended control of woody species and broadleaf weeds such as birch, poplar, dandelion, and leafy spurge on rail, roadside and utility corridors.
- **Selective.** Controls woody species and broadleaf weeds without harming grass.

### BRUSH AND BROADLEAF WEED SPECIES CONTROLLED

**Brush species**  
- Alder  
- Birch  
- Cedar  
- Maple  
- Pine  
- Poplar  
- Spruce and other species

**Broadleaf weeds**  
- Burdock  
- Canada thistle  
- Common ragweed  
- Common yarrow  
- Dandelion  
- Dock  
- Fleabane  
- Goldenrod  
- Leafy spurge  
- Plantain  
- Prickly lettuce  
- Sweet and red clover  
- Toadflax  
- Vetch  
- Wild carrot

**USE GUIDELINE**

**Rates and packaging**

- Aspect is packaged in 2 x 10 L jugs.
- For broadleaf weed control, apply 2.47-4.67 L/ha Aspect in a minimum of 200 L total spray solution.
- For woody plant control, apply up to 11.5 L/ha Aspect in a minimum of 200 L total spray solution.
- Directed stem applications: For control of woody plants, use 6.67 L/ha Aspect herbicide in 1,000 L water and apply to woody plants after the foliage is fully developed. Thoroughly and uniformly wet to the point of runoff.
- For increased efficacy and faster plant uptake for tough to control species such as leafy spurge, toadflax and coniferous trees such as spruce, use Gateway™ adjuvant at a rate of 0.25-0.375% v/v with Aspect.
- Refer to the product label for additional product information.
### When to apply

- Apply to target weeds and trees when they are actively growing.
- Only weeds and trees present at the time of application will be controlled.
  - **Weeds**: Apply to actively growing weeds, after emergence, prior to flowering.
  - **Trees**: Apply to actively growing shrubs, after full leaf expansion, but prior to the development of a waxy cuticle on the leaf of the shrubs.

### Rainfast

- **Rainfast**: 2 hours

### Optimizing performance

- Apply to actively growing weeds and shrubs. Avoid applying to plants under stress.
- For faster burndown of coniferous species, use Gateway™ adjuvant at 0.25% by volume (250 mL/100 L of water). For maximum rainfastness, increase the rate to 0.375% (375 mL/100 L of water). Gateway should be added after the herbicide is thoroughly mixed.
- Do not treat areas intended to be used for cultivated sensitive crops or other desirable plants in sequential years. Clippings from grass or crops that have been treated with Aspect™ herbicide should not be used for composting or mulching, nor should the manure from animals grazing treated areas or fed treated forage be used around susceptible plants.
- For control of leafy spurge and toadflax under less-than-optimum growing conditions, add Gateway adjuvant at the rate of 0.25% by volume.

### Tree safety

- Aspect should NOT be used over the top of desirable trees. Applications should remain 1.5x the height of off target trees away. Use additional caution around lateral root systems, shallow rooting species and those that propagate vegetatively through layering.

---

Please refer to Tree Safety, page 32 for additional information.
ClearView™ Brush herbicide provides elite control of the broadest spectrum of trees, brush, broadleaf weeds and can be applied to the dripline of desirable trees.

WHY USE CLEARVIEW BRUSH?

• Elite performance. Provides broad-spectrum control of broad leaf weeds, woody species and brush, including conifers as well as alder, ash, birch, poplar and willow.

• Dripline safety. Apply to the dripline of desirable tree species without risking root uptake or damage.

WEEDS CONTROLLED

Broadleaf weed species

• Absinth wormwood
• Ball mustard
• Bluebur
• Burdock
• Canada fleabane
• Canada goldenrod\(^1\)
• Canada thistle
• Chickweed
• Chicory
• Clover (red, white)
• Common groundsel
• Common ragweed
• Corn spurry
• Cow cockle
• Cudweed
• Curly dock
• Dandelion
• Field bindweed
• Field scabious
• Fireweed
• Flixweed
• Green smartweed
• Hemp-nettle
• Horseradish
• Lady’s-thumb
• Lamb’s-quarters\(^2\)
• Musk thistle (nodding thistle)
• Narrow-leaved hawk’s-beard
• Ox-eye daisy (pre-bud)
• Perennial pepperweed
• Perennial sow thistle
• Plumeless thistle
• Prickly lettuce
• Prostrate pigweed
• Pussytoes
• Ragweed
• Russian thistle\(^2\)
• Scentless chamomile
• Shepherd’s purse
• Smartweed
• Smooth bedstraw
• Spotted knapweed
• Stinkweed
• Stork’s-bill
• Sweet clover
• Tall buttercup
• Tansy
• Tartary buckwheat
• Vetch
• Volunteer alfalfa
• Volunteer canola\(^3\)
• Western ragweed
• Western snowberry (buckbrush)
• Wild buckwheat\(^1\)
• Wild lettuce
• Wild mustard
• Wild strawberry
• Yarrow\(^2\)
• Yellow star-thistle

\(^1\)Suppression.
\(^2\)Non-ALS resistant biotypes.
\(^3\)All varieties except ALS resistant canola.
**USE GUIDELINE**

**Rates and packaging**
- This co-package contains:
  - ClearView™ herbicide: 0.92 kg
  - Garlon™ XRT herbicide (2 x 10 L cases)
- One case treats 4 ha or 10 ac at the highest labelled rates.
- Requires the addition of Gateway™ adjuvant at 0.25% - 0.375% v/v.
- Use 135-230 g/ha of ClearView herbicide tank mixed with 2.5-5 L of Garlon XRT herbicide.
- For control of black spruce, use 230 g of ClearView herbicide and 4-5 L of Garlon XRT.
- Water volume:
  - 1,000 L/ha for hose and handgun applications
  - 400 L/ha for broadcast applications

**Application methods**
**Single stem foliar**
For control of woody plants up to 2.5 m in height, use Garlon XRT herbicide at rates of 2.5-5 L tank mixed with ClearView at 135-230 g/ha in enough water to make 1,000 L of spray solution. Use the higher rate for late summer application when growth rates are reduced or when hard-to-control species are present. Spray brush to the point of runoff. Coverage should be thorough to wet all foliage.

