



ADAMA

20
22

Product Guide

EASTERN CANADA



Listen · Learn · Deliver

ADAMA.COM/CANADA



1 Meeting challenges

2 Keeping promises

3 Delivering results





ADAMA

Listening to Canadian growers is at the heart of everything we do. Through our conversations with you we learn about your greatest challenges, and our promise is to provide you new solutions to overcome them.

Why? What we've heard what Canadian growers want the most is more choice and faster innovation...and we think you deserve it. What's more, we know the typical sources of innovation have slowed and diverted focus, creating a void. We believe ADAMA is uniquely positioned to fill this void.

With the largest library of actives in the world, an R&D focus on improving crop protection formulations, and a global network of manufacturing plants, we're proud to offer our fast-evolving full suite of herbicides, fungicides and insecticides. These customizable options are formulated to help you get the most out of your acres, with no strings attached—No complicated programs or bundling products you want with ones you don't—Just effective, easy-to-use solutions that deliver results.

Thank you for choosing ADAMA.

Sincerely,

Cornie Thiessen

General Manager, Canada at ADAMA Agricultural Solutions

QUICK REFERENCE

		ROW CROPS							SPECIALTY CROPS			Page
		Spring Wheat	Winter Wheat	Barley	Oats	Corn	Soybeans	Canola	Field Vegetables	Fruits	Potatoes	
HERBICIDES	2,4-D ESTER 700	●	●	●		●						10
	ARMORY® 240				●		●		●		●	13
	ARROW® 240 EC						●	●	● ¹	● ²	●	15
	ARROW ALL IN®						●	●	● ¹	● ²	●	17
	BADGE®	●	●	●	●	●						20
	BISON® 400 L	●	●	●								22
	BROMOTRIL®	●	●	●	●	●			●			24
	EMPHASIS™	●	●	●	●			●				26
	INVOLVE® 50 WDG	●	●	●	●		●					28
	KARMEX®								● ³			31
	LEOPARD®						●	●	●			33
	MCPA ESTER 600	●	●	●	●							35
	PHANTOM® 240 SL						●		●			37
	SQUADRON® II						●		● ⁴	● ⁵	●	39
THRASHER®	●		●								42	
INSECTICIDES	ALIAS® 240 SC	●	●	●	●		●		●	●	●	48
	CORMORAN®					● ⁶			●	●	●	52
	NIMITZ® 480 EC								●	●		58
	PYRINEX® 480 EC	●	●	●	●	●		●	●	●	●	60
	SILENCER® 120 EC	●	●	●	●	●	●	●	●		●	62
	SOMBRERO® 600 FS	●	●	●	●	●	●	●				64
FUNGICIDES	BUMPER® 432 EC	●	●	●	●	●	●	●	●	●		70
	CAPTAN 80 WSP								●	●	●	72
	CUSTODIA®	●	●	●								75
	FOLPAN® 80 WDG								●	●		77
	ORIOUS® 430 SC	●	●	●	●							79
	SORATEL™	●	●	●	●	●	●	●				81
	TOPNOTCH™	●	●	●	●		●					83

¹ Onions, spinach, fenugreek and coriander⁵ Fruit trees (newly planted and established), highbush blueberries (newly planted)² Highbush blueberries³ Asparagus only⁶ Sweet corn only⁴ Asparagus (established), processing carrots, transplanted tomatoes

QUICK REFERENCE GUIDE

REGISTERED HERBICIDES										
ARMORY® 240	ARROW® 240 EC	ARROW ALL IN®	BISON® 400 L	BRAZEN™ II	INVOLVE® 50 WDG + glyphosate	KARMEX®	LEOPARD®	PHANTOM® 240 SL	SQUADRON® II	
	•	•				•	•	•	•	Barnyard Grass
	•	•					•		•	Fall Panicum
					•				•	Giant Foxtail
	•	•		•	•	•	•	•	•	Green Foxtail
	•	•		•	•					Persian Darnel
	•	•					•	•		Proso Millet
	• ¹	• ¹				•	• ¹			Quackgrass
	•	•					•			Volunteer Cereals
	•	•					•			Volunteer Corn
	•	•	•	•			•			Wild Oats
		•					•		•	Witch Grass
	•	•		•		•	•	•	•	Yellow Foxtail
•										Desiccant

For a complete listing of grassy weeds controlled for each product, please refer to the product label.

¹Use highest rate listed for control.

For tank mixes with registered pest control products, the entirety of both labels, including Directions For Use, Precautions, Restrictions, Environmental Precautions, and Buffer Zones must be followed for each product. In cases where these requirements differ between the tank-mix partner labels, the most restrictive label must be followed.

QUICK REFERENCE GUIDE

REGISTERED HERBICIDES												
2,4-D ESTER 700	ARMORY® 240	BADGE®	EMPHASIS™ + glyphosate	BROMOTRIL®	INVOLVE® 50 WDG + 2,4-D ESTER 700	INVOLVE® 50 WDG + glyphosate	KARMEX®	MCPA ESTER 600	PHANTOM® 240 SL	SQUADRON® II	THRASHER®	
		•	• ¹¹	•					•		•	American Nightshade
•			•				•	•				Annual Sow Thistle
•								• ¹²				Burdock
					• ¹⁴							Canada Fleabane
		• ⁴	•		• ⁴	• ⁵		• ²				Canada Thistle
			•						•			Cleavers
•	•	•	•	•			•	•	•	•	•	Cocklebur
•	•	•	•	•		•	•	•			•	Common Ragweed
			•			•		•				Dandelion
•								• ²				Field Bindweed
•								•				Giant Ragweed
• ²												Horsetail
•	•	•	•	•	• ¹⁰		•	•		•	•	Kochia
• ²	•	•	•	•		•		• ²	•	•	•	Lady's Thumb
•	•	•	• ¹¹	•	•	•	•	•		•	•	Lamb's Quarters
•		•		•	•	•	•					Narrow-leaved Hawk's Beard
•	• ⁴							• ²				Perennial Sow Thistle
	•	•		•	•	•	•	•	•	•	•	Redroot Pigweed
•	•	•	•	•	•	•		•		•	•	Russian Thistle
•	•	•		• ⁹		•	• ²	•	•	•	•	Shepherd's Purse
• ²		•					• ²	•				Smartweed
•	•	•	•	•	• ⁹	•		•	•	•	•	Stinkweed
• ¹	• ¹	•			• ⁷			• ⁶	• ³	•	•	Volunteer Canola
• ²	•	•		• ⁵		•		• ⁵	•	•	•	Wild Buckwheat
•	•	•	•			•	•	•	•	•	•	Wild Mustard
						•						Wild Carrot
•												Desiccant

For a complete listing of broadleaf weeds controlled for each product please refer to the product label.

¹ All types

² Use highest rate listed for suppression

³ Including triazine-resistant biotypes

⁴ Top-growth control

⁵ Suppression

⁶ Non-Clearfield® varieties

⁷ Including glyphosate-resistant biotypes (Group 9)

⁸ Including Group 1-resistant biotypes

⁹ Fall rosettes and spring seedlings

¹⁰ 2-10 leaf

¹¹ Black Nightshade up to 5 cm; lamb's quarters up to 7.5 cm

¹² Before 4-leaf stage

¹³ Excluding Group 2- and Group 9-resistant fleabane



QUICK REFERENCE GUIDE

REGISTERED INSECTICIDES							
ALIAS® 240 SC (Seed and Soil Treatment)	ALIAS® 240 SC (Foliar Treatment)	CORMORAN®	NIMITZ® 480 EC	PYRINEX® 480 EC	SILENCER® 120 EC	SOMBRERO® 600 FS	
•	•	•		•	•	•	Aphid
		•					Apple Maggot
		•		•	•		Army Worm
				•	•		Bertha Armyworm
		•					Blueberry Maggot
				•			Cabbage Maggot
					•		Cabbage Seedpod Weevil
		•			•		Codling Moth
•	•	•		•	•		Colorado Potato Beetle
					•		Corn Earworm
				•	•		Cutworm
		•		•	•		Diamondback Moth
		•					European Apple Sawfly
		•			•		European Corn Borer
				•	•	•	Flea Beetle
				•	•		Grasshopper
	•	•					Leaf Hopper
		•		•	•		Lygus Bug
		•			•		Oriental Fruit Moth
		•			•		Plum Curculio
			•				Root-Knot Nematode
			•				Root Lesion Nematode
		•			•		Swede Midge
		•					Tarnished Plant Bug
	•	•					Tentiform Leaf Miner
				•	•		Wheat Midge
•						•	Wireworm

For a complete listing of insects controlled for each product please refer to the product label.

QUICK REFERENCE GUIDE

REGISTERED FUNGICIDES						
BUMPER® 432 EC	CAPTAN 80 WSP	CUSTODIA®	FOLPAN® 80 WDG	SORATEL™	ORIOUS® 430 SC	TOPNOTCH™
•						Alternaria Leaf Spot
	•		•			Anthracnose
	•		•			Apple Scab
•						Blackleg
	•		•			Black Rot
•				•		Crown Rust
	•		•			Downy Mildew
	•					Early Blight
•				•		Eyespot
	•		•			Fly Speck
•				•		Frog-eye Leaf Spot
				• ¹	• ¹	Fusarium Head Blight
		•				Late Blight
•		•		•	•	Leaf Rust
•	•					Monilinia spp
•				•		Northern Corn Leaf Blight
•			•		•	Powdery Mildew
				•	•	Sclerotinia Stem Rot/White Mould
•	•	•	•		•	Septoria Leaf Blotch/Spot
	•		•			Sooty Blotch
•		•		•	•	Stem Rust
•		•		•	•	Stripe Rust
•		•		•	•	Tan Spot

For a complete listing of diseases controlled for each product please refer to the product label.

¹Suppression only.



“

My customers are really progressive. So much so, that they'll already be researching potential solutions for a problem they have. A big part of my job is listening to them and sharing their feedback with the entire team to see what other options we can offer.

Drew Thompson

Area Business Manager, Ontario





HERBICIDES



WEED CONTROL



HERBICIDES

2,4-D ESTER 700	10
ARMORY® 240	13
ARROW® 240 EC	15
ARROW ALL IN®	17
BADGE®	20
BISON® 400 L	22
BROMOTRIL®	24
NEW EMPHASIS™	26
INVOLVE® 50 WDG	28
KARMEX®	31
LEOPARD®	33
NEW MCPA ESTER 600	35
PHANTOM® 240 SL	37
SQUADRON® II	39
THRASHER®	42



2,4-D ESTER 700

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



ACTIVE INGREDIENT

2,4-D 2 EH Ester 660 g/L = EC

PACKAGING

Case: 2 x 10 L jugs

APPLICATION RATES & ACRES TREATED

Rate: 200 – 600 ml/ac

Acres Treated: 17 – 50 ac/jug

WATER VOLUME

Ground: 12.5 – 50 L/ac (5–15 US gal/ac)

Aerial: Minimum 12 L/ac (3 US gal/ac)

RAINFASTNESS

2 hours

REGISTERED CROPS

- Wheat (spring, winter)
- Barley
- Field corn
- Rye (spring, fall)

WEEDS CONTROLLED

Susceptible Weeds	Leaf Stage	Rate
Annual sow thistle		Small seedlings (2–4 leaf), growing rapidly, good growing conditions: 200–300 ml/ac Large weeds, dry or cold weather, heavy infestations: 300 ml/ac Larger weeds are more difficult to control and require higher rates.
Bluebur	Before 4	
Burdock	Before 4	
Cocklebur, Daisy fleabane, False flax, False ragweed, Flixweed, Giant ragweed, Goat's beard, Kochia, Lamb's quarters, Mustards (except dog and tansy)		
Narrow-leaved hawk's beard	In the fall, and at the 1- to 2-leaf stage in the spring	
Plantain, Prickly lettuce, Ragweeds, Redroot pigweed, Russian pigweed, Russian thistle, Shepherd's purse, Stinging nettle, Stinkweed, Sweet clover (seedling), Thyme-leaved spurge		
Volunteer canola ¹	1–4	
Wild radish, Wild (prairie) sunflower		

¹All types



2,4-D ESTER 700

WEEDS CONTROLLED (CONT'D)

Harder-to-Control Weeds	Leaf Stage	Rate
Curled dock	1-4	Small seedlings (2- to 4-leaf), growing rapidly, good growing conditions: 400-500 ml/ac
Dog mustard, Field pepper-grass, Flixweed (if treated before bolting in spring), Groundsel, Hairy galinsoga, Hawkweed, Heal-all		
Knotweed	1-4	Large weeds, dry or cold weather, heavy infestations: 500 ml/ac Larger weeds are more difficult to control and require higher rates.
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		
Volunteer canola ¹	4-6	

¹All types

Very-Hard-to-Control Weeds	Leaf Stage	Rate
Biennial wormwood, Blue lettuce, Bull thistle, Burdock, Buttercup, Canada thistle, Chicory, Curled dock, Dandelion, Field bindweed, Field chickweed ² , Field horsetail ² , Gumweed, Hedge bindweed		Small seedlings (2- to 4-leaf), growing rapidly, good growing conditions: 400-500 ml/ac
Hemp-nettle ²	1-4	
Hoary cress, Lady's thumb ² , Leafy spurge, Mouse-eared chickweed ² , Perennial sow thistle, Russian knapweed, Scentless mayweed, Smartweed ² , Tartary buckwheat, Teasel, Volunteer sunflower, Wild buckwheat ²		Large weeds, dry or cold weather, heavy infestations: 500 ml/ac Larger weeds are more difficult to control and require higher rates.
Yellow rocket	1-4	

²Use highest listed rate for suppression.