---

*These species may need to be re-treated the following year.*
When to apply
- Apply to target weeds, shrubs and trees when they are actively growing.
- Only weeds, shrubs and trees present at the time of application will be controlled.
  - **Weeds:** Apply to actively growing weeds, after emergence, prior to flowering.
  - **Shrubs:** Apply to actively growing shrubs, after full leaf expansion, but prior to the development of a waxy cuticle on the leaf of the shrubs.
  - **Trees:** Apply after full leafout to actively growing trees, prior to autumn colouration.

Rainfast
- 2 hours

Mixing instructions
1. Fill the spray tank ¾ full of clean water.
2. Add the required amount of ClearView herbicide with the agitation running.
   Pre-slurrying with water may be necessary where there is little or no agitation, or an injection system is being used, or where herbicide is first added to a tank other than the spray tank.
3. Add the required amount of Garlon XRT herbicide with the agitation running.
4. Add the required amount of Gateway adjuvant at 0.25–0.375% by volume.
5. Add antifoaming agent, such as Halt, if required.

Optimizing performance
- For best results, apply to actively growing weeds, shrubs and trees. Avoid applying to plants under stress.
- Pre-slurrying ClearView is recommended.
- Use higher rates when hard-to-control species such as ash, chokecherry, elm, maple (other than vine or big leaf), oak or pine are present. If lower rates are used on hard-to-control species, resprouting may occur and re-treatment may be necessary the following year.
- Avoid applications in hot temperatures. If temperatures reach 28 C or higher, cease applications for the day.

Tree safety
- ClearView Brush should NOT be used over the top of desirable trees. Application may be made up to the drip line (outermost edge of the branches) of desirable trees. Use additional caution around lateral root systems, shallow rooting species and those that propagate vegetatively through root shoots.

Please refer to Tree Safety, page 32 for additional information.
Garlon™ RTU herbicide offers convenience and performance with the industry’s only ready-to-use herbicide.

WHY USE GARLON RTU?

• Convenient, simple and precise.
  – Year-round control of more than 30 deciduous tree species, including aspen, birch and poplar.
  – Designed for selective, direct stem application to woody species.

• Application flexibility.
  – Use anytime throughout the year when plants are dry.
  – Three application methods: streamline, one-sided and cut stump.

• Ready to use.
  – Formulated to be used right out of the container, no mixing required.

TREES CONTROLLED

- Alder
- Ash
- Aspen
- Basswood
- Beech
- Birch
- Blackberry
- Buckthorn
- Cherry¹
- Chokecherry¹
- Cottonwood
- Dogwood
- Elderberry
- Elm¹
- Hawthorn
- Hickory
- Hop-hornbeam
- Honey locust¹
- Locust
- Maples
- Mulberry
- Oaks¹
- Pines¹
- Poplar
- Red maple¹
- Sassafras
- Sumac
- Sycamore
- Tamarack
- Tamarack
- Wild rose
- Willow
- Witch hazel

¹These species may need to be re-treated the following year.
USE GUIDELINE

Rates and packaging
• Garlon RTU herbicide is packaged in 13 L jerriboxes and can be added directly to backpack spayers.
• It is formulated to be used right out of the container. No mixing is required.
• Garlon RTU is designed for selective, direct stem application to woody species.

Application methods

Streamline
This has proven to be the fastest and most effective method of selective basal bark application. Best results are on young, actively growing stems less than 8 cm in diameter.
• Achieving complete “wrap” of the solution around the entire stem circumference is essential for effectiveness.
• Spray 30-50 cm above ground level:
  – For stems less than 8 cm basal diameter, spray a band 5 cm wide on one side of each stem.
  – For stems 8-15 cm basal diameter, spray a band 5 cm wide on two sides of each stem (two-sided streamline).
• With sufficient volume, the treated zone should widen to encircle the entire stem circumference within 30 minutes.

Cut Stump Treatment
This method is excellent for prevention of re-sprouting. It also reduces the need for repeated cutting of large diameter stumps of species that sprout from the base or suck from roots. Applications may be made to both old and freshly cut stumps.
Thoroughly wet the stump, including:
• Cut surfaces, especially the cambium layer just inside the bark.
• The remaining bark to the ground line, including the root collar.

When to apply
• Optimal results are achieved when applications are made to young, vigorously growing stems that have not developed the thicker bark characteristic of slower growing older trees.
• For best results, apply when stem and bark are dry.
• Garlon RTU can be applied at any time, including the winter months, except when snow or water prevents spraying at the ground line.
Optimizing performance

“Free water” on stems resulting from melting frost, wet snow or rain, causes emulsification and failure to penetrate bark during streamline and stump treatments. Emulsified herbicide can run down the treated stem like water, showing no evidence of “wrap.” If the wetting front formed by the oil in the bark does not wrap, then control is likely to be incomplete. Tips for best results include:

**Frost**
If no emulsification occurs (dry frost), then the solution is working. If the oil solution does not penetrate the frost (ice), shut down the application. Watch for frost as temperature rises above 0°C and moisture appears on stems.

**Potential spray drift**
Keep application pressure low to prevent vapour drift. Small quantities of vapour drift, which may not be visible, can seriously injure susceptible plants and sensitive non-target vegetation.

**Rain**
Basal bark and cut stump applications cannot be made to wet stumps or emulsification may occur and the target trees will not be controlled. However, rain immediately after an application will not affect the efficacy of the product as it will have already entered the bark.

**Snow**
When snow prevents access to ground line at the base of target trees, one-sided application should be stopped. Two-sided streamline application should be used on larger stems to ensure wrap.

**Temperature**
Garlon™ RTU herbicide can be applied at temperatures below –10°C anytime throughout the year. However, if temperature drops too low, and coagulation begins to occur, applicators should stop operations.

Package disposal

- Garlon RTU containers should not be reused for any purpose. For disposal, return to Veseris as per their instructions.
- If the cardboard shows no sign of pesticide contamination, remove the plastic bag inserts and recycle the cardboard box locally. Collect empty plastic bags together and do not triple rinse.
- Return the plastic bag inserts or the whole package to Veseris as per their instructions by contacting a Veseris representative at 1-866-572-8240.

Grazing

There is no restriction on livestock grazing treated areas.
Garlon™ XRT herbicide plus Gateway™ adjuvant is an industry leading advanced formulation for the professional vegetation manager.

**WHY USE GARLON XRT?**

- **Selective.** Desirable species such as forbs and wild flowers return post treatment much sooner than competitive alternatives.
- **Peace of mind.** Professional Vegetation Managers can confidently apply to the outer edge of desirable trees without risking potential root uptake or damage.
- **Industry leading.** The addition of Gateway adjuvant to Garlon XRT provides superior control of deciduous brush.

**TREES AND BRUSH SPECIES CONTROLLED**

- Alder
- Ash
- Aspen
- Basswood
- Beech
- Birch
- Blackberry
- Buckthorn
- Cherry*
- Chokecherry*
- Cottonwood
- Elderberry
- Elm*
- Hawthorn
- Hickory
- Hop-hornbeam
- Honey locust*
- Locust
- Maples
- Mulberry
- Oaks*
- Poison oak
- Pines*
- Poplar
- Red maple*
- Raspberry*
- Sassafras
- Sumac
- Sycamore
- Tamarack
- Wild rose
- Willow
- Witch hazel

**BROADLEAF WEEDS CONTROLLED**

- Burdock
- Chicory
- Curled dock
- Dandelion
- Field bindweed
- Lamb’s-quarters
- Ragweed
- Smartweed
- Smooth bedstraw
- Vetch
- Wild lettuce

*These species may require treatment at the higher rate and may need to be re-treated the following year, particularly if the original treatment was made at the lower rate.*
## USE GUIDELINE

<table>
<thead>
<tr>
<th>Rates and packaging</th>
<th>Garlon™ XRT herbicide is available in 2 x 10 L cases.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Broadleaf weed and deciduous tree control</td>
<td>Mix 2.5-5 L of Garlon XRT herbicide plus 0.25-0.375 % v/v Gateway™ adjuvant in a minimum of 200 L of water per hectare to ensure uniform coverage.</td>
</tr>
</tbody>
</table>
| Application methods | **Single stem foliar**<br>For control of woody plants up to 2.5 m in height, use Garlon XRT herbicide at rates of 2.5-5 L plus 0.25-0.375 % v/v Gateway adjuvant in enough water to make 1000 L of spray solution. Use the higher rate for late summer application when growth rates are reduced or when hard-to-control species are present. Spray brush to the point of runoff. Coverage should be thorough to wet all foliage.  
**Low volume foliar**<br>For control of woody plants up to 2.5 m in height use this technique with knapsack or backpack sprayers equipped with flat fan or solid cone nozzles. For control of woody plants, mix 0.6-3 L of Garlon XRT herbicide plus 0.25-0.375 % v/v Gateway adjuvant in enough water to make 100 L of spray solution. Direct the spray solution to thoroughly wet the foliage of the target plants, but not to the point of runoff. Apply after full leafout, but before autumn colouration. |
| When to apply | For foliar applications, apply to target trees and weeds when they are actively growing.  
• **Trees:** Apply after full leafout to actively growing trees, prior to autumn colouration.  
• **Weeds:** Apply to actively growing weeds, after emergence, prior to flowering. |
| Rainfast | 2 hours |
| Basal bark and stump treatment | • For selective control of woody plants, Garlon XRT herbicide can be used in oil mixtures and applied using the streamline or stump treatment technique. Use a diluent such as mineral oil or vegetable oil. Add Garlon XRT herbicide to the required amount of oil in the mixing tank and mix thoroughly.  
• If basal bark and stump treatment applications are required, please see Garlon™ RTU for additional information. |
| Optimizing performance | • For best results, apply to actively growing trees and weeds. Avoid applying to plants under stress.  
• Use higher rates when hard-to-control species such as ash, chokecherry, elm, maple (other than vine or big leaf), oaks or pine are present. If lower rates are used on hard-to-control species, resprouting may occur and re-treatment may be necessary the following year.  
• Avoid applications in hot temperatures. If temperatures reach 28 C or higher, cease applications for the day. |
| Grazing | • There is no restriction on livestock grazing treated areas for areas applied with up to 3 L/ha.  
• 3-5 L/ha: Do not graze or harvest green forage from treated area for 14 days following treatment. Note: No grazing restriction for beef livestock if less than 25% of the grazed area has been treated. |
Torpedo® EZ herbicide is a resistance management rotational tool for the professional vegetation manager providing extended, pre-emergent total vegetation control for bareground applications.

WHY USE TORPEDO® EZ?

• Performance. Torpedo EZ provides long lasting, pre-emergent control of grasses and small-seeded broadleaf weeds.

• Resistance management tool. A combination of two active ingredients from two unique modes of action all-in-one liquid formulation.

• Wide application window. Pre-emergence and early post emergence application timing for bareground and non-crop areas.

• Stay Where You Spray. Low mobility and low risk of off-site movement.

• Ease of use. Torpedo EZ is a co-formulated solution that does not require mixing.

WEEDS CONTROLLED

• Canada fleabane
• Common lamb’s-quarters
• Common ragweed
• Common waterhemp
• Dandelion
• Eastern black nightshade
• Green foxtail*
• Green pigweed
• Hairy nightshade
• Kochia*
• Large crabgrass
• Palmer amaranth
• Pennsylvania smartweed
• Redroot pigweed
• Velvetleaf
• Wild buckwheat
• Wild mustard*
• Witchgrass

*Including Group 1, 2, 4 and/or glyphosate resistant biotypes.
## Use Guideline

### Rates and Packaging
- One case treats 12 ha at the highest labelled rate (2 x 7.16 L jugs per case).
- Non-crop, bareground and IVM rate 880 - 1215 mL/ha.
- Water volume:
  - Broadcast: Apply in a minimum of 100-300 L/ha total spray solution
- Requires 0.5-1.0 cm moisture for activation.

### When to Apply
- Pre-emergence
  - Apply prior to weeds emerging
- Early post-emergence
  - When weeds are emerging (<5 cm)
  - Will require the addition of a non-ionic surfactant (NIS) if glyphosate is not tank mixed
  - NIS at 0.25% v/v, 150-600 L/ha spray volume
- Post emergence
  - If weeds are greater than 5 cm, or very dense, a tank-mix partner should be used in addition to Torpedo® EZ herbicide to control emerged weeds

### Tank Mixes
- Labelled tank mixes: 2,4-D Ester, Hyvar XL, Krovar, Telar, Vanquish, Banvel, Karmex, Velpar, Tordon™ 22K, Garlon™ herbicides.

For questions on tank mixing Torpedo EZ with other tank mix partners, contact your local IVM Experts representative.