2,4-D ESTER 700

HOW IT WORKS

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

CROP STAGING

Crop	Timing	Rate
Barley, Rye, Wheat (spring, winter)	Pre-plant or pre-emergent	200–500 ml/ac
Barley, Rye, Wheat (spring, winter)	4-leaf to flag leaf	Up to 500 ml/ac
Winter wheat, Fall rye	Pre-plant or pre-emergent	200–500 ml/ac
Winter wheat, Fall rye	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.	Up to 300 ml/ac
Field corn	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.	Up to 300 ml/ac

REGISTERED AND SUPPORTED TANK MIXES

- BISON® 400 L
- BROMOTRIL®
- BUMPER® 432 EC
- Glyphosate
- INVOLVE® 50 WDG
- PYRINEX® 480 EC

MIXING INSTRUCTIONS

1. ½ fill the tank with clean water.
2. Add the required amount of 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

STORAGE

May be stored at any temperature. Shake well before using.

PRE-HARVEST INTERVAL

90 days

GRAZING RESTRICTIONS

30 days

QUICK TIPS:

Avoid spray drift to any off-target vegetation. Coarse sprays are less likely to drift. Do not spray during periods of high winds.



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 240 g/L = EC

PACKAGING

Case: 2 x 10 L jugs

APPLICATION RATES & ACRES TREATED

Ground: 360–1860 ml/ac
Aerial: 690–1090 ml/ac
Acres Treated: 7–28 ac/jug

Potatoes:

- Ground: 510–1420 ml/ac
- Aerial: 690–930 ml/ac

Vegetables:

- Ground: 930–1860 ml/ac
- Aerial: Do not apply by air.

Beans, canola, chickpeas, lentils, field peas, sunflowers:

- Ground: 500–690 ml/ac
- Aerial: 690–930 ml/ac

Legumes:

- Ground: 690–1090 ml/ac
- Aerial: 690–1090 ml/ac

Oats:

- Ground: 360–510 ml/ac
- Aerial: Do not apply by air.

WATER VOLUME

Ground: 90–200 L/ac (24–53 US gal/ac)
Aerial: Minimum 18 L/ac (5 US gal/ac)

RAINFASTNESS

30 minutes

REGISTERED CROPS

This is only a partial list of crops registered for use with ARMORY® 240. For the full list, please refer to the ARMORY® 240 label.

- Alfalfa
- Beans (white and red kidney, adzuki)
- Birdsfoot trefoil
- Canola
- Chickpeas
- Lentils
- Peas (field and dry)
- Potatoes
- Red and white clover
- Soybeans
- Sunflowers

OTHER USES AND WEEDS CONTROLLED

- Potato vines
- Corn spurry in oats
- Desiccation for beans, and legume forage seed crops
- Weeds in stale seedbeds (vegetables and field crops)
- Weeds in vegetables (inter-row directed)
- Suppression of perennial grasses under apple trees

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.



ARMORY® 240

REGISTERED AND SUPPORTED TANK MIXES

- Agral® 90, LI 700®, Liberate® and other non-ionic surfactants
- Carfentrazone

MIXING INSTRUCTIONS

1. Fill the spray tank 3/4 full with water.
2. Add the required amount of ARMORY® 240 into the sprayer.
3. Agitate until the herbicide is thoroughly mixed.
4. Continue agitation while adding the required amount of recommended registered surfactant at 0.10% v/v non-ionic surfactant (NIS) or 0.25% v/v Li700.
5. Complete filling the tank to the desired level with water.

ADJUVANT RATE

- 0.25% v/v LI 700®
- 0.10% v/v NIS

GRAZING RESTRICTIONS

Crop waste remaining after harvest (e.g. pea vines, alfalfa stems) may be used as a feed supplement for livestock.

STORAGE

Do not freeze.

QUICK TIPS:

Best results under cloudy conditions or in the evening. Suggested conditions for aerial applications are a temperature below 25°C, humidity above 50% and wind speed below 9 km/hr at flying height.

ARROW® 240 EC

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



ACTIVE INGREDIENT

Clethodim 240 g/L = EC

PACKAGING

One case includes:

- 1 x 3 L jug of ARROW® 240 EC
- 1 x 9 L jug of X-ACT® adjuvant

APPLICATION RATES & ACRES TREATED

Rate: 50 – 150 ml/ac

Acres Treated: 20 – 60 ac/case

WATER VOLUME

Ground: 20 – 90 L/ac (5–24 US gal/ac)

Aerial: Do not apply by air.

RAINFASTNESS

1 hour

REGISTERED CROPS

- Alfalfa, seedling
- Beans
- Canola
- Chickpeas
- Coriander
- Cranberries
- Fenugreek
- Field peas
- Highbush blueberries
- Lentils
- Onions
- Potatoes
- Prairie carnations
- Soybeans
- Spinach
- Sunflowers

WEEDS CONTROLLED

Grass Species	Leaf Stage	Application Rates
Foxtail (green, yellow), Wild oats, Volunteer cereals (wheat, barley, oats)	2–4	50 ml/ac
Barnyard grass, Fall panicum, Proso millet, Volunteer corn, Volunteer canarygrass, Witch grass	2–6	50 ml/ac
Barnyard grass, Crabgrass (smooth, large), Fall panicum, Foxtail (green, yellow), Persian darnel, Proso millet, Volunteer canarygrass, Volunteer cereals (wheat, barley, oats), Volunteer corn, Wild oats, Witch grass, Quackgrass (suppression)	2–6	75 ml/ac
Quackgrass (control) ¹	2–6	150 ml/ac

¹ Use a higher rate (1% v/v) of X-ACT® adjuvant for improved quackgrass control.

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.



ARROW® 240 EC

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.

REGISTERED AND SUPPORTED TANK MIXES

- Canola: Lontrel™ XC or Muster®
- Clearfield® canola only: PHANTOM® 240 SL
- LibertyLink® canola only: glufosinate
- Field peas: PHANTOM® 240 SL
- Glyphosate-tolerant soybeans: glyphosate

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.

ADJUVANT RATE

- 0.5–1.0% v/v X-ACT®*
- 0.5% v/v methylated seed oil (MSO)
- 0.25% v/v NIS

*Use a higher rate (1% v/v) of X-ACT. for improved quackgrass control.

CROP ROTATIONS

No restrictions when applied alone

PRE-HARVEST INTERVALS

- Blueberries, Spinach: 14 days
- Alfalfa, Fenugreek: 30 days
- Onions: 45 days
- Canola, Coriander, Beans, Lentils, Potatoes, Chickpeas: 60 days
- Sunflowers: 72 days
- Soybeans, Field peas: 75 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®.

ARROW ALL IN®

Grassy weed control for soybeans and a variety of specialty crops with the convenience of a built-in surfactant



ACTIVE INGREDIENT

Clethodim 120 g/L = EC

PACKAGING

Case: 2 x 6 L jugs

APPLICATION RATES & ACRES TREATED

Rate: 100 – 300 ml/ac

Acres Treated: 20 – 60 ac/jug

WATER VOLUME

Ground: 40 L/ac (10 US gal/ac)

Aerial: Do not apply by air.

RAINFASTNESS

1 hour

REGISTERED CROPS

- Alfalfa, seedling
- Beans, dry (pinto, black, great northern, red, pink, navy)
- Canola
- Carnations
- Chickpeas (desi, kabuli)
- Coriander
- Cranberries
- Fenugreek
- Field peas
- Highbush blueberries
- Lentils
- Onions, dry
- Potatoes
- Soybeans
- Spinach
- Sunflowers

WEEDS CONTROLLED

Grass Species	Leaf Stage	Application Rates
Foxtail (green, yellow), Wild oats, Volunteer cereals (wheat, barley, oats)	2 – 4	100 ml/ac
Barnyard grass, Fall panicum, Proso millet, Volunteer corn, Volunteer canarygrass, Witch grass	2 – 6	100 ml/ac
Barnyard grass, Crabgrass (smooth, large), Fall panicum, Foxtail (green, yellow), Persian darnel, Proso millet, Quackgrass suppression, Volunteer canarygrass, Volunteer cereals (wheat, barley, oats), Volunteer corn, Wild oats, Witch grass	2 – 6	150 ml/ac
Quackgrass control	2 – 6	300 ml/ac

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.



ARROW ALL IN®

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.

REGISTERED AND SUPPORTED TANK MIXES

- Glyphosate-tolerant soybeans: glyphosate
- Canola: Lontrel™ XC or Muster®
- Clearfield® canola only: PHANTOM® 240 SL
- LibertyLink® canola only: glufosinate*
- Field peas: PHANTOM® 240 SL

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, agitate 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.

*When mixing with glufosinate, reverse the mixing order of Steps 3 and 4 so that ARROW ALL IN® is added first and the glufosinate is added second. Continue to follow the mixing instructions in Steps 5–8.



HERBICIDE

ARROW ALL IN[®]

PRE-HARVEST INTERVALS

- Canola, Chickpeas (desi, kabuli), Coriander, Dry beans (pinto, black, great northern, red, pink, navy), Lentils
- Highbush blueberries, Spinach: 14 days
- Alfalfa (seedling), Cranberries, Fenugreek: 30 days
- Onions, dry: 45 days
- Potatoes: 60 days
- Sunflowers: 72 days
- Field peas, Soybeans: 75 days

STORAGE

Do not freeze.

ADJUVANT RATE

Adjuvant built into formulation; no additional adjuvant required

CROP ROTATIONS

30-day plant-back interval for all unlabeled crops

GRAZING RESTRICTIONS

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

QUICK TIPS:

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

BADGE®

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



ACTIVE INGREDIENT

Bromoxynil 225 g/L and MCPA 2 EH ester 225 g/L = EC

PACKAGING

Case: 2 x 10 L jugs

APPLICATION RATES & ACRES TREATED

Rate: 500 ml/ac

Acres Treated: 20 ac/jug

WATER VOLUME

Ground:

- Cereals: 20–40 L/ac (5–10 US gal/ac)
- Corn: 80–120 L/ac (20–30 US gal/ac)
- Forages: 60 L/ac (15 US gal/ac)

Aerial: 8–20 L/ac (2–5 US gal/ac)

RAINFASTNESS

1 hour

REGISTERED CROPS

Field crops:

- Barley
- Corn
- Fall rye
- Oats
- Wheat (spring, winter)

WEEDS CONTROLLED

- American nightshade
- Ball mustard
- Bluebur
- Canada thistle¹
- Cocklebur
- Common buckwheat
- Common groundsel
- Common ragweed
- Cow cockle²
- Flixweed
- Green smartweed
- Kochia³
- Lady's thumb
- Lamb's quarters
- Night-flowering catchfly
- Pale smartweed
- Perennial sow thistle¹
- Redroot pigweed
- Russian thistle³
- Scentless chamomile⁴
- Shepherd's purse
- Stinkweed
- Tartary buckwheat
- Velvetleaf⁵
- Volunteer canola (all types)
- Volunteer sunflower
- Wild buckwheat
- Wild mustard
- Wild tomato
- Wormseed mustard

¹Top growth control

²Up to 4-leaf stage

³When sprayed before plants are 2 inches high

⁴Spring annual only

⁵When sprayed before plants are 3 inches high

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

Crop	Timing
Barley, Oats, Spring wheat	2-leaf to early flag
Corn	4- to 6-leaf
Fall rye	When growth commences in spring to early flag leaf
Timothy (established for seed production)	Prior to shot blade in the seed production year
Winter wheat (includes underseeded with red clover)	2- to 4-leaf stage in the fall or after growth resumes up to early flag leaf

REGISTERED AND SUPPORTED TANK MIXES

- Corn: atrazine
- Oats: MCPA ESTER 600
- Spring wheat and barley: Avenge®, MCPA ESTER 600, Refine Extra®, BISON® 400 L
- Winter wheat: MCPA ESTER 600, Refine Extra®

MIXING INSTRUCTIONS

1. Fill clean spray tank ½ full with water.
2. Add the required amount of BADGE® 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

STORAGE

Do not freeze.

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® herbicide is well known for being gentle on the crop. Avoid spraying if temperatures are above 25°C.

BISON® 400 L

Get a wide window of application and excellent control of annual grasses in cereals and seedling forage grasses grown for seed.



ACTIVE INGREDIENT

Tralkoxydim 400 g/L = SC

PACKAGING

One case includes:

- 1 x 8 L jug of BISON® 400 L
- 1 8 L jug of Addit® adjuvant

APPLICATION RATES & ACRES TREATED

Rate: 200 ml/ac

Acres Treated: 40 ac/case

WATER VOLUME

Ground: 20–40 L/ac (5–10 US gal/ac)

Aerial: 12–18 L/ac (3–5 US gal/ac)

RAINFASTNESS

1 hour

REGISTERED CROPS

Field crops:

- Barley
- Rye (spring, winter)
- Triticale
- Wheat (spring, winter)

Cereal crops underseeded to forage legumes:

- Alfalfa
- Birdsfoot trefoil
- Clovers
- Sainfoin

WEEDS CONTROLLED

Weed	Leaf Stage
Wild oats, Volunteer oats	1–6

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.



BISON® 400 L

REGISTERED AND SUPPORTED TANK MIXES

Do not apply any broadleaf herbicide tank mixes to underseeded forage legumes.

Herbicides:

- 2,4-D ESTER 700
- Attain®
- BADGE®
- BROMOTRIL®
- Bromoxynil + 2,4-D ESTER 700
- Dichlorprop + 2,4-D ESTER 700
- Infinity®
- Lontrel™ XC
- MCPA ESTER 600
- Pixxaro™

Insecticides:

- Decis®
- SILENCER® 120 EC

Fungicides:

- BUMPER® 432 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 $\frac{3}{4}$ 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 tank-mix partner(s).
5. Add Addit® adjuvant at a rate of 0.5 L per 100 L of water or 0.5% v/v, and continue to fill tank to desired level with water.

ADJUVANT RATE

Apply at 0.5% v/v (0.5 L/100 L water volume, or 500 ml/10 gal). Adjust accordingly if reducing water volume.

CROP ROTATIONS

Do not replant 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

- Shake well before use.
- Do not freeze.

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.



BROMOTRIL®

Tough broadleaf weed control with tank-mix flexibility and excellent crop safety.



ACTIVE INGREDIENT

Bromoxynil Octanoate Ester 235 g/L = EC

PACKAGING

Case: 2 x 9.7 L jugs

APPLICATION RATES & ACRES TREATED

PRE-PLANT:

- Rate: 490 ml/ac
- Acres Treated: 20 ac/jug

IN-CROP BROADLEAF:

- Rate: 490 – 570 ml/ac
- Acres Treated: 17 – 20 ac/jug

WATER VOLUME

Ground: 20 – 80 L/ac (5 – 20 US gal/ac)

Aerial (in-crop only):

- 8 – 16 L/ac (3 – 5 US gal/ac)
- Wheat and barley only
- Do not apply pre-plant

RAINFASTNESS

30 minutes

REGISTERED CROPS

Crop	Timing
Barley, Canola, Oats, Wheat	Pre-plant burn-off with glyphosate

Crop	Crop Stage
Alfalfa (seedling)	2 – 6 trifoliate
Alfalfa (established for seed production only)	Spring: before the crop begins to shield the weeds
Barley, Oats, Triticale, Wheat (spring)	2-leaf to early flag
Winter wheat	Fall: 2- to 4-leaf Spring: first growth to early flag
Corn (field, sweet)	4- to 8-leaf (beyond 8-leaf requires drop pipes)
Fall rye	Spring: from first growth to early flag
Forage millet, Sorghum	4-leaf to 8 inches

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
- Velvetleaf³
- Wild mustard¹

Seedling up to 8-leaf stage:

- Common buckwheat
- Common groundsel
- Lamb's quarters
- Tartary buckwheat
- Wild buckwheat

¹In 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.

²Spray before plants are 2 inches high.

³Spray before plants are 3 inches high.



BROMOTRIL®

HOW IT WORKS

BROMOTRIL® is a contact herbicide which controls Group 2- and Group 9-resistant biotypes. Leaves will yellow in 2–4 days with complete control in 7–14 days.

RAINFASTNESS

30 minutes

REGISTERED AND SUPPORTED TANK MIXES

Post-emergent herbicides:

- Spring wheat: 2,4-D ESTER 700, MCPA ESTER 600, BISON® 400 L
- Winter wheat: 2,4-D ESTER 700, MCPA ESTER 600, BISON® 400 L
- Barley: 2,4-D ESTER 700, MCPA ESTER 600, BISON® 400 L
- Oats: MCPA ESTER 600
- Corn: Accent®, atrazine, Banvel® (dicamba), Ultim®
- Fall rye: MCPA ESTER 600

Pre-plant herbicide:

- Glyphosate

Fungicide:

- BUMPER® 432 EC

MIXING INSTRUCTIONS

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

CROP ROTATIONS

No crop rotation 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

Do not freeze.

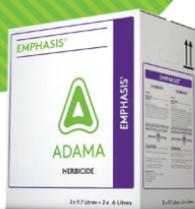
QUICK TIPS:

Avoid spraying if temperatures are above 25°C. Leaf scorching may occur in corn 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.

EMPHASIS™

Introducing EMPHASIS™:

A co-pack of two actives – carfentrazone and bromoxynil – that, when tank-mixed with glyphosate, offers three modes of action for fast burndown control of approximately 70 broadleaf and grassy weeds.



ACTIVE INGREDIENTS

Carfentrazone-ethyl at 240 g/L as an EC = EMPHASIS™ A, and Bromoxynil (present as the octanoate ester) at 240 g/L as an EC = BROMOTRIL®

PACKAGING

Co-pack:

- 2 x 0.6 L jugs of EMPHASIS™ A
- 2 x 9.7 L jugs of BROMOTRIL®

APPLICATION RATE & ACRES TREATED

Canola

Rate: 15 ml/ac of EMPHASIS™ + 236 ml of BROMOTRIL®
Acres treated: 80 ac/case

Wheat, Oats & Barley

Rate: 30 ml/ac of EMPHASIS™ + 472 ml of BROMOTRIL®
Acres treated: 40 ac/case

WATER VOLUME

Ground: minimum 40 L/ac (10 US gal/ac)
Aerial: Do not apply by air.

RAINFASTNESS

30 minutes

REGISTERED CROPS AND STAGING

- Barley
- Oats
- Canola
- Wheat (spring, winter)

HOW IT WORKS

EMPHASIS™ is a multi-mode, contact herbicide broadleaf weeds including Group 2- and 9- resistant biotypes such as kochia. Within a few hours following application, the foliage of susceptible weeds shows signs of desiccation, and in subsequent days, necrosis and death of the plant occur.

MIXING INSTRUCTIONS

1. Fill spray tank with ½ of the volume of clean water needed.
2. With agitator running add the required amount of EMPHASIS™ A to spray tank.
3. Next add the required amount of BROMOTRIL®.
4. Add more water, then add glyphosate.
5. Complete filling the tank to desired level.

CROP ROTATIONS

No restrictions

STORAGE

Do not freeze.



EMPHASIS™

WEEDS CONTROLLED

Canola: Pre-Plant (80 acres/case)		
Weeds controlled by EMPHASIS™ alone:	Rates:	
<ul style="list-style-type: none"> • Black nightshade • Eastern black nightshade¹ • Lamb's quarters² • Morning glory³ • Redroot pigweed • Tall waterhemp¹ • Velvetleaf • Volunteer canola⁶ 	<ul style="list-style-type: none"> • EMPHASIS™ A: 15 ml/ac • BROMOTRIL®: 236 ml/ac 	
Additional weeds controlled when EMPHASIS™ is tank-mixed with glyphosate (at stated rate)*		
EMPHASIS™ alone weeds, plus:		
<ul style="list-style-type: none"> • Cocklebur • Cow cockle • Green foxtail • Green smartweed • Lady's thumb • Smooth pigweed • Volunteer cereals (barley, oats, wheat) • Wild mustard 	<ul style="list-style-type: none"> • EMPHASIS™ A: 15 ml/ac • BROMOTRIL®: 236 ml/ac • Glyphosate: 180 g a.i./ac 	
180 g a.i./ac weeds, plus:		
<ul style="list-style-type: none"> • Bluegrass (annual) • Canada fleabane⁴ • Canada thistle (rosette stage, summerfallow) • Cleavers • Crabgrass • Dandelion (less than 15 cm) • Downy brome • Flixweed • Giant foxtail • Hemp-nettle • Kochia • Narrow-leaved hawk's beard • Narrow-leaved vetch • Quackgrass⁵ • Ragweed (common) • Russian thistle • Stinkweed • Prickly lettuce • Sow thistle (annual) • Shepherd's purse • Wild buckwheat 	<ul style="list-style-type: none"> • EMPHASIS™ A: 15 ml/ac • BROMOTRIL®: 236 ml/ac • Glyphosate: 360 g a.i./ac 	
Wheat, Oats, Barley: Pre-Plant (40 acres/case)		
Weeds controlled by EMPHASIS™ alone:	Rates:	
<ul style="list-style-type: none"> • Buckwheat (common, tartary) • Carpetweed • Groundsel (common) • Jimsonweed • Lamb's quarters² • Morning glory³ • Mustard (tansy) • Nightshade (American, Black, Eastern black¹, hairy) • Pigweed (red root, tumble) • Purslane (common) • Smartweed (pale) • Velvetleaf • Volunteer canola • Waterhemp (common, tall¹) 	<ul style="list-style-type: none"> • EMPHASIS™ A: 30 ml/ac • BROMOTRIL®: 472 ml/ac 	
<p>The EMPHASIS™ + glyphosate combination controls approximately 70 weeds (not all are listed here). See the glyphosate label for a complete list of weeds controlled at each rate.</p>		
<p>¹ up to 5 cm ² up to 7.5 cm ³ up to 3 leaves ⁴ does not include Group 9-resistant fleabane ⁵ light to moderate infestations, 3-4 green leaves or more ⁶ including glyphosate-tolerant varieties * Additional weeds controlled with glyphosate pertain to both canola and wheat/oat/barley applications.</p>		
QUICK TIPS:		
<p>Wait at least one day after application before seeding to allow adequate time for weed control.</p> <p>Avoid overnight storage of spray mixtures when possible.</p> <p>Premixing EMPHASIS™ spray solutions in nurse tanks is not recommended.</p>		



INVOLVE® 50 WDG

ADAMA's new pre-plant or post-harvest Group 2 herbicide for control of the toughest broadleaf weeds.



ACTIVE INGREDIENT

50% Tribenuron-methyl = WDG

PACKAGING

Case: 10 x 480 g bottles/case

APPLICATION RATES & ACRES TREATED

Rate: 6 g/ac

Acres Treated:

- 80 ac/bottle
- 800 ac/case

WATER VOLUME

Ground: 22 – 44 L/ac (5–12 US gal/ac)

Aerial: Do not apply by air.

RAINFASTNESS

1 hour

REGISTERED CROPS

- | | | |
|-----------------|--------------|--------------------------|
| · Alfalfa | · Field peas | · Spring barley |
| · Alsike clover | · Oats | · Timothy |
| · Dry beans | · Red clover | · Wheat (spring, winter) |
| · Faba beans | · Soybeans | |

WEEDS CONTROLLED

INVOLVE® 50 WDG plus 0.5 L/ac glyphosate equivalent will control the following weeds:

Broadleaf Weeds:

- | | |
|-------------------------------|------------------------------------|
| · Canada fleabane | · Narrow-leaved hawk's beard |
| · Canada thistle ² | · Redroot pigweed |
| · Common ragweed | · Scentless chamomile ² |
| · Cow cockle | · Stinkweed |
| · Dandelion | · Volunteer canola ³ |
| · Flixweed | · White cockle ² |
| · Hemp-nettle | · Wild mustard |
| · Kochia | · Wild buckwheat |
| · Lamb's quarters | |

Grasses:

- | | |
|------------------|--------------------|
| · Downy brome | · Volunteer barley |
| · Giant foxtail | · Volunteer wheat |
| · Green foxtail | · Wild oats |
| · Persian darnel | |

¹ Excluding Group 2- and Group 9-resistant fleabane

² Suppression only

³ Including glyphosate-tolerant varieties



INVOLVE® 50 WDG

HOW IT WORKS

INVOLVE® 50 WDG 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.

CROP STAGING

- Pre-plant, Post-harvest, Summerfallow

REGISTERED AND SUPPORTED TANK MIXES

- 2,4-D ESTER 700
- AIM® EC
- Authority® 480
- Dicamba L
- Glyphosate

SUPPORTED ADJUVANTS

- Agral 90®
- Not all tank mixes require an adjuvant, see label for details.

MIXING INSTRUCTIONS

1. Always start with a clean and empty sprayer tank.
2. Fill the tank $\frac{1}{3}$ to $\frac{1}{2}$ full of clean water.
3. With the agitator running, add the required amount of INVOLVE® 50 WDG herbicide. Continue to agitate for a minimum of 5 minutes to ensure that INVOLVE® 50 WDG herbicide is completely dispersed. If a chemical handler is used, make sure that all of the granules of INVOLVE® 50 WDG herbicide are completely dispersed and injected into the main tank with agitation before adding other chemicals.
4. Add the required amount of the tank-mix partner.
5. If the tank-mix partner is an Emulsifiable Concentrate (EC), reduce agitation to avoid inducing an invert emulsion. Maintain agitation to keep INVOLVE® 50 WDG herbicide dispersed.
6. Add the rest of the water.
7. If required for the tank mixture, add surfactant. If an antifoam agent is required, add last.
8. Refer to the section Specific Tank-Mix Directions on the label for mixing order and other mixing instructions.
9. For repeat tank loads, empty the spray tank completely before proceeding with Step 1, because remaining chemicals may prevent INVOLVE® 50 WDG herbicide granules from completely dispersing. If this is not possible, pre-slurry INVOLVE® 50 WDG herbicide in a small amount (5–10 L) of water before adding to the tank.



INVOLVE® 50 WDG

CROP ROTATIONS

- Alfalfa, bean crops (including dry beans, faba beans, field peas and soybeans), oats, red clover or alsike clover, timothy, spring barley, spring wheat and winter wheat: 24 hours after application
- Canola and lentils: 60 days after application

Post-harvest application in the fall may be summerfallowed or seeded in the spring to:

- Alfalfa, canola, field corn or bean crops (including dry beans, faba beans, field peas and soybeans), lentils, red clover or alsike clover, spring wheat, spring barley, oats and Timothy.

ADJUVANT RATE

Non-ionic surfactant varies from 0.2–0.35% v/v (2–3.5 L per 1000 L of water). Please refer to label for appropriate rate.

STORAGE

May be stored at any temperature

QUICK TIPS:

Degree of control and duration of effect depend on weed sensitivity, weed size, spray coverage and growing conditions. Activity of the herbicide mixture may be delayed by cold, dry conditions after application.

Injury to pulse crops may occur on coarse-textured soils, low in organic matter (less than 3%), or in fields with variable soils, gravely areas, sandy areas or eroded knolls. Avoid planting pulse crops in soils containing more than 50% sand.



KARMEX®

Unmatched versatility and value in residual weed control. Selectively control weeds in grape vineyards and asparagus, or control many annual and perennial weeds on non-crop areas where bare ground is desired.



ACTIVE INGREDIENT

80% Diuron = DF

PACKAGING

1 x 10 kg bag

APPLICATION RATES & ACRES TREATED

Rate: 0.45–2.71 kg/ac

Acres Treated: 4–20 ac/bag

Asparagus:

- Light sandy soils: 0.45–0.91 kg/ac (actual area sprayed)
- Clay soils: 0.91–1.82 kg/ac (actual area sprayed)

Grapes:

- Light sandy soils: 0.91–1.32 kg/ac (actual area sprayed)
- Clay soils: 1.32–2.71 kg/ac (actual area sprayed)

WATER VOLUME

- **Ground:** 100–160 L/ac (26–42 US gal/ac)
- **Aerial:** Do not apply by air.