### Mixing Instructions
1. Fill clean spray tank 1/2 to 2/3 of desired level with clean water.
2. While agitating, slowly add Torpedo EZ Herbicide to the spray tank. Agitation should create a rippling or rolling action on the water surface.
3. If tank mixing Torpedo EZ Herbicide with other labelled herbicides follow the WAMLEGS mixing order system:
   - (1) water soluble granules;
   - (2) wettable powders;
   - (3) aqueous suspensions, flowables and liquids;
   - (4) emulsifiable concentrates; and
   - (5) solutions.
4. Add any required adjuvants.
5. Fill spray tank to desired level with water. Agitation should continue until all spray solution has been applied.
6. Mix only the amount of spray solution that can be applied the day of mixing. Torpedo EZ Herbicide should be applied within 6 hours of mixing.

### Optimizing Performance
- Avoid application to plants under stress, or when prolonged periods without moisture are forecasted.
- Do not incorporate into the soil.
LongRun™ herbicide is a broad spectrum, systemic herbicide providing season-long control of key annual and perennial broadleaf weeds and grasses for total vegetation control on bareground sites.

**WHY USE LONGRUN 25 WG HERBICIDE?**

- **Broad spectrum.** Controls many annual and perennial broadleaf weeds and grasses.
- **Wide application window.** Can be applied any time of the year; best results are achieved with spring application.
- **Season-long control.** Following a spring application, LongRun herbicide can provide season-long control of labeled broadleaf weeds and grasses.

**WEEDS AND GRASSES CONTROLLED**

- **Grasses (pre- and post-emergent control):**
  - Downy brome
  - Giant foxtail
  - Green foxtail
  - Yellow foxtail
  - Annual bluegrass
  - Rough fescue

- **Broadleaf weeds:**
  - Canada horseweed/Mare’s tail
  - Wild carrot
  - Chamomile, mayweed
  - Annual sowthistle
  - Common mallow

*Please see label for more extensive list of weeds and grasses controlled.*
USE GUIDELINE

Rates and packaging
- One case treats ~12 ha at the highest labeled rate (6 x 404g containers per case)
- 150–200g/ha.
- The use of a non-ionic surfactant such as Gateway™ adjuvant at 0.25 percent by volume (0.25 litre/100 litres spray volume) provides a maximum performance for all postemergence applications.
- For postemergence weed control, consider tank mixing LongRun™ 25WG herbicide with glyphosate such as VP480 herbicide.
- Water volume:
  - Broadcast: Apply in a minimum 150–450L/ha totally spray solution.

When to apply
- For preemergence application, rainfall or irrigation is needed for herbicide activation.
- The best control is obtained when LongRun 25WG Herbicide is applied either to weeds just prior to germination or to young, actively growing weeds.
- For optimal herbicidal activity, prior to application, the bed or soil surface should be reasonably even and clear of crop and weed residue.

Tank mixes
- Tank mixes, such as ClearView™, Milestone™, Sightline™, OcTTain™ XL and VP480 herbicides can be supported under the PMRA tank-mix policy.

Mixing instructions
1. Ensure the spray system is clean and free of residues from previous applications.
2. Fill the spray tank 1/2 full with clean water.
3. Ensure the agitation system is operating and sufficient to provide uniform spray mixing during application and until the spray tank has been emptied.
4. Add the appropriate amount of this product to the spray tank.
5. Complete filling the spray tank to the desired level.
   Prepare no more spray mixture than is needed for the immediate application. Avoid the overnight storage of LongRun 25WG Herbicide spray mixtures.

Optimizing performance
LongRun is active in low concentrations and stays in the upper surface of the soil layer. Avoid disturbing soil surface after application.
VP480 herbicide provides high performance, non-selective control for the professional vegetation manager.

WHY USE VP480 HERBICIDE?
- **Reliable.** Trusted non-selective control of grasses and broadleaf weeds
- **Innovative formulation.** Rapidly absorbed by the plant for premium grass and weed control.
- **Tank mix convenience.** Can be used in combination with ClearView, Milestone, Sightline, Torpedo® EZ herbicides and other IVM registered products for bareground applications.

WEEDS CONTROLLED
- Annual broadleaf weeds
- Annual grasses
- Perennial broadleaf weeds
- Perennial grasses and sedges

*Please refer to label for a detailed list of broadleaf weeds and grasses controlled.*

USE **GUIDELINE**

**Rates and packaging**
- VP480 is packaged in 2 x 10 L jugs and 960 L totes.
- Refer to the product label for specific rates.

**When to apply**
- Apply to target weeds when they are actively growing.
- Plants that have not emerged will not be controlled with VP480 alone.

**Rainfast**
- 30 minutes

**Bareground**
- VP480 can be tank mixed with Sightline, ClearView, Milestone or OcTTain XL for applications where total vegetation control is required.

**Optimizing performance**
- Apply to actively growing weeds. Avoid applying to plants under stress.
- Rainfall immediately after application may wash herbicide off.
- Heavy dust on weed leaves will reduce control.
- VP480 is compatible with isopropylamine formulations (IPA Salt) and dimethylamine formulations (DMA Salt). It is not advised to tank mix VP480 with potassium formulations of glyphosate (K + Salt) in the spray tank.
- Use clean water for spray solution, as organic matter binds to the active ingredient, reducing efficacy. Do not use water from open bodies of water.

*Torpedo® is a registered trademark of Valent U.S.A. LLC*
Gateway™ adjuvant is an innovative non-ionic, paraffinic oil blend surfactant developed for use with the IVM portfolio of products from Corteva Agriscience™.

WHY USE GATEWAY ADJUVANT?

- **Industry leading technology.** An innovative adjuvant formulation unique to Corteva Agriscience and non-ionic surfactants.
- **Performance.** Gateway improves plant uptake in challenging environmental conditions.
- **Tank mixability.** Labelled for use with the IVM portfolio of products from Corteva Agriscience requiring surfactants.

USE GUIDELINE

**Rates and packaging**

- Gateway is packaged in 4 x 4 L jugs.
- Use at 0.25-1.0% v/v (2.5 L-10 L Gateway adjuvant/1,000 L spray mixture).
- Use the higher rate in adverse conditions, such as dense weed populations, late weed growth stages, poor environmental conditions or with certain multiple-product tank mixes.
- Refer to individual herbicide product labels for additional details on rate of use and mixing instructions.