RAINFASTNESS

Rain is desirable and required to move product to the rooting zone.

REGISTERED CROPS

- Asparagus
- Grapes

WEEDS CONTROLLED

Weed seedlings such as crabgrass, foxtail, pigweed, ragweed and lamb's quarters. See the label for the full listing of weeds controlled.

HOW IT WORKS

Applied as a spray to the surface of the ground for control of weeds. The weed control effects are slow to appear and will not become apparent until moisture carries the chemical into the root zone.

**CROP STAGING****Grapes:**

- Apply only to established vineyards (at least 3 years old) as a band application to grape rows.

Asparagus:

- Do not apply to newly planted asparagus, or to young plants during the first growing season after setting or on plants with exposed roots as severe injury may result.
- Apply as a band or broadcast treatment.
- Two applications may be used.

REGISTERED AND SUPPORTED TANK MIXES

None registered

MIXING INSTRUCTIONS

1. Accurately weigh the amount of KARMEX® required and mix into necessary volume of water.
2. Material must be kept in suspension at all times by agitation, preferably by continuous mechanical or hydraulic means in the spray tank.
3. Openings in screens should be equal to or larger than 50 mesh.

CROP ROTATIONS**Asparagus:**

- Do not replant treated areas to any crop within 2 years after last application as injury to subsequent crops may result.
- Do not use on dwarf or semi-dwarf plants.

PRE-HARVEST INTERVAL

None

GRAZING RESTRICTIONS

Do not graze the treated areas or cut for hay.

STORAGE

May be stored at any temperature

QUICK TIPS:

KARMEX® requires moisture in the form of rainfall or irrigation after treatment. Sandy and sandy loam soils require lower rates than clay and high organic soils. Use higher rates where perennial weeds are dominant on non-cropland. On non-cropland, regrowth of plantain, thistle or wild carrot will indicate when retreatment is necessary.

LEOPARD®

ADAMA's grass control product to control hard-to-kill grassy weeds in dry beans, soybeans and cucurbit vegetable crops.



ACTIVE INGREDIENT

Quizalofop-P-ethyl 100 g/L = EC

PACKAGING

Case: 2 x 7.8 L jugs

APPLICATION RATES & ACRES TREATED

Rate: 150 – 290 ml/ac (standard rate: 195 ml/ac)

Acres Treated: 30 – 50 ac./jug (standard rate: 40 ac./jug)

WATER VOLUME

Ground: 40 L/ac (10 US gal/ac)

Aerial: 10 L/ac (2.5 US gal/ac)

RAINFASTNESS

1 hour

REGISTERED CROPS

- Alfalfa, seed
- Beans (dry & snap)
- Canola
- Chickpeas
- Cucurbit vegetables
- Lentils
- Lima, Adzuki & Mung beans (Ontario)
- Peas (field & processing)
- Rutabagas (Ontario & Quebec)
- Soybeans
- Sugarbeets

WEEDS CONTROLLED

Check label as weed stage controlled by LEOPARD® varies.

- Barnyard grass
- Downy brome
- Fall panicum
- Foxtail barley
- Green foxtail
- Japanese brome
- Old witchgrass
- Proso millet
- Quackgrass¹
- Volunteer cereals (wheat, barley, oats)
- Volunteer corn
- Wild oats
- Yellow foxtail

¹Suppression at lower rates; control at higher rates

HOW IT WORKS

LEOPARD® is a selective post-emergent herbicide for the control of annual and perennial grasses. LEOPARD® is a systemic herbicide which is rapidly absorbed and readily translocated for the treated foliage to the root systems and growing points of the plant. Treated plants show a reduction in growth and a loss of competitiveness. An early yellowing and browning of the younger plant tissues is followed by a progressive collapse of the remaining foliage. These symptoms will generally be observed in 1–3 weeks depending on the grass species treated and the environmental conditions. This product does not control sedges or broadleaf weeds.

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.

**REGISTERED AND SUPPORTED TANK MIXES**

- Basagran®
- Glufosinate
- PHANTOM® 240 SL

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. If tank-mixing LEOPARD® with another pesticide and/or adjuvant, use the following sequence:
 - a. Water conditioning agents
 - b. Wettable Powders (WP)
 - c. Water Dispersable Granules (WDG)
 - d. Suspension Concentrates (SC) or flowables
 - e. Emulsifiable Concentrates (EC) or oil-based products (LEOPARD®)
 - f. Surfactants (NIS, COC, MSO)
4. Ensure that the herbicide is completely mixed before proceeding to the next step.
5. Add the rest of the required water to the tank. Mix well before applying to the crop.

On repeat tank loads, ensure that the amount of spray solution left in the tank from the previous load is less than 10% of volume about to be mixed.

Do not mix, load or clean spray equipment where there is a potential to contaminate wells or aquatic systems.

ADJUVANT RATES

- LEOPARD® is not packaged with, but requires, an adjuvant such as:
 - Merge® at 5–10 litres per 1000 litres of spray solution
 - Sure-Mix™ at 0.5% (0.5 litres per 100 litres of spray solution)
 - LI700® at 0.25–0.5% v/v
 - Liberate™ adjuvant at 0.5% v/v
 - Other non-ionic or methylated seed oil adjuvants

CROP ROTATIONS

No restrictions

PRE-HARVEST INTERVAL

- Beans (dry and snap), Cucurbits, Soybeans: 80 days
- Faba beans, Rutabagas: 30 days · Chickpeas: 85 days
- Sugarbeets: 60–80 days
- Canola: 64 days
- Lentils, Peas, Small red beans: 65 days

GRAZING RESTRICTIONS

Do not cut treated crops for hay.

STORAGE

Do not freeze.

QUICK TIPS:

LEOPARD® is safe on the crop at all stages. Rates are dependent on weed stages.

Use the higher adjuvant rate when targeting quackgrass, or when conditions are not conducive to good growth.



MCPA ESTER 600

Provides reliable post-emergent control of broadleaf weeds and great tank-mix flexibility in wheat, barley, rye, oats, and pasture areas.



ACTIVE INGREDIENT

MCPA 2 EH Ester 600 g/L = EC

PACKAGING

Case: 2 x 10 L jugs

APPLICATION RATES & ACRES TREATED

Rate: 285 – 425 ml/ac

Acres Treated: 24 – 35 ac/jug

WATER VOLUME

Ground: 37–75 L/ac (10–20 US gal/ac)

Aerial: 11 L/ac (3 US gal/ac)*

* Please refer to label as aerial application is crop-specific.

RAINFASTNESS

Avoid applying when rain is forecast.

REGISTERED CROPS

Crop	Timing*	Rate
Spring wheat, Barley, Rye	From the 3-leaf expanded to the early flag-leaf stage. From milk stage to maturity.	Up to 425 ml/ac
Oats (not underseeded with legumes)	From the 1-leaf expanded to the early flag-leaf stage.	Up to 365 ml/ac
Winter wheat, Fall rye	In spring, from full tillering to the shot blade stage. Do not apply during and after the flag-leaf stage. Do not apply to seedling winter cereals in the fall. GROUND APPLICATION ONLY.	Up to 425 ml/ac

*Do not apply more than one treatment per year

WEEDS CONTROLLED

Susceptible weeds²:

- Annual sunflower
- Burdock⁴
- Cocklebur
- Flixweed¹
- Lamb's quarters
- Mustard (except Dog and Tansy)
- Plantain
- Prickly lettuce
- Ragweed
- Russian pigweed¹
- Shepherd's purse¹
- Stinkweed
- Vetch
- Wild radish

Harder-to-control weeds²:

- Annual sow thistle
- Biennial wormwood
- Canada thistle¹
- Corn spurry¹
- Curled dock
- Dandelion
- Dog mustard
- Field bindweed¹
- Field Horsetail¹
- Field peppergass
- Goat's beard
- Hairy galinsoga
- Hedge bindweed¹
- Hemp-nettle⁴
- Kochia
- Lady's thumb¹
- Leafy spurge¹
- Oak-leaved goosefoot
- Perennial sow thistle¹
- Purslane
- Redroot pigweed
- Russian knapweed¹
- Russian thistle
- Smartweed¹
- Sweet clover⁵
- Tansy mustard
- Tartary buckwheat

¹ Use highest listed rate

² Small seedlings (2–4 leaf), growing rapidly, good growing conditions: 235 mL/ac
Large weeds, dry or cold weather, heavy infestations: 365 mL/ac Susceptibility decreases with age.

³ Small seedlings (2–4 leaf), growing rapidly, good growing conditions: 425 mL/ac
Large weeds, dry or cold weather, heavy infestations: 610 mL/ac Susceptibility decreases with age.

⁴ Before 4-leaf stage

⁵ Seedlings.



MCPA ESTER 600

HOW IT WORKS

Systemic post-emergence phenoxy herbicide that acts as a plant growth regulator to control broadleaf weeds by stimulating nucleic acid and protein synthesis, which impacts the cell division and respiration causing malformed leaves, stems and roots.

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.

REGISTERED AND SUPPORTED TANK MIXES

Herbicides:

- BADGE®
- BISON® 400 L
- BROMOTRIL®

Fungicides:

- BUMPER® 432 EC

Insecticides:

- PYRINEX® 480 EC

MIXING INSTRUCTIONS

1. Fill the spray tank 1/2 full with clean water.
2. Add the required amount of ADAMA MCPA ESTER 600 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

7 days

GRAZING RESTRICTIONS

7 days

STORAGE

May be stored at any temperature

QUICK TIPS:

If product is exposed to temperatures below -20°C, it should be warmed to at least 5°C and mixed thoroughly before using.

Always read and follow registered product label instructions. It is an offence under the Pest Control Products Act to use this product in a way that is inconsistent with the directions on the label.



PHANTOM® 240 SL

Flexible pre-plant, pre-plant incorporated, pre-emergent or post-emergent broadleaf and grassy weed control in soybeans, dry beans, peas and alfalfa, with residual control to eliminate early season weed competition.



ACTIVE INGREDIENT

Imazethapyr 240 g/L = SL

PACKAGING

Case: 2 x 3.3 L jugs

APPLICATION RATES & ACRES TREATED

Rate: 126 – 170 ml/ac

Acres Treated: 20 – 26 ac/jug

WATER VOLUME

Ground: 40 L/ac (10 US gal/ac)

Aerial: Do not apply by air.

RAINFASTNESS

6 hours or reduced control may occur on foliar application

REGISTERED CROPS

Crop	Application timing			
	Pre-plant	Pre-plant incorporated	Pre-emergent	Post-emergent
Adzuki beans		•	•	
Alfalfa (grown for seed)		•	•	
Dry common beans (black, cranberry, Dutch brown, kidney, white, yellow eye)		Cranberry Kidney White	•	
Lima beans (Ontario only)			•	
Processing peas		•	•	
Snap beans		•	•	
Snow peas		•	•	
Soybeans	•	•	•	•

WEEDS CONTROLLED

Check label as weeds controlled vary by crop and application timing.

Broadleaf weeds:

- Cocklebur
- Common ragweed
- Eastern black nightshade¹
- Lady's thumb
- Lamb's quarters
- Ragweed¹
- Redroot pigweed¹
- Smartweed
- Velvetleaf
- Wild buckwheat
- Wild mustard

Grasses:

- Barnyard grass
- Crabgrass
- Foxtail (green, yellow)
- Witch grass
- Proso millet

¹ Excluding Group 2-resistant weeds

HOW IT WORKS

PHANTOM® 240 SL is readily absorbed through both leaf and root uptake, and it is translocated in the weed to inhibit amino acid production and cell division. With early pre-plant and pre-emergent treatments, susceptible weeds emerge, are present as stunted plants and then die. When PHANTOM® 240 SL is applied post-emergence, absorption may occur through both roots and foliage. Susceptible weeds stop growing and eventually die.



PHANTOM® 240 SL

CROP STAGING

PHANTOM® 240 SL can be applied early pre-plant, pre-plant incorporated, pre-emergent or post-emergent depending on the crop.

REGISTERED AND SUPPORTED TANK MIXES

Tank-mix option	Application timing			
	Early Pre-plant	Pre-plant incorporated	Pre-emergent	Post-emergent
Glyphosate	•			• ¹
Glyphosate + FirstRate®	•			
Sencor®		•	•	
Trifluralin		•		
Edge®		•		
Lorox®/Linuron			•	
Basagran®				•
Basagran® Forte				•
ARROW® 240 EC, ARROW ALL IN®				•
LEOPARD®				•
SQUADRON® II			•	•

¹ Glyphosate-tolerant soybeans only (i.e. varieties with the Roundup Ready®).

MIXING INSTRUCTIONS

1. Fill the spray tank ½ full to ¾ full of water and start agitation.
2. Using a calibrated measuring device, add the required amount of tank-mix partner (refer to the tank mixture section of each crop for tank mixtures).
3. Mix thoroughly.
4. Using a separate calibrated measuring device, add the required amount of PHANTOM® 240 SL to the tank while agitating the spray solution.
5. While the solution remains agitating, add the required amount of non-ionic surfactant if required.
6. If required, add the required amount of liquid fertilizer (28-0-0, 10-34-0 or 32-0-0) to the spray solution.
7. Continue agitation while filling the remainder of the spray tank with water.

CROP ROTATIONS

These crops may be planted the season following a PHANTOM® 240 SL application:

- Adzuki beans
- Black beans
- Cranberry beans
- Dutch brown beans
- Field corn
- Clearfield® canola and corn
- Kidney beans
- Lima beans
- Processing peas
- Soybeans
- Spring barley
- Spring wheat
- White beans
- Winter wheat
- Yellow eyed beans

PRE-HARVEST INTERVALS

- Snap peas: 40 days
- Processing peas: 50 days
- Snow peas: 60 days
- Lima beans: 90 days
- Dry beans², Soybeans: 100 days

GRAZING RESTRICTIONS

Do not graze treated crops or cut for hay.