**Tank mixes**

- Gateway is recommended for use with the following Corteva Agriscience herbicide products:
  - ClearView™
  - ClearView™ Brush
  - Sightline™
  - Aspect™
- For additional products, see the Gateway label.
<table>
<thead>
<tr>
<th>Broadleaf Weeds, Shrubs and Grass</th>
<th>Milestone™ Herbicide</th>
<th>M&amp;G + 2,4-D Herbicides</th>
<th>Clearview™ Herbicide</th>
<th>Clearview™ + 2,4-D Herbicides</th>
<th>Sightline™ Herbicide</th>
<th>Aspect™ Herbicide</th>
<th>Clearview™ + 2,4-D + Garlon® 2X™ Adjuvant</th>
<th>Octtain™ XL Herbicide</th>
<th>Longrun™ Herbicide</th>
<th>Torpedo® EZ Herbicide</th>
<th>Torpedo® EZ Adjuvant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Absinth Wormwood</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alsike Clover</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annual Sow Thistle</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baby’s Breath</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ball Mustard</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bitter Sneezeweed</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black Henbane</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Lettuce (Top Growth)</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bluebur</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brown Knapweed</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Bull Thistle</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Burdock &lt;4 Leaf</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Canada Fleabane</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Canada Goldenrod</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Canada Horseweed / Mare’s Tail</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Canada Thistle</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chickweed</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chicory</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cleavers</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Clover</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cocklebur</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Common Broomweed</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Common Groundsel</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Common Mallow</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Common Plantain</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Common Ragweed</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Common Tansy</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Common Waterhemp</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Common Yarrow</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corn Spurry</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cow Cockle</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cudweed</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Curly Dock</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dandelion</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diffuse Knapweed</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Downy Brome</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eastern Black Nightshade</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Field Bindweed</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Field Horsetail (Top Growth)</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Field Scabious</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fireweed</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Fluxweed</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Fuller’s Teasel</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Goat’s-Beard</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>BROADLEAF WEEDS, SHRUBS AND GRASS</td>
<td>MILESTONE® HERBICIDE</td>
<td>MILESTONE® + 2,4-D HERBICIDES</td>
<td>CLEARVIEW® HERBICIDE</td>
<td>CLEARVIEW® + 2,4-D HERBICIDES</td>
<td>SIGNATURE HERBICIDE</td>
<td>ASPECT® HERBICIDE</td>
<td>CLEARVIEW® BRUSH HERBICIDE</td>
<td>GARDON® XRT HERBICIDE + GATEWAY® ADJUVANT</td>
<td>LONGRUN® XC HERBICIDE</td>
<td>OCTANT® XL HERBICIDE</td>
<td>LARGRUN® HERBICIDE</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>----------------------</td>
<td>------------------------</td>
<td>----------------</td>
<td>------------------------</td>
<td>----------------</td>
<td>----------------</td>
<td>------------------------</td>
<td>------------------------</td>
<td>----------------</td>
<td>----------------</td>
<td>----------------</td>
</tr>
<tr>
<td>GIANT FOXTAIL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GREEN FOXTAIL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GREEN PIGWEED</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GREEN SMARTWEED</td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GUMWEED (TOP GROWTH)</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HAIRY BUTTERCUP</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HAIRY FLEABANE</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HAIRY NIGHTSHADE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HAWKWEED</td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HEMP-NETTLE</td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HOARY AYLYSSUM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HOARY CRESS (TOP GROWTH)</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HORSENETTLE</td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HOUNDS TONGUE</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>JAPANESE KNOTWEED</td>
<td></td>
<td>7</td>
<td>7</td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KOCHIA</td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KUDZU</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LADY’S-THUMB</td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LAMB’S-QUARTERS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LARGE CRABGRASS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LEAFY SPURGE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MULLEIN</td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MUSK OR NODDING THISTLE</td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MUSTARDS (EXCEPT GREEN TANSY, DOG, &amp; GREY TANSY)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NARROW-LEAVED HAWK’S-BEARD</td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ORANGE HAWKWEED</td>
<td></td>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OX-EYE DAISY</td>
<td></td>
<td>2</td>
<td>2</td>
<td>2</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PALMER AMARANTH</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PASTURE SAGE [FRINGED SAGE]</td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PENNSYLVANIA SMARTWEED</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PEPPERGRASS</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PERENNIAL PEPPERWEED</td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PERENNIAL SOW THISTLE</td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PLUMELESS THISTLE</td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>POVERTY WEED</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PRAIRIE SAGE</td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PRAIRIE WILD ROSE</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PRICKLY LETTUCE</td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PROSTRATE PIGWEED</td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PURPLE LOOSESTRIFE</td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PUSSYTOES</td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RAGWEED</td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REDROOT PIGWEED</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ROUND–LEAVED MALLOW (1-6 LEAF)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RUSSIAN KNPWEED</td>
<td></td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RUSSIAN THISTLE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SCENTLESS CHAMOMILE</td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SCOTCH THISTLE</td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SHEEP SORREL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SHEPHERD’S PURSE</td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BROADLEAF WEEDS, SHRUBS AND GRASS</td>
<td>MILESTONE^ HERTICIDE</td>
<td>MILESTONE^ + 2,4-D HERBICIDES</td>
<td>CLEARVIEW^ HERBICIDE</td>
<td>CLEARVIEW^ HERBICIDE</td>
<td>ASPECT^ HERBICIDE</td>
<td>GARLON XRT HERBICIDE + GATEWAY ADJUVANT</td>
<td>LONGRUN^ HERBICIDE</td>
<td>OCTTAIN^ XL HERBICIDE</td>
<td>TORPEDO^ Z HERBICIDE</td>
<td>TORPEDO^ Z HERBICIDE</td>
<td></td>
</tr>
<tr>
<td>----------------------------------</td>
<td>----------------------</td>
<td>-----------------------------</td>
<td>---------------------</td>
<td>---------------------</td>
<td>------------------</td>
<td>------------------------------------------</td>
<td>-------------------</td>
<td>---------------------</td>
<td>---------------------</td>
<td>---------------------</td>
<td></td>
</tr>
<tr>
<td>SHRUBBY CINQUEFOIL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SILVERBERRY (WOLF WILLOW)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SMARTWEED</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SMOOTH BEDSTRAW</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SPOTTED KNAabweed</td>
<td>x</td>
<td>x x x x x x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STINGING NETTLE</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STINKWEED</td>
<td>x</td>
<td>x x x x x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STORK’S-BILL</td>
<td>x</td>
<td>x x x x x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SULPHUR CINQUEFOIL</td>
<td>4</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SUNFLOWER (ANNUAL)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SWEET CLOVER</td>
<td>x</td>
<td>x x x x x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TALL BUTTERCUP</td>
<td>x</td>
<td>x x x x x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TALL IRONWEED</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TANSY RAGWORT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TARTARY BUCKWHEAT</td>
<td>x</td>
<td>x x x x x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TROPICAL SODA APPLE</td>
<td>3</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TROPIC CROTON</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VELVETLEAF</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VETCH</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VOLUNTEER ALFALFA</td>
<td>x</td>
<td>x x x x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VOLUNTEER CANOLA</td>
<td>ΔΔ</td>
<td>ΔΔ ΔΔ ΔΔ</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VOLUNTEER FLAX</td>
<td></td>
<td>1-12 cm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WESTERN RAGWED</td>
<td>x</td>
<td>x x x x x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WESTERN SNOWBERRY (BUCKBRUSH)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WILD BUCKWHEAT</td>
<td>x</td>
<td>x x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WILD CARAWAY</td>
<td>x</td>
<td>x x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WILD CARROT</td>
<td>x</td>
<td>x x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WILD LETTUCE</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WILD MUSTARD</td>
<td>x</td>
<td>x x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WILD PARSNIP</td>
<td>x</td>
<td>x x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WILD RADISH</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WILD STRAWBERRY</td>
<td>x</td>
<td>x x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WITCHGRASS</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>YELLOW FOXTAIL</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>YELLOW HAWKWEED</td>
<td>ΔΔΔ ΔΔ ΔΔ ΔΔ ΔΔ ΔΔ ΔΔ</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>YELLOW STARTHISTILLE</td>
<td>1 x x x x x x x x x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>YELLOW TOADFLAX</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