STORAGE

Do not freeze.

²Kidney, adzuki, Dutch brown, black, yellow eye, white and cranberry beans.

QUICK TIPS:

PHANTOM® 240 SL requires moisture for activation.

Soil-applied PHANTOM® 240 SL requires sufficient water within 7 days of application to moisten the soil to a depth of 2 inches for activation. If adequate moisture is not received within 7–10 days of application, perform a shallow inter-row cultivation 2–3 inches deep using a roller or S-tine cultivator to control escaped weeds until the field receives adequate moisture.

For early pre-plant applications (soybeans only), if more than 7–10 days elapse before the receipt of adequate precipitation to activate the herbicide and reduce the risk of weed escapes.



SQUADRON® II

With enhanced pan-granulated formulation, SQUADRON® II has increased solubility, less foaming and better compatibility with other herbicides. This broad-spectrum herbicide is registered for grassy and broadleaf weed control in a wide range of crops, most notably soybeans and potatoes.



ACTIVE INGREDIENT

75% Metribuzin = WDG

PACKAGING

Case: 4 x 5 kg jugs

APPLICATION RATES & ACRES TREATED

Rate: Please refer to the label for application rates as these vary based on crop, soil type and application methods.

Acres Treated: 15 – 60 acres/jug

RAINFASTNESS

6 hours after foliar application

REGISTERED CROPS

- Asparagus (established)
- Fruit trees (newly planted and established)
- Highbush blueberries (newly planted)
- Potatoes
- Processing carrots
- Soybeans¹
- Transplanted tomatoes (grown for processing)

¹ Do not use SQUADRON® II on AC Brant, Apache, Baron, Emosa, Maple Amber, Maple Ridge, IA 1003 or S-240 varieties.

WEEDS CONTROLLED

Broadleaf weeds:

- Carpetweed¹
- Cocklebur
- Common chickweed
- Common ragweed
- Corn spurry²
- Dandelion (seedling)
- Green smartweed
- Hemp-nettle²
- Jimsonweed¹
- Lady's thumb
- Lamb's quarters
- Prickly mallow
- Prostrate pigweed
- Redroot pigweed
- Russian thistle
- Shepherd's purse
- Stinkweed³
- Velvetleaf
- Wild buckwheat³
- Wild mustard
- Wild potato vine
- Yellow woodsorrel¹

Grassy weeds:

- Barnyard grass
- Cheat grass
- Crabgrass
- Fall panicum
- Giant foxtail
- Green foxtail
- Johnson grass (seedling)
- Witch grass
- Yellow foxtail

¹ Pre-emergence only

² Suppression with multiple post-emergent applications of 200 g/ha

³ Post-emergent applications only



SQUADRON® II

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® II 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:

Coarse	Medium	Fine
Loamy sand, Sandy loam	Loam, Silt loam, Silt, Sandy clay loam, Sandy clay	Silty clay loam, Silty clay, Clay loam, Clay

- 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® II is applied to muck soils, subsequent crops may be injured.
- Do not use on coarse soils with less than 2% organic matter.

PRE-HARVEST INTERVALS

- Asparagus: 14 days
- Potatoes, tomatoes: 60 days
- Newly planted blueberries: 2 years

CROP ROTATIONS

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

Fall planted or cover crops such as wheat, oats and rye may be injured when planted within the same season.

QUICK TIPS:

New pan-granulated formula is the same concentration as our original formulation but with a new production method; it has a smaller particle size (averaging 4 microns) which disperses more rapidly and at rest stays suspended longer than the original metribuzin formulation (average particle size of 6 microns).

SQUADRON® II

REGISTERED AND SUPPORTED TANK MIXES AND APPLICATION TIMING

Crop	Application Method	Products
Soybeans	Pre-plant incorporated	SQUADRON® II plus Treflan™ E.C., Dual II Magnum®, Frontier® or Axiom® DF
	Pre-emergence following pre-plant incorporated application of other herbicides	Treflan™ E.C. followed by SQUADRON® II; Dual II Magnum® followed by SQUADRON® II
	Pre-plant surface or burn-off application	SQUADRON® II alone or with PHANTOM® 240 SL (Pursuit®), glyphosate, Axiom® DF, Lorox® DF, Dual II Magnum®
	Pre-emergence	SQUADRON® II alone or with PHANTOM® 240 SL (Pursuit®), glyphosate, Axiom® DF, Lorox® DF, Dual II Magnum®, Frontier®, Linuron 50%, Linuron 480, Broadstrike™ Dual
Potatoes	Pre-emergence	SQUADRON® II alone or with Dual II Magnum®, Linuron 50%, Linuron 480 g/L
	Early post-emergence	SQUADRON® II alone or with Venture® L
	Pre-emergence or early post-emergence or pre-plant incorporated	SQUADRON® II plus Dual II Magnum® or Eptam® 8-E
	Split application (pre- and post-emergence)	SQUADRON® II alone
Transplanted Tomatoes (grown for processing only)	Pre-plant incorporated	SQUADRON® II plus Treflan™ E.C., Dual II Magnum®
	Post-emergence	SQUADRON® II alone
Asparagus (established)	Pre-emergence	SQUADRON® II alone
Processing carrots	Post-emergence	SQUADRON® II alone
Highbush blueberries (newly planted)	Pre-emergence to weeds	SQUADRON® II alone

INSECTICIDE TANK MIXES WITH SQUADRON® II

SILENCER® 120 EC is a supported tank mix for soybeans, potatoes, transplanted tomatoes (grown for processing only), asparagus (established) and processing carrots.

Timing of applications should be based on the presence of vulnerable pest developmental stages and significant populations as determined by local monitoring.

THRASHER®

Provides excellent dual modes of action for control of 26 tough broadleaf weeds in wheat and barley.



ACTIVE INGREDIENTS

Bromoxynil Octanoic Ester 225 g/L, and
2,4-D EH Ester 225 g/L = EC

PACKAGING

Case: 2 x 10 L jugs

APPLICATION RATES & ACRES TREATED

Rate: 500 ml/ac

Acres Treated: 20 ac/jug

WATER VOLUME

Ground: 20–40 L/ac (5–10 US gal/ac)

Aerial: 12–16 L/ac (3–4 US gal/ac)

RAINFASTNESS

1 hour

REGISTERED CROPS

• Barley

• Wheat (spring)

WEEDS CONTROLLED (4-LEAF STAGE UNLESS OTHERWISE NOTED)

- American nightshade
- Ball mustard
- Bluebur
- Cocklebur
- Common buckwheat¹
- Common ground¹
- Common ragweed
- Cow cockle
- Flixweed
- Green smartweed
- Kochia (2" high or 1- to 12- leaf)
- Lady's thumb
- Lamb's quarters¹
- Night-flowering catchfly
- Pale smartweed
- Redroot pigweed²
- Russian thistle (2- to 12-leaf)
- Shepherd's purse
- Stinkweed¹
- Tartary buckwheat¹
- Velvetleaf (3" high)
- Volunteer canola
- Volunteer sunflower
- Wild buckwheat¹
- Wild mustard¹

¹ 8-leaf

² including triazine-resistant pigweed

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



HERBICIDE

THRASHER®

REGISTERED AND SUPPORTED TANK MIXES

BISON® 400 L

MIXING INSTRUCTIONS

1. Fill the spray tank $\frac{1}{2}$ full with water.
2. Add the required amount of THRASHER® 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

- May be stored at any temperature
- 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.

“

Being able to draw from the largest library of actives is such an advantage. I like being able to offer my customers a full portfolio of solutions that fits their needs.

Melissa Goods
R&D/Tech Services





INSECTICIDES

PEST CONTROL

INSECTICIDES



INSECTICIDES

.....	
ALIAS® 240 SC (Seed and soil treatment)	48
ALIAS® 240 SC (Foliar application)	50
CORMORAN®	52
NIMITZ® 480 EC	58
PYRINEX® 480 EC	61
SILENCER® 120 EC	62
SOMBRERO® 600 FS	64
.....	



ALIAS® 240 SC

Seed and soil treatments for long lasting, early season control of tough insects in cereals, soybeans and many specialty crops.



ACTIVE INGREDIENT

Imidacloprid 240 g/L = SC

PACKAGING

Case: 4 x 3.785 L jugs

APPLICATION RATES & ACRES TREATED

Rate:

- Seed treatment: 12–238 ml/100 lbs of seed
- Soil application: 344–526 ml/ac

Seed or Acres Treated:

- Seed treatment: 16–315 lbs of seed/jug
- Soil application: 7–11 ac/jug

WATER VOLUME

Do not dilute with any more than 3:1 water to ALIAS® 240 SC when treating seed pieces.

Aerial: Do not apply by air.

RAINFASTNESS

N/A

REGISTERED CROPS¹

- Barley
- Broccoli
- Cabbage
- Caneberries
- Field lettuce
- Ginseng
- Melons
- Oats
- Potatoes
- Saskatoon berries
- Soybeans
- Strawberries
- Sweet potatoes
- Tomatoes
- Wheat (spring, winter)

¹Consult label for crop registrations by province.

KEY INSECTS CONTROLLED

- Aphids
- Colorado potato beetle
- European chafer larvae
- Leafhopper
- Potato flea beetle
- Soybean aphid
- Wireworm
- Plus many other insects; see label for details

HOW IT WORKS

Neonicotinoid chemistry provides control of insect pests through a combination of contact and ingestion.

APPLICATION TIMING AND CROP STAGING

Crop	Insect	Rate	Application Information
Wheat (spring, winter), Barley, Oats	Wireworm	19–29 ml/100 lbs of seed	For light wireworm pressure, apply to the seed prior to planting.
		38–57 ml/100 lbs of seed	For fields with a history of moderate to high wireworm pressure, apply to the seed prior to planting.
Field lettuce	Lettuce aphid	10.2 ml/1,000 plants	Drench plugs prior to transplanting.
Potatoes	Aphids (including green, peach, buckthorn, foxglove, potato aphid), Colorado potato beetle, Potato flea beetle, Potato leafhopper	Soil application: 7.5–12 ml/100 m row or 344–526 ml/ac (based on 36-inch row spacing)	The higher rate is recommended when extended length of control is needed.
		Seed piece treatment: 12–18 ml/100 lbs of seed pieces	Apply as a diluted spray onto seed pieces using a shielded spray system.
Soybeans	Wireworm, Soybean aphid, Bean leaf aphid, Seedcorn maggot	118–236 ml/100 lbs of seed	Apply to seed, and use the higher rate when insect populations are expected to be high.
Tomatoes	Colorado potato beetle	7–10 ml/100 m row	Apply in-furrow transplant.

Consult label for additional seed, soil and in-furrow treatments. soil treatment seed or seed piece treatment



ALIAS® 240 SC

SEED AND SOIL TREATMENT

REGISTERED AND SUPPORTED TANK MIXES

- Raxil® Pro in wheat, barley and oats
- Apron XL® LS in soybeans
- ALIAS® 240 SC may be applied sequentially or mixed with other leading seed treatments that are registered for use in cereal and soybean crops.

MIXING INSTRUCTIONS

Seed and seed treatment:

- Shake well before using.
- When using ALIAS® 240 SC in conjunction with another seed treatment such as Rancona® Apex, Rancona® Pinnacle or Vitaflo® 280, mix just prior to application.
- Apply as a diluted spray onto seed pieces using a shielded spray system.
- Agitate or stir spray solution as needed.

Soil application:

- Apply as a narrow band in-furrow.

CROP ROTATIONS

Acceptable plant-back intervals for:

- Cereal grains (wheat, barley, oats): minimum 30 days
- Peas and beans: 9 months
- All other food and feed crops: 12 months

PRE-HARVEST INTERVALS

- Caneberries (Crop subgroup 13A), Highbush blueberries, Saskatoon berries: 14 days
- Brussels sprouts, Cole (Crop group 5), Field lettuce, Melons: 21 days
- Strawberries: 30 days
- Eggplant: 70 days
- Sweet potatoes: 125 days
- Ginseng: 3 years between application and harvest

GRAZING RESTRICTIONS

Do not graze or feed livestock on treated areas for 4 weeks after planting.

STORAGE

- Store in cool, dry place. Do not freeze.
- Long-term storage of mixed product or carry-over of seed treated with ALIAS® 240 SC is not recommended.

QUICK TIPS:

For optimal insect control, good coverage of the seed is required.
For best results, direct spray on the seed pieces or seed potatoes in the furrow.

ALIAS® 240 SC

Control your worst potato, blueberry, vegetable and tree fruit insects with a long-lasting foliar application.



ACTIVE INGREDIENT

Imidacloprid 240 g/L = SC

PACKAGING

Case: 4 x 3.785 L jugs

APPLICATION RATES & ACRES TREATED

Rate: 70 – 190 ml/ac

Acres Treated: 20 – 54 ac/jug

WATER VOLUME

Ground: Apply by ground application in a water volume that provides good coverage of foliage and insect pests.

Aerial: Do not apply by air.

RAINFASTNESS

Avoid application when heavy rain is forecast.

REGISTERED CROPS

- Apples
- Brussels sprouts
- Caneberries (Crop subgroup 13A)
- Cherries¹
- Cole (Crop group 5)
- Eggplant
- Highbush blueberries²
- Lettuce³
- Nectarines
- Peaches
- Potatoes
- Tomatoes

¹BC, ON only

²BC only

³BC, ON, PQ, PEI, NS only

KEY INSECTS CONTROLLED

- Aphids
- Black cherry fruit fly
- Colorado potato beetle
- Leaf hoppers
- Mullein bug
- Potato flea beetle
- Soybean aphid
- Tentiform leafminer
- Western cherry fruit fly

HOW IT WORKS

Neonicotinoid chemistry provides control of insect pests through a combination of contact and ingestion.

APPLICATION TIMING AND CROP STAGING

The need and timing of application should be based on the presence of pests at vulnerable developmental stages and significant populations as determined by local monitoring. Consult label for specific crop and insect timing.



ALIAS® 240 SC FOLIAR APPLICATION

REGISTERED AND SUPPORTED TANK MIXES

None registered

MIXING INSTRUCTIONS

1. Shake well before using.
2. Add a portion of the required amount of water to the spray tank with agitation.
3. Add required amount of ALIAS® 240 SC.
4. Complete filling the tank with balance of water.
5. Maintain sufficient agitation during mixing and application.

CROP ROTATIONS

- Cereal grains (wheat, barley, oats): minimum 30 days
- Field peas and beans: 9 months
- All other food and feed crops: 12 months

PRE-HARVEST INTERVALS

- Caneberries (Crop subgroup 13A): 4 days
- Potatoes, Field lettuce, Cole (Group group 5), Apples, Peaches, Nectarines, Brussels sprouts and Eggplant: 7 days
- Cherries: 10 days
- Highbush blueberries: 14 days

GRAZING RESTRICTIONS

Do not graze or harvest cover crops for food or feed.

STORAGE

Store in cool, dry place. Do not freeze.

QUICK TIPS:

For optimal control, good coverage of the foliage is needed.

CORMORAN®

Multiple modes of action for codling moth control in apples and Colorado potato beetle control in potatoes as well as a wide range of other insects in specialty crops



ACTIVE INGREDIENT

Novaluron 100 g/L and Acetamiprid 80 g/L = EC

PACKAGING

Case: 2 x 10.08 L jugs

APPLICATION RATES & ACRES TREATED

Rate: 180–840 ml/ac

Acres Treated: 12–56 ac/jug

WATER VOLUME

Ground: 80–400 L/ac (20–105 US gal/ac)

Aerial: Do not apply by air.

RAINFASTNESS

Avoid application when heavy rain is forecast.

REGISTERED CROPS

- Alfalfa (grown for seed)
- Apples
- Brassica leafy greens (Crop subgroup 4-13B)
- Bushberries (Crop subgroup 13-07B)
- Head and stem brassica vegetable crops (Crop group 5-13)
- Peppers (bell and non-bell)
- Potatoes
- Strawberries
- Stone fruits (Crop group 12-09)
- Sweet corn

KEY INSECTS CONTROLLED

- Alfalfa looper
- Alfalfa plant bug
- Aphids
- Apple maggot
- Armyworm
- Blueberry flea beetle
- Blueberry gall midge (Cranberry tip worm)
- Blueberry maggot fly
- Blueberry spanworm
- Cabbage looper
- Cherry fruit fly (suppression)
- Cherry fruitworm
- Codling moth
- Colorado potato beetle
- Cranberry fruitworm
- Diamondback moth
- Dogwood borer
- European apple sawfly
- European corn borer
- Green fruitworm
- Gypsy moth
- Imported cabbageworm
- Japanese beetle
- Leafhopper
- Leafroller
- Lesser appleworm
- Lygus bug
- Mullein bug
- Oriental fruit moth
- Plum curculio
- Spotted wing drosophila
- Strawberry clipper weevil
- Strawberry rootworm
- Swede midge
- Tarnished plant bug
- Tentiform leafminer
- Thrips

HOW IT WORKS:

CORMORAN® kills insect eggs by contact and larvae by ingestion. Containing two modes of action, CORMORAN® provides both rapid knockdown and residual control of insect pests.

**CROP STAGING AND RATES (CONT'D)**

Crop	Insects Controlled	Rate	Application Instructions
Apples	Leafhopper, Tentiform leafminer	280 ml/ac	Do not apply more than 2800 ml/ac per season. Apply in minimum finished spray volume of 400 L/ac by ground. Repeat applications if needed to maintain control but do not make applications < 12 days apart.
	Aphids	280 – 420 ml/ac	
	Gypsy moth, Japanese beetle, Mullein bug	340 – 500 ml/ac	
	Green fruitworm	420 ml/ac	
	Apple maggot, Codling moth, European apple sawfly, Oriental fruit moth, Plum curculio	420 – 500 ml/ac	
	Lesser appleworm, Tarnished plant bug	500 ml/ac	
	Dogwood borer	600 ml/ac	
Potatoes	Colorado potato beetle	180 – 280 ml/ac	Do not apply more than once every 10 – 14 days. For Colorado potato beetle, do not apply more than twice to a single generation and do not apply to successive generations. Apply in minimum finished spray volume of 80 L/ac by ground.
	Armyworm, Cabbage looper	180 – 300 ml/ac	
	Leafhopper	200 – 300 ml/ac	
	Aphids, European corn borer	260 – 300 ml/ac	



Crop	Insects Controlled	Rate	Application Instructions
Stone fruit (Crop group 12-09) American plum, Apricot, Beach plum, Black cherry, Canada plum, Cherry plum, Chicksaw plum, Chinese jujube, Damson plum, Japanese apricot, Japanese plum, Klamath plum, Nanking cherry, Nectarine, Peach, Plum, Prune plum, Plumcot, Sloe, Sweet cherry, Tart cherry and cultivars, varieties and/or hybrids of these commodities	Oriental fruit moth (Ontario only)	580 – 840 ml/ac	Applications per season: 4
	Cherry fruit fly (suppression, cherry only), Plum curculio (under high pressure, suppression only)	840 ml/ac	Apply in minimum finished spray volume of 405 L/ac. Use the high rate under heavy pest pressure. Do not apply during bloom. Minimum re-application interval of 10 days.
Peppers (bell and non-bell)	Colorado potato beetle	180 – 280 ml/ac	Do not make applications less than 7 days apart.
	Aphids	200 ml/ac	
	European corn borer	260 – 300 ml/ac	Do not apply more than 1050 ml/ac per season. Apply in at least 80 L/ac by ground. For CPB, do not apply more than twice to a single generation and do not apply to successive generations.
	Armyworm, Cabbage looper	180 – 300 ml/ac	
Strawberries	Aphids, Leafhopper	200 – 300 ml/ac	Applications per season: 3
	Strawberry clipper weevil, Tarnished plant bug	360 ml/ac	Do not apply more than once every 10-14 days. Apply in a min. application volume of 80 L/ac by ground. Do not apply during bloom.

**CORMORAN®**

Crop	Insects Controlled	Rate	Application Instructions
Brassica (cole) leafy vegetables (Crop group 5-13): Broccoli, Chinese broccoli, Broccoli raab (rapini), Brussels sprouts, Cabbage, Chinese cabbage (bok choy or napa), Cauliflower, Cavalo broccoli, Collards, Kale, Kohlrabi, Mizuna, Mustard spinach, Rape greens and cultivars, varieties and/or hybrids of these commodities	Alfalfa looper, Armyworm, Cabbage looper, Diamondback moth, Imported cabbageworm	180 – 300 ml/ac	Applications per season: · Two at low rate · One at high rate
	Aphids	260 – 300 ml/ac	Do not apply more than 680 ml/ac per season. Apply in a minimum finished spray volume of 81 L/ac by ground.
	Lygus bug, Swede midge	200 ml/ac	
Leafy vegetables – Brassica leafy greens (Crop subgroup 4-13B): Arugula, Broccoli raab, Chinese broccoli, Abyssinian cabbage, Seakale cabbage, Bok choy (Chinese cabbage), Collards, Garden cress, Upland cress, Hanover salad, Kale, Maca, Mizuna, Mustard greens, Radish leaves, Rape greens, Wild rocket, Shepherd's purse, Turnip greens, Watercress, as well as cultivars, varieties and hybrids of these commodities	Aphids	260 – 300 ml/ac	Applications per season: 3 Do not apply more than once every 7 – 10 days. Apply in a minimum finished spray volume of 80 L/ac by ground.



Crop	Insects Controlled	Rate	Application Instructions
Sweet corn	Aphids	200 – 280 ml/ac	Applications per season: 2 Do not apply more than once every 21 days. Apply in a minimum 80 L/ac spray volume by ground. Use the higher rate for heavier infestations.
Bushberries (Crop sub-group 13-07B): Aronia berry, Blueberry (lowbush, highbush), Chilean guava, Cranberry (highbush), Currant (black, buffalo, red), Elderberry, European barberry, Gooseberry, Honeysuckle (edible), Huckleberry, Jostaberry, Juneberry (Saskatoon berry), Lingonberry, Native currant, Salal, Sea buckthorn and cultivars, varieties and/or hybrids of these commodities	Aphids, Blueberry gall midge (cranberry tipworm)	200 ml/ac	Applications per season: 3
	Japanese beetle	280 ml/ac	Apply in a finished spray volume of 80 L/ac by ground.
	Blueberry maggot fly	300 – 560 ml/ac	Do not apply more than once every 10 – 14 days.
	Blueberry flea beetle, Blueberry spanworm, Strawberry rootworm, Cherry fruitworm, Cranberry fruitworm, Spotted wing drosophila, Thrips	560 ml/ac	
Alfalfa (grown for seed)	Alfalfa plant bug, Lygus bug	300 – 360 ml/ac	Applications per season: 2 Apply prior to bloom up to when 50% of seed pods are ripe. Do not exceed more than 720 ml/ac per season. Do not apply more than once in 7 days. Use higher rate for heavier infestations.



CORMORAN®

REGISTERED AND SUPPORTED TANK MIXES

- Acramite® 50 WS
- Luna Sensation™
- Polyram® DF WSP
- Pristine® WG

MIXING INSTRUCTIONS

1. Be sure sprayer is clean and not contaminated with any other materials or crop injury or sprayer clogging may result.
2. Fill tank ½ full with clean water.
3. Start agitation.
4. Be certain that the agitation system is working properly and creates a rippling or rolling action on the liquid surface.
5. Pour product directly from container into partially filled spray tank.
6. Continue filling tank. Increase agitation if necessary, to maintain surface action.
7. Maintain continuous agitation during mixing and application to assure uniform suspension. If mixture sits without agitation for extended periods, agitate the mixture for at least 10 minutes before use.

CROP ROTATIONS

There are no rotational crop plant restrictions for this product.

PRE-HARVEST INTERVALS

- Strawberries: 1 day
- Brassica leafy vegetables (Crop group 5-13 and subgroup 4-13B), Peppers, Potatoes, Stone fruits (Crop group 12-09): 7 days
- Bushberries (Crop sub-group 13-07B): 8 days
- Sweet corn: 10 days
- Alfalfa (grown for seed), Apples: 14 days

STORAGE

- Store in original, tightly closed container.
- Do not ship or store near food, feed, seed and fertilizers.
- Store in cool, dry, locked, well-ventilated area without floor drain.
- Keep away from fire or open flame, or other sources of heat.

QUICK TIPS:

Consider early applications (before petal fall) of CORMORAN® to allow beneficial insects to build up later in the season. To minimize the possibility of transient effects on honeybee brood development, do not use CORMORAN® on blooming crops when bees are actively foraging. If orchards have been historically infested with mites or aphids, be sure to scout regularly and use miticides to control their populations.

NIMITZ[®] 480 EC

A fast-acting contact nematicide, NIMITZ[®] 480 EC is a revolutionary new management option for controlling root-knot and root lesion nematodes in fruiting vegetables and cucurbits.



ACTIVE INGREDIENT

Fluensulfone 480 g/L = EC

PACKAGING

Case: 2 x 9.46 L jugs

APPLICATION RATES & ACRES TREATED

Rate: 1.62 – 3.24 L/ac

Acres Treated: 3 – 6 ac/jug

WATER VOLUME

Ground: 120 L/ac (32 US gal/ac)

Aerial: Do not apply by air.

RAINFASTNESS

If NIMITZ[®] 480 EC is applied in heavy rainfall areas, avoid application during rain or when rain is forecasted within the next 24 hours. Excessive moisture immediately after application may cause this product to move past the targeted zone.

REGISTERED CROPS

- Cucumbers
- Eggplant
- Melons
(cantaloupe, watermelon, honeydew)
- Okra
- Peppers (bell, non-bell)
- Squash
- Tomatoes (except small tomatoes)

KEY INSECTS CONTROLLED

- Root-knot nematodes
- Root lesion nematodes

HOW IT WORKS

Fluensulfone is a true nematicide that kills the target by contact, rather than temporary paralysis activity as seen with older organophosphate and carbamate chemistry. NIMITZ[®] 480 EC has rapid activity. After one hour of exposure, nematodes cease feeding, become paralyzed and complete mortality is achieved within 24–72 hours. Any nematode eggs laid after exposure to NIMITZ[®] 480 EC are likely to be unviable, or if juveniles do hatch, they do not survive.

APPLICATION TIMING AND CROP STAGING

Applications can be broadcast incorporated, banded and incorporated, or applied by drip (trickle) chemigation. Apply at a rate of 1.62–3.24 L/ac a minimum of 7 days before transplanting. Soil applications should be applied only in accordance with directions and conditions of use described in this labeling. Treated areas can be covered with plastic or left uncovered according to planting practices. NIMITZ[®] 480 EC does not provide residual control of nematodes. Do not apply more than 1 application per crop and no more than 3.24 L/ac of product per year (365 days).



NIMITZ® 480 EC

REGISTERED AND SUPPORTED TANK MIXES

Do not apply NIMITZ® 480 EC with any other product before testing for physical and chemical compatibility of the mixture. To determine compatibility pour the recommended proportions of the product(s) into a suitable container. After mixing, wait for 30 minutes and check to see if the product remains mixed. If the product remains mixed, it is considered physically compatible.

MIXING INSTRUCTIONS

1. Add the recommended amount of NIMITZ® 480 EC to the water in the spray tank and mix well.
2. Continue agitation at frequent intervals during application.
3. If NIMITZ® 480 EC is to be mixed with other products or fertilizers, the physical compatibility of the mixture should be tested as described above prior to use.

CROP ROTATIONS

Fruiting vegetables and cucurbits may be planted following an application of this product.