This is meant as a reference guide; always read and follow label directions. If there is a species not listed here you are seeking to control, please contact your Corteva Agriscience™ representative for recommendations.

Δ Non ALS resistant biotypes.
ΔΔ All varieties except ALS resistant canola.
ΔΔΔ Apply ClearView at 230 g/ha when plants are actively growing with the optimum time of application occurring from rosette to the bolting stages of development or in the fall. Plants will be controlled by mid-summer and fall application even though plants may not show any changes in form or stature the year of application.
ΔΔΔΔ Apply ClearView at 230 g/ha to plants in the bolting stage of development.

* For control of leafy spurge and toadflax under less-than-optimum growing conditions, use a recommended surfactant such as Gateway adjuvant at the rate of 0.25% by volume (250 ml per 100 L of water).

1 Yellow star-thistle: Apply to plants at the rosette through bolting growth stage.
2 Ox-eye daisy: Apply to plants in the pre-bud stages of development.
3 Tropical soda apple: Apply to any growth stage, but application by flowering will reduce seed production.
4 Sulphur cinquefoil (suppression): Apply to plants in the pre-bud stage of development.
5 Diffuse knapweed (suppression): Apply to plants in the bolting stage of development.
6 Russian knapweed (suppression): Apply to plants in the spring and summer that are in the bud to flowering.
7 Japanese knotweed (suppression): Apply to plants 0.9-1.2 m tall.
8 Orange hawkweed: For seasonal and 12 month control, apply to plants in the bolting stage of development.

* For control of leafy spurge and toadflax under less-than-optimum growing conditions, use a recommended surfactant such as Gateway adjuvant at the rate of 0.25% by volume (250 ml per 100 L of water).

^ Up to season-long suppression of tap growth.
^^ Tap growth control.
^^^^ Suppression.
### Product Solutions to Fit Your Needs

<table>
<thead>
<tr>
<th>TREE SPECIES</th>
<th>CLEARVIEW™ BRUSH HERBICIDE</th>
<th>GARLON™ XRT HERBICIDE</th>
<th>GATEWAY™ ADJUVANT</th>
<th>ASPECT™ HERBICIDE</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALDER</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>ASH</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ASPEN</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BASSWOOD</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BEECH</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIRCH</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>BLACKBERRY</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BUCKTHORN</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CEDAR</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>CHERRY</td>
<td>x</td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>CHOECHERRY</td>
<td>x</td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>COTTONWOOD</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DOGWOOD</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ELDERBERRY</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ELM</td>
<td>x</td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>HAWTHORN</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HICKORY</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HONEY LOCUST</td>
<td>x</td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>HOP-HORNBEEAM</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOCUST</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAPLE</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>MULBERRY</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OAKS</td>
<td>x</td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>PINE</td>
<td>x</td>
<td></td>
<td></td>
<td>* xx</td>
</tr>
<tr>
<td>POISON OAK</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>POPLAR</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>RASPBERRY</td>
<td>x</td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>RED MAPLE</td>
<td>x</td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>SASSAFRAS</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SPRUCE</td>
<td>x</td>
<td></td>
<td></td>
<td>xx</td>
</tr>
<tr>
<td>SUMAC</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SYCAMORE</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TAMARACK</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WILLOW</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WITCH HAZEL</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*These species may need to be re-treated the following year, particularly if the original treatment was made at the lower rate.*
STEWARDSHIP

SUSTAINABLE VEGETATION MANAGEMENT

The effective use of vegetation management herbicides is essential to controlling target weeds and brush. Corteva Agriscience™ is committed to providing vegetation management professionals with the products and tools to get the job done right and ensuring that the practices used are sustainable in the long term.

STEWARDSHIP TRAINING AVAILABLE

All Corteva Agriscience representatives can provide detailed information to answer your questions about products, application procedures and safety. Our representatives are available to train your applicators on a variety of subjects, including: Corteva Agriscience products, product application procedures, human health, safety and professionalism. Contact your Corteva Agriscience representative for details or to book a training session.

MANAGING INVASIVE PLANTS CROSSES FENCelines

Invasive plant control is not only critical in industrial right of ways, roadside and other non-crop area vegetation management. It is also crucial on private permanent grass pastures and rangeland. Controlling invasive plants with a herbicide is an effective way to reduce the spread and infestation of a species that may have the potential to be detrimental to biodiversity and the ecosystem.

Corteva Agriscience offers effective herbicide solutions for invasive plant control on rangeland and permanent pastures. We also provide an educational brochure used by counties and municipalities to promote the control of invasive plants with area residents. To learn more about Corteva Agriscience herbicides designed for range and pasture use, please visit ivm.corteva.ca.

PROTECTING POLLINATORS

Bees are one of several types of pollinators that feed from flowers, transferring pollen in the process. Other examples include butterflies and hummingbirds.

Herbicides target a specific pathway in plants. These target sites do not exist in pollinators, including bees. For this reason, herbicides from Corteva Agriscience do not have an adverse effect on pollinators when used according to the label.

Controlling invasive species with herbicides is beneficial for ensuring food stability for pollinators. When invasive plants, such as spotted or diffused knapweed, overtake an area they can choke out a variety of native species. Invasive weeds can flower once annually, while native plants flower throughout the whole growing season, providing a continual food source for pollinators. By eliminating the invasive plant types, the native species will re-establish themselves from seed, providing more sustainable foraging ground and habitat for bees and other pollinators.

SCIENCE BASED SOLUTIONS

Corteva Agriscience is committed to investing globally in products specifically designed to meet the needs of the industrial vegetation management market. This investment funds active ingredient discovery for non crop uses, advancements in formulations that are easier to use, and a continued focus to make sure that our chemistry couples performance together with the highest standards in safety to applicators, the general public, wildlife, pollinators and the environment.
USE AROUND TREES
Aspect™, ClearView™, Milestone™, Tordon™ 22K and Sightline™ herbicides may have activity on woody species, including trees, when applied to the soil within the root zone. These products should not be used as a spray application under the tree canopy.

ClearView, ClearView™ Brush, Garlon™ XRT, Garlon™ RTU and Milestone herbicides should NOT be used over the top of desirable trees. Application may be made up to the drip line (outermost edge of the branches) of desirable trees. Milestone, ClearView and Sightline can be applied up to the drip line of the following species:

- Ash
- Aspen
- Birch
- Black cherry
- Cottonwood
- Dogwood
- Eastern white pine
- Elm
- Fir
- Junipers
- Maple
- Oaks
- Ponderosa and lodgepole pines (may cause transient leaf curling that will disappear)
- Poplar
- Spruce species
- Sweetgum
- Willow

Use caution when using Milestone, ClearView and Sightline around the following species. Greatest caution should be taken around those species with extensive lateral root systems, shallow rooting species and those that propagate vegetatively through layering.

- Black locust
- Caragana
- Cedar
- Honey locust
- Mimosa
- Other locust species
- Redbud
- Rose

CAUTION: DO NOT use Aspect, ClearView, ClearView Brush, Milestone, Tordon 22K or Sightline over the top of, or directly under, any desirable tree species; injury or death can also result from foliar applications to trees.

Sightline, ClearView and Milestone should NOT be used over the top of desirable trees. Application may be made up to the drip line (outermost edge of the branches) of desirable trees. Use additional caution around lateral root systems, shallow rooting species and those that propagate vegetatively through layering.

- Aspect and Tordon 22K should NOT be used over the top of desirable trees. Applications should remain a distance of 1.5x the height of desirable trees at all times.
- Do not apply Aspect and Tordon 22K to coarse texture soils (> 40% sand) with a high water table (within 1.8 metres or 6 feet of the soil surface).
- Do not apply Aspect and Tordon 22K within 30 metres (approximately 100 feet) of an open water body (does not include dugouts) or as per provincial regulations.
APPLICATION TIMING
Herbicide application should be made after the majority of the target weed populations have emerged and are actively growing.

- The ideal timing for application will generally be in June through to mid-July with the exception of Canada thistle, which enters its ideal timing in mid- to late July when the majority of plants have emerged.
- Timing varies from season to season due to environmental conditions that influence growth and plant staging.
- When targeting shrubs such as buckbrush or wolf willow, they must be fully leafed out prior to an application.

HAY, SOIL AND MANURE MANAGEMENT
Treated area:
Vegetation management products.
- Soil from treated areas should never be moved to areas where sensitive plants may be planted within five years.
- Manure from livestock consuming treated grass should never be used for compost or around susceptible plants.
- Clippings from grass that has been treated with Corteva Agriscience™ vegetation management products should never be used for composting or mulching.
- Please contact your Corteva Agriscience representative with additional questions regarding hay, soil and manure management.

* If forage must be removed from treated area.
RE-SEEDING AND GRASS TOLERANCE

- Newly seeded grass should not be sprayed until secondary root development and a minimum of four leaf surfaces have established – well past the seedling stage.
- Safe to established grasses.
- Grasses may be seeded 10 months following an application.
- Legume re-establishment may be affected for up to five years.
- Soil organic matter, rainfall and temperature all affect the rate of degradation.
- Avoid application under stress conditions when grass is not actively growing (hot or cold weather, excessive moisture, or drought) as grass injury, including leaf discolouration and stunting of growth in the season of application may result.

MULTIPLE MODES OF ACTION

Products with multiple modes of action contain two or more active ingredients with different modes of action that deliver overlapping control on the same target weeds.

The use of multiple modes of action on key weeds will provide more effective control and will delay the onset of resistance.

<table>
<thead>
<tr>
<th>MODE OF ACTION</th>
<th>HERBICIDE</th>
<th>ACTIVITY</th>
<th>WEED RESISTANCE LEVELS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multi-Mode of Action</td>
<td>Two or more active ingredients with different modes</td>
<td>Overlapping control on the same target weeds</td>
<td>- Rotates the opportunity for resistant weeds to escape, survive and reproduce</td>
</tr>
</tbody>
</table>

* Adapted from Powles, S.B., Preston, C., Bryan, I.B., and Jutsum, A.R., (1997) Herbicide Resistance: Impact and Management. Advances in Agronomy. Vol. 58, pp. 57-93. Herbicide rotation alone will delay the onset of resistance; however, incorporating Multi-Mode of Action products in conjunction with rotation is a more effective resistance management strategy. The graphs depicting frequency of resistant weeds over generations is a hypothetical example valid only for the modeled parameters. Actual rates of weed resistance development and increase are dependent on a variety of conditions, including the weed species, propensity for outcrossing, seed dormancy, mode of inheritance of the resistance trait, herbicide mode of action and herbicide efficacy.
**WATER QUALITY**

### HARD WATER AND pH

Hard water is classified by high concentrations of cations such as Ca²⁺, Mg²⁺, Mn²⁺, Zn²⁺, Na⁺, K⁺, Al³⁺ or Fe³⁺ (Table 1). Hard water can be problematic because these cations can bind to the herbicide causing a decrease in efficacy of the product. Most research looking at herbicide antagonism with hard water has found Ca²⁺, Mg²⁺, Mn²⁺, Na⁺, and Fe³⁺ to be the most problematic. The pH of the water solution can also exaggerate the impact of hard water on the herbicide’s activity. Most post-applied herbicides are weak acids, meaning they have a pKa value less than 7. If the pH of the water is greater than the pKa of the herbicide, the product has a greater chance to dissociate. This results in the separation of the herbicide into negative ions, which can combine with the cations of the hard water, thereby reducing the efficacy of the product.