GRAZING RESTRICTIONS

Do not feed treated commodities or any residual plant material to animals.

STORAGE

Do not freeze.

QUICK TIPS:

Soil moisture should be adequate for uniform mechanical incorporation and to support seed germination or plant growth. For optimal performance, all applications must be incorporated by water and/or mechanical means to a depth of 15–20 cm. Resume a normal irrigation schedule immediately after transplanting.

PYRINEX® 480 EC

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

NOTE: ADAMA is no longer producing PYRINEX® 480 EC. Consult local retail for availability.



ACTIVE INGREDIENT

Chlorpyrifos 480 g/L = EC

PACKAGING

Case: 2 x 10 L jugs

APPLICATION RATES & ACRES TREATED

Rate: 235 – 600 ml/ac

Acres Treated: 17 – 42 ac/jug

WATER VOLUME

Ground: 20–80 L/ac (5–20 US gal/ac)

Aerial: 4–12 L/ac (1–3 US gal/ac)

RAINFASTNESS

4–6 hours

REGISTERED CROPS

- Strawberries
- Radishes
- Celery
- Cucumbers
- Peppers (green)
- Broccoli
- Brussels Sprouts
- Cabbages
- Cauliflower
- Onions
- Chinese Broccoli
- Garlic
- Rutabagas
- Carrots
- Corn (field, sweet)
- Cereals (wheat, barley, oats)
- Potatoes
- Tobacco

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)
- Dark-sided 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.



PYRINEX® 480 EC

REGISTERED AND 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 ESTER 700
- Banvel® + 2,4-D amine
- BUMPER® 432 EC
- MCPA ESTER 600
- Velocity®

MIXING INSTRUCTIONS

1. Fill spray tank with water to $\frac{2}{3}$ 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
- Sunflowers: 42 days
- Cereals (wheat, barley, oats): 60 days
- Corn (field, sweet), Potatoes: 70 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 freeze.

QUICK TIPS:

Avoid application under hot temperatures. Get the best control of orange wheat blossom 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.

SILENCER® 120 EC

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



ACTIVE INGREDIENT

Lambda-cyhalothrin 120 g/L = EC

PACKAGING

Case: 4 x 3.785 L jug

APPLICATION RATES & ACRES TREATED:

Rate: 17 – 94 ml/ac

Acres Treated: 40 – 220 ac/jug

WATER VOLUME

Ground: 40 – 80 L/ac (10–20 US gal/ac)

Aerial: 4 – 16 L/ac (1–4 US gal/ac)

RAINFASTNESS

1 hour

REGISTERED CROPS

- Apples
- Cherries
- Peaches and Nectarines
- Pears
- Strawberries
- Plums
- Cole crops
(broccoli, Brussels sprouts, cauliflower)
- Tomatoes
- Head and Leaf lettuce
- Sweet potatoes
- Choke cherry
- Shelterbelts
- Bulb vegetables
(garlic, leeks, green and Welsh onions, shallots)
- Soybeans
- Carrots
- Corn (field, sweet)
- Cereals
(wheat, barley, oats)
- Potatoes
- Tobacco

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
- Bean aphid
- Bean leaf beetle
- Bertha armyworm
- Black vine weevil (adults)
- Bud (clipper) weevil
- Cabbage looper
- Cabbage seedpod weevil (adults)
- Carrot rust fly
- Carrot weevil
- Cherry maggot
- Codling moth
- Colorado potato beetle
- Corn borer
- Corn earworm
- Crucifer flea beetle
- Cutworms
- Dark-sided cutworm
- Diamondback moth larvae
- European asparagus aphids
- European corn borer
- 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
- Pear psylla (nymphs, adults)
- Plum curculio
- Potato flea beetle
- Potato leafhopper
- Prairie tent caterpillar
- Soybean aphid
- Spotted tentiform leafminer
- Sunflower beetle
- Swede midge
- Tarnished plant bug
- Tuber flea beetle
- Ugly nest caterpillar
- Western bean cutworm
- White apple leafhopper
- Winter moth
- Woolly apple aphid



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.

REGISTERED AND SUPPORTED TANK MIXES

Herbicides:

- BISON® 400 L
- SQUADRON® II

Fungicides:

- Allegro®
- BUMPER® 432 EC
- Headline® EC
- Quilt®
- TOPNOTCH™

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): 14 days
- Corn (field): 21 days
- Legumes (soybeans, beans, field 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 in alfalfa and 14 days of application in wheat, barley, oats and timothy.

For silage corn do not apply within 14 days of harvesting for silage.

For all other registered crops, DO NOT graze or harvest treated forage, straw or hay for livestock feed.

STORAGE

Do not freeze.

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.

SOMBRERO® 600 FS

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



ACTIVE INGREDIENT

Imidacloprid 600 g/L = SC

PACKAGING:

Case: 8 x 1.54 L jugs

APPLICATION RATES & ACRES TREATED

Rate: Please refer to the label for application rates or the table below as these vary based on seed type.

Acres Treated: Varies

WATER VOLUME

Dilute in sufficient liquid to achieve uniform coverage on the seed.

RAINFASTNESS

N/A

REGISTERED CROPS

- Barley
- Canola¹
- Corn¹
- Oats
- Soybeans
- Wheat (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
- Seed corn 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 Pest Control Products (PCP) Act and the Seeds Act Regulations.

Crop	Insect	Rate	Application Information
Corn, Field corn for seed production	Wireworm	21.3 ml per 80,000 seeds	Dilute in sufficient water to achieve uniform coverage on the seed. Ensure seed is adequately coloured. Other polymers and coating materials may be required.
Field corn for seed production	Corn flea beetle	80 ml per 80,000 seeds	
Wheat (spring, winter), Barley, Oats	Wireworm	17 – 50 ml per 100 kg of seed	Dilute in sufficient liquid to achieve uniform coverage on the seed.
Soybeans	Soybean aphid, Bean leaf beetle, Seedcorn maggot, Wireworm	104 – 208 ml per 100 kg of seed	Use the higher rate for early planting, 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.
Canola	Flea beetle	667 – 1333 ml per 100 kg of seed	In areas where flea beetle populations are high, use the higher application rate.



SOMBRERO® 600 FS

REGISTERED AND SUPPORTED TANK MIXES

- Allegiance®
- Apron Maxx® RTA®
- EverGol® Energy
- Insure® Cereal FX4
- Insure® Pulse
- Rancona® Apex
- Raxil® MD
- Raxil® Pro
- Trilex® EverGol®
- Vibrance® Quattro
- Vibrance® Maxx RFC

MIXING INSTRUCTIONS

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

STORAGE

- Do not freeze.
- Agitate vigorously before use.

USE RESTRICTIONS¹

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 planting.
3. Treated canola seed or rapeseed 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 planting. Do not store treated seed above 25°C or in direct sunlight.
4. 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.

¹All bags containing treated seed must be labelled or tagged. Please see label for instructions.

QUICK TIPS:

For optimal insect control, make sure to get good coverage. For resistance management, rotate SOMBRERO® 600 FS with different groups that control the same pests in a field.

“

Everyone tells you that their products are the best—best performing, best yielding, best protection—the list goes on and on... but how many companies really listen to the challenges that are facing their customers and make best-solution recommendations for them based on those challenges?

Gavin Lunn

Key Account Manager, Eastern Canada





FUNGICIDES

DISEASE CONTROL

FUNGICIDES



FUNGICIDES

.....

BUMPER® 432 EC 70

CAPTAN 80 WSP 72

CUSTODIA® 75

FOLPAN® 80 WDG 77

ORIOUS® 430 SC 79

NEW SORATEL™ 81

TOPNOTCH™ 83

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BUMPER® 432 EC

Broad-spectrum systemic fungicide that protects against yield and quality losses due to leaf disease including mummy berry in blueberries



ACTIVE INGREDIENT

Propiconazole 432 g/L = EC

PACKAGING

Case: 2 x 4.8 L jugs

APPLICATION RATES & ACRES TREATED

Rate: 60–180 ml/ac

Acres Treated: 27–80 ac/jug

WATER VOLUME

Ground: min 80 L/ac (20 US gal/ac)

Aerial: 16–20 L/ac (4–5 US gal/ac)

RAINFASTNESS

1 hour

REGISTERED CROPS

- Apricots
- Barley
- Blueberries
- (lowbush, highbush)
- Canola
- Cherries (sweet, sour)
- Corn
- Cranberries
- Caneberries
- Dry edible beans
- Nectarines
- Oats
- Peaches
- Plums
- Saskatoon berries
- Soybeans
- Wheat (spring, winter)

KEY DISEASES CONTROLLED

- Black knot (suppression)
- Blackleg
- Brown rot
- Cherry Leaf spot
- Cottonball
- Mummy berry
- Net and spot blotches
- Powdery mildew
- Rusts
- Septoria spots and blotches
- Scalds
- Tan spots
- Yellow rust

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

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

BUMPER® 432 EC

FRUIT AND SPECIALTY CROP USES

Crop	Diseases
Asparagus	Rust
Cranberries	Cottonball
Blueberries (highbush, lowbush)	Mummy berry
Kentucky bluegrass grown for seed	Powdery mildew
Peaches, Nectarines, Plums, Apricots	Brown rot blossom blight, Fruit brown rot
Plums, Sour cherries	Black knot (suppression only)
Rutabagas	Powdery mildew
Saskatoon berries	Entomosporium leaf and berry spot, Saskatoon juniper rust
Sweet and sour cherries	Brown rot blossom blight, Fruit brown rot, Cherry leaf spot
Western red cedar	Keithia foliar blight

REGISTERED AND SUPPORTED TANK MIXES

Herbicides:

- 2,4-D ESTER 700
- BADGE®
- BROMOTRIL®
- MCPA ESTER 600

Insecticides:

- SILENCER® 120 EC

MIXING INSTRUCTIONS

1. Fill spray tank ½ full with water and gently agitate.
2. Add the required amount of BUMPER® 432 EC 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

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

GRAZING RESTRICTIONS

Do not graze livestock within 3 days of spraying.

STORAGE

May be stored at any temperature

QUICK TIPS:

BUMPER® 432 EC should be applied as a preventative disease control measure. Established diseases are more difficult to control and may have already reduced crop vigour.

CAPTAN 80 WSP

CAPTAN 80 WSP can be used as a spray for the control of certain fungus diseases of fruit, vegetables and ornamental crops as well as a soil treatment for the control of certain seed-rots and damping-off diseases.



ACTIVE INGREDIENT

80% CAPTAN = WSP (water-soluble pouch)

PACKAGING

Case: 4 foil bags x 5 pouches of 0.5 kg

APPLICATION RATES & ACRES TREATED

Rate: Varies by crop, refer to table below.

Acres Treated: Varies

WATER VOLUME

Ground: 400 L/ac (105 US gal/ac)

Aerial: 20 L/ac (5 US gal/ac)

RAINFASTNESS

N/A

REGISTERED CROPS

This is only a partial list of crops registered for use with CAPTAN.

For the full list, please refer to the CAPTAN label.

- Apples
- Apricots
- Blackberries
- Blueberries (highbush, lowbush)
- Cherries
- Cucumbers (field grown)
- Ginseng
- Grapes
- Highbush blueberries
- Lowbush blueberries
- Loganberries
- Nectarines
- Peaches
- Pears¹
- Plums
- Potatoes
- Prunes
- Raspberries
- Rhubarb
- Strawberries (field grown)
- Tomatoes (field grown – foliar applications)
- Turf (golf course, sod farms only)
- Outdoor ornamentals (cut and non-cut flowers)
- Greenhouse ornamentals (non-cut flower: foliar applications to aster, camellia, carnation, chrysanthemum, dahlia, lilac, rose and tulip)
- Soil and greenhouse bench treatment (soil treatment: seedlings or transplants of roses and other flowers, shrubs, trees, lawn seedbeds, beans, celery, crucifers, eggplants, peas, tomatoes, peppers)

KEY DISEASES CONTROLLED AND APPLICATION RATES

Crop	Disease	Application Rate
FRUIT CROPS		
Apples	Scab, Sooty blotch, Fly speck, Brook's spot, Bitter rot, Black Rot, Bull's eye rot	1.2 kg/ac
Pears ¹	Scab, Sooty blotch	
Apricots	Brown rot	1.6 kg/ac
Cherries	Brown rot, Leaf spot (Shot Hole)	
Peaches and Nectarines	Brown rot, Scab	
Plums and Prunes	Black knot, Brown rot	

¹ Does not include D'Anjou pears

CAPTAN 80 WSP

KEY DISEASES CONTROLLED AND APPLICATION RATES (CONT'D)

Crop	Disease	Application Rate
Grapes	Dead arm (current season's infections)	0.8 kg/ac
	Downy mildew, Black rot	0.8–1.2 kg/ac
Raspberries	Fruit rot Spur blight	1 kg/400 L of water per acre
Blackberries	Fruit rot	0.9 kg/400 L of water per acre
Loganberries	Cane spot, Fruit rot, Leaf spot, Spur blight	0.6–0.9 kg/400 L of water per acre
Blueberries	Fruit rot, Mummy berry	0.9 kg/400 L of water per acre
Strawberries	Grey mould, Leaf spot	1.4 kg/ac
Rhubarb (in forcing sheds)	Leaf rot	0.5–0.8 kg/ 1,000 L water
VEGETABLE CROPS		
Cucumbers (field only)	Anthracnose, Scab	0.9–1.7 kg/ac
Potatoes	Early blight, Late blight	1–1.5 kg/ac
Tomatoes	Anthracnose, Septoria leaf spot	1.1–1.7 kg/ac
Ginseng	Control: rhizoctonia root rot, pythium root rot and damping-off, phytophthora root rot and grey mould Suppression: cylindrocarpon root rot	1 kg/ac (0.8 kg ai/ac) in a spray volume of 378–757 L of water per acre
TURF AND ORNAMENTAL USES		
Soil and greenhouse bench treatments	Use as a soil treatment for damping-off and fungus root rot diseases of seedlings or transplants of roses (and other shrubs, trees, flowers), lawn seedbeds, and vegetables	1.5 kg/1,000 L of water Apply at rates of 50–85 L/100 m ²
Turf (golf courses and sod farms only)	Brown patch, Damping-off, Leaf spot and Melting-out, Root rot	60 g/20 L of water per 100 m ²
OUTDOOR ORNAMENTALS		
Camellia	Petal blight	1.25 kg per 1000 L of water
Aster, Dahlia, Lilac, Rose, Tulip	Botrytis flower blight	
Carnation	Leaf spot	1.25–1.5 kg g per 1000 L of water
Chrysanthemum	Botrytis flower blight, Septoria leaf spot	
Rose	Black spot	
Begonia (tuberous), Daffodil, Dahlia, Gladiolus, Iris (bulbous), Narcissus, Tulip	Damping-off, Bulb rots	3.75–9.5 kg per 1000 L of water

CAPTAN 80 WSP

REGISTERED AND SUPPORTED TANK MIX

Nova™

MIXING INSTRUCTIONS

1. Fill the spray tank $\frac{1}{3}$ to $\frac{1}{2}$ full with clean water and begin agitation or bypass.
2. Add the required number of unopened pouches of CAPTAN 80 WSP fungicide directly to the spray tank.
3. Vigorous agitation is required for CAPTAN 80 WSP fungicide to become fully suspended. The water temperature and the degree of agitation will determine the amount of time for the pouches to dissolve. The pouches should be completely dissolved before application or adding tank-mix partners. Maintain sufficient agitation during both mixing and application.
4. If required, add the tank-mix partner.