Addition of ammonium sulfate (21-0-0-24) (AMS) can reduce the interaction between hard water and herbicides because the sulfate binds with the positive ions in the hard water and the ammonium binds to the herbicide, which actually helps the product to penetrate the plant cell membrane.

<table>
<thead>
<tr>
<th>Mineral parts per million (ppm) in water</th>
<th>World Health Organization water classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 – 114</td>
<td>Soft</td>
</tr>
<tr>
<td>114 – 342</td>
<td>Moderately Hard</td>
</tr>
<tr>
<td>342 – 800</td>
<td>Hard</td>
</tr>
<tr>
<td>&gt;800</td>
<td>Extremely Hard</td>
</tr>
</tbody>
</table>

*Note: Some hard water test results will be in "grams," which is the ppm divided by 17.*

### ALKALINITY

Soft water can be high in bicarbonates (HCO₃⁻) or carbonate (CO₃²⁻), which can also interfere with some herbicides, similar to the hard water ions. When testing water for alkalinity, levels should be below 300 ppm.

### TURBID WATER

Turbid water is a name used to describe a water source that has suspended particles which could include soil, organic matter, algae, salt or contamination from runoff. Pesticides have the potential to bind to these particles in the water source, tying up the active ingredient and decreasing the efficacy of the product. How well a chemistry binds to the sediment depends on their Koc *ratio, which is the soil organic carbon sorption coefficient*. A high Koc number means the product binds strongly to the particles – for example glyphosate at 24,000 mL/g, where lower numbers like dicamba (2 mL/g) do not bind as strongly. Aminopyralid and Picloram have relatively low Koc numbers, 10.8 and 16 mL/g, respectively. Triclopyr has been known to adsorb tightly to soil, with a Koc value of 780 mL/g. Therefore, it is extra important to have clean water when applying Triclopyr.

<table>
<thead>
<tr>
<th>Herbicide</th>
<th>pKa value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aminopyralid</td>
<td>2.6</td>
</tr>
<tr>
<td>Picloram</td>
<td>2.3</td>
</tr>
<tr>
<td>Triclopyr</td>
<td>2.7</td>
</tr>
</tbody>
</table>

*Note: pKa (logKₐ) is an index to express acidity of soils – the smaller the value, the stronger the acid.*

---

37
**WHAT CAN BE DONE?**

- Ensure water source is free from sediment – any amount of sediment can be problematic; if you visually see particles, consider a different water source.
- Perform a water analysis to determine suitability for herbicide applications (i.e., hardness, pH, total dissolved solids, etc.).

**Some labs that can perform this analysis:**
- **Environmental Analytical Laboratory**, Saskatchewan Research Council, 422 Downey Road, Saskatoon, SK Canada – src.sk.ca/analytical
- **ALS Global** – alsglobal.com has various labs across Canada that can perform well water testing.

- Some hard water/pH testers can be bought from local pool stores. These testers sometimes read hard water at 300 ppm whereas spraying hard water is considered 1,000 ppm or higher.
- Ideal water pH for these weak acid herbicides is around 5-7.
- If the pH is too high (over 8), consider a different water source.

**Hard water:** Studies by Thomes et al. (1996) and Zollinger et al. (2010) found AMS could be added to Picloram and Aminopyralid to mitigate hard water impacts, although there has not been a rate identified specifically for these products.

- The recommended rates of AMS with glyphosate are 13: 1-2% w/w (i.e., 1-2 kg/100 L of water), or 2.5-5% v/v of a 400 g/L AMS solution
- If water is over 1,000 ppm and you are applying Aminopyralid or Picloram, consider adding AMS at 20.4 g/L.
- A jar test can be performed before putting any products in the spray tank to ensure they will not create any problems.
- Follow all label directions for tank mixes and adjuvants.
- For best results, Corteva Agriscience™ recommends using clean fresh water sources for spray solution. Using open bodies of water or poor quality water (sediment, hardness or high pH) as a source increases risk of having water issues.

**SUMMARY**

- Picloram and Aminopyralid activity could be affected by hard water ions.
- Picloram and Aminopyralid can both be impacted by pH of water since it can cause them to break down into ions, allowing them to combine with hard water ions decreasing efficacy.
- Triclopyr formulated as an ester has the potential to bind to organic matter or sediment in the water and reduce efficacy.

---

CONTACT US
If you have a technical question, your Corteva Agriscience™ representative can help. If you require immediate attention, please call our Solutions Center at 1-800-667-3852.

Corteva Agriscience Canada Inc.
Suite 2450, 215-2nd Street SW
Calgary, AB  T2P 1M4
Solutions Center: 1-800-667-3852
Fax: 1-888-296-6188
Website: www.ivm.corteva.ca

British Columbia
Vegetation Management Specialist
Lisa Jarrett
Cell: 250-870-3734
Email: lisa.jarrett@corteva.com

Ontario & Manitoba
Vegetation Management Specialist
Gavin Lunn
Cell: 905-867-3927
Email: gavin.lunn@corteva.com

Northern Alberta & Northern Saskatchewan
Vegetation Management Specialist
Vaughn Leuschen
Cell: 780-721-3469
Email: vaughn.leuschen@corteva.com

Central & Southern Alberta, Central & Southern Saskatchewan
Vegetation Management Specialist
Holly Moffet
Cell: 403-394-6824
Email: holly.moffet@corteva.com

Atlantic Canada & Quebec
Vegetation Management Specialist
Justin Toner
Cell: 506-479-0444
Email: justin.toner@corteva.com
Questions?
Contact the Solutions Center at 1-800-667-3852

Visit us at ivm.corteva.ca