CROP ROTATIONS

No restrictions

PRE-HARVEST INTERVALS

- Apricots, Blueberries, Cherries, Cucumbers, Loganberries, Nectarines, Peaches, Potatoes, Plums, Prunes, Rhubarb, Strawberries, Tomatoes: 2 days
- Apples, Grapes, Pears: 7 days
- Ginseng: 20 days

GRAZING RESTRICTIONS

N/A

STORAGE

May be stored at any temperature

QUICK TIP:

The enclosed pouches containing CAPTAN 80 WSP fungicide are water-soluble and will dissolve completely in water. After opening the outer bag, drop the required number of unopened inner pouches into the spray tank as directed. Reseal outer bag to protect remaining pouches. Do not excessively handle water-soluble pouches or expose to moisture since this may cause breakage. Do not allow pouches to become wet prior to mixing spray solution.

CUSTODIA®

A multi-mode-of-action fungicide offering preventative and curative protection of the flag leaf against all major leaf diseases in wheat and barley.



ACTIVE INGREDIENT

Tebuconazole 200 g/L and Azoxystrobin 120 g/L = SC

PACKAGING

- Case: 2 x 10.08 L jugs

APPLICATION RATES & ACRES TREATED

- Rate: 190–250 ml/ac
- Acres Treated: 40–53 ac/jug

WATER VOLUME

- Ground: 40 L/ac (10 US gal/ac)
- Aerial: 20 L/ac (5 US gal/ac)

RAINFASTNESS

- Avoid applying when heavy rainfall is in the forecast.

REGISTERED CROPS

- Wheat (spring, winter)
- Barley

KEY DISEASES CONTROLLED

- Leaf rust
- Stem rust
- Stripe rust
- Septoria leaf blotch
- Tan spot
- Net blotch
- Spot blotch

HOW IT WORKS

CUSTODIA® is a broad-spectrum, preventative fungicide with systemic and curative properties recommended for the control of many important plant diseases. CUSTODIA® may be applied as a foliar spray in spray programs or in tank mixes with other crop protection products. All applications must be made according to the use directions that follow.

CROP STAGING

Crop	Diseases	Application Timing
Wheat (spring, winter)	Leaf rust, Stem rust, Stripe rust, Septoria leaf blotch, Tan spot	Apply CUSTODIA® to leaf foliage at the first sign or very early stage of disease, up to the beginning of heading.
Barley	Net blotch, Spot blotch, Leaf rust, Stem rust, Stripe rust, Septoria leaf blotch, Tan spot	Use of the higher rate should be considered when weather conditions are conducive to heavy disease development.

REGISTERED AND SUPPORTED TANK MIX

Manipulator™

MIXING INSTRUCTIONS

1. For ground application use 40 L/ac, for aerial use 20 L/ac.
2. Use a 50-mesh (or coarser) filter screen.
3. Fill the spray tank $\frac{3}{4}$ full with water.
4. Add the required amount of CUSTODIA® foliar fungicide into the sprayer.
5. Agitate until the fungicide is thoroughly mixed.
6. Continue agitation and add the required amount of the tank-mix partner.
7. Complete filling the tank to the desired level with water.
8. Upon completion of spraying, thoroughly flush tank, boom, hoses and in-line and nozzle screens with clean water to avoid possible injury to other crops.
9. Repeat sprayer cleanout process using an appropriate spray system cleaner.

CROP ROTATIONS

No restrictions

PRE-HARVEST INTERVALS

- Forage, hay: 6 days
- Mature grains: 36 days

GRAZING RESTRICTIONS

Do not allow livestock to graze or feed green forage to livestock prior to 6 days after treatment. Straw cut after harvest may be fed or used for bedding.

STORAGE

Do not freeze.

QUICK TIPS:

CUSTODIA® should be applied at flag leaf for optimal leaf disease control. Pathogens coverage is key; do not use less than recommended water volumes.

For fusarium control, we would recommend an application of SORATEL™ fungicide at full head emergence after CUSTODIA® at flag leaf.

For resistance management, CUSTODIA® contains Group 3 and 11 fungicides. When possible, rotate the use of CUSTODIA® or other Group 3 and 11 fungicides with different groups that control the same pathogens.

FOLPAN® 80 WDG

A water-dispersible granular fungicide that delivers exceptional protection against the most common and economically damaging diseases in grapes and other fruit, vegetable and ornamental crops



ACTIVE INGREDIENT

80% Folpet = SC

PACKAGING

Case: 2 x 5 kg packs

APPLICATION RATES & ACRES TREATED

Rate: 0.5–2 kg/ac

Acres Treated: 2.5–10 ac/pack

WATER VOLUME

Ground: 400–1200 L/ac (100–317 US gal/ac)

Aerial: Do not apply by air.

RAINFASTNESS

N/A

REGISTERED CROPS

- Apples
- Azalea
- Carnation
- Chrysanthemum
- Crabapples
- Field cucumbers
- Field tomatoes
- Grapes
- Iris
- Marigold
- Melons
- Poinsettia (greenhouse)
- Pumpkins
- Snapdragon
- Squash
- Strawberries
- Zinnia

KEY DISEASES CONTROLLED

- Alternaria leaf spot
- Anthracnose
- Black rot
- Brooks spot
- Dead arm
- Didymellina leaf spot
- Downy mildew
- Fly speck
- Fruit rot
- Grey mould
- Leaf spot
- Phythium root rot
- Powdery mildew
- Scab
- Septoria leaf spot
- Sooty blotch
- Stem rot

HOW IT WORKS

Multi-site-contact mode of action with protective ability. Use in a regularly scheduled maintenance program.

APPLICATION TIMING AND CROP STAGING

Crop	Diseases	Timing
Apples, Crabapples	Alternaria leaf spot, Black rot, Brooks spot, Fly speck, Scab, Sooty blotch	Apply in a regular protective schedule from green tip up until harvest. Do not apply more than 6 applications per season. See label for additional precautions.
Cranberries	Fruit rot	Apply when 5% of blossoms are open. Repeat 10–14 days later when 50–75% of blossoms are open.
Grapes	Dead arm	Apply when new shoots are 1–2 inches long and repeat when growth is 4–6 inches long.
	Black rot, Downy mildew	Apply just before bloom, just after bloom and in first cover spray. For downy mildew, an additional application 2–3 weeks later may be needed.
	Powdery mildew	Apply in a tank mix with Kumulus® DF at first sign of mildew and repeat after 10 days.

APPLICATION TIMING AND CROP STAGING (continued)

Crop	Diseases	Timing
Field cucumbers, Melons, Pumpkins, Squash	Anthracoise, Downy mildew	Apply when first true leaves appear. Repeat at 7-day intervals until crop is harvested.
Field tomatoes	Anthracoise	Apply during first bloom and repeat at 7-day intervals until harvest.
Strawberries	Grey mould, Fruit rot, Leaf spot	Apply before first infection and repeat at 7-day intervals to protect crop until harvest.
Carnation, Poinsettia, Azalea, Marigold, Zinnia, Chrysanthemum, Iris, Snapdragon	Blight, Phythium root rot, Stem rot, Alternaria leaf spot, Septoria leaf spot, Didymellina leaf spot, Anthracnose (depending on ornamental)	Generally, apply when ornamental emerges and repeat at regular intervals. Consult label for timing on specific disease and ornamental.

REGISTERED AND SUPPORTED TANK MIXES

- Most commonly used insecticides, adjuvants and fungicides. Check compatibilities before making tank mixes.

MIXING INSTRUCTIONS

1. Fill spray tank nearly full and pour recommended amount of FOLPAN® 80 WDG on surface of water.
2. Fungicide can be premixed in a bucket ½ filled with water. Mix can be poured through screen into nearly filled spray tank.
3. Finish filling tank.
4. Keep agitator running during filling and spraying.

CROP ROTATIONS

No restrictions

GRAZING RESTRICTIONS

No restrictions

STORAGE

May be stored at any temperature

PRE-HARVEST INTERVALS

- Field cucumbers, Field tomatoes, Grapes, Melons, Pumpkins, Squash, Strawberries: 1 day
- Cranberries: 30 days

QUICK TIPS:

Fungicidal activity is reduced if combined with strongly alkaline materials such as hydrated lime.

Do not use in combination with or closely following an oil spray.

ORIOUS® 430 SC

Your tool of choice – ORIOUS® 430 SC offers long-lasting, broad-spectrum protection against the most dangerous cereal leaf and head diseases in wheat, barley and oats, and the flexibility of a wider application window.



ACTIVE INGREDIENT

Tebuconazole 430 g/L = SC

PACKAGING

Case: 2 x 9.44 L jugs

APPLICATION RATE & ACRES TREATED

Rate: 89–118 ml/ac

Acres Treated: 80–100 ac/jug

WATER VOLUME

Ground: 40 L/ac (10 US gal/ac)

Aerial: 20 L/ac (5 US gal/ac)

RAINFASTNESS:

Avoid applying when heavy rainfall is in the forecast.

REGISTERED CROPS

- Wheat (spring, winter)
- Barley
- Oats

KEY DISEASES CONTROLLED

- Fusarium head blight (suppression)
- Septoria glume blotch
- Rusts (leaf, stem, stripe)
- Septoria leaf blotch
- Tan spot
- Powdery mildew
- Net blotch
- Spot blotch
- Scald

HOW IT WORKS

ORIOUS® 430 SC foliar fungicide can be applied as a post-emergent treatment in wheat (spring, winter), barley and oats for the suppression of fusarium head blight and control of foliar diseases.

CROP STAGING

Crop	Diseases	Application Timing	Rate
Wheat (spring, winter)	Fusarium head blight (suppression), Septoria glume blotch (control)	For optimum suppression of fusarium head blight and control of septoria glume blotch, apply ORIOUS® 430 SC foliar fungicide within the time period from when at least 75% of the wheat heads on the main stem are fully emerged to when 50% of the heads on the main stem are in flower. Spray coverage is essential: Ensure thorough coverage of all wheat heads.	118 ml/ac
	Rusts (leaf, stem, stripe), Septoria leaf blotch, Tan spot	Apply ORIOUS® 430 SC foliar fungicide to leaf foliage at the first sign or very early stage of disease, especially if weather conditions are conducive to disease development, up to the end of the flowering stage. Consider using the higher rate when weather conditions are conducive to heavy disease development.	89–118 ml/ac
	Powdery mildew		118 ml/ac
Barley	Net blotch, Spot blotch, Scald, Rusts (leaf, stem and stripe), Septoria leaf blotch, Powdery mildew	Apply ORIOUS® 430 SC foliar fungicide at the very early stages of disease development. Consider using the higher rate when weather conditions are conducive to heavy disease development.	89–118 ml/ac
Oats	Stem rust, Crown rust	Apply ORIOUS® 430 SC foliar fungicide at the very early stages of disease development.	89 ml/ac

ORIOUS® 430 SC

REGISTERED AND SUPPORTED TANK MIXES

ORIOUS® 430 SC foliar fungicide is recommended to be used with a registered non-ionic surfactant, such as Agral® 90 or Ag-Surf®.

MIXING INSTRUCTIONS

1. Use 40 L/ac of water for ground applications and 20 L/ac of water if an aerial application.
2. Use a 50-mesh (or coarser) filter screen.
3. Fill the spray tank $\frac{3}{4}$ full with water.
4. Add the required amount of ORIOUS® 430 SC foliar fungicide into the sprayer.
5. Agitate until the fungicide 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 registered non-ionic surfactant at 0.125% v/v.
8. Complete filling the tank to the desired level with water.
9. Upon completion of spraying, thoroughly flush tank, boom, hoses, and in-line and nozzle screens with clean water to avoid possible injury to other crops.
10. Repeat sprayer cleanout process using an appropriate spray system cleaner.

SURFACTANT RATE

Non-ionic surfactant at 0.125% v/v

PRE-HARVEST INTERVALS

Wheat, barley, oats: Applications may not be made within 36 days of harvest.

GRAZING RESTRICTIONS

Do not allow livestock to graze or feed green forage to livestock prior to 6 days after treatment. Straw cut after harvest may be fed or used for bedding.

CROP ROTATIONS

No restrictions

STORAGE

Do not freeze.

QUICK TIPS:

ORIOUS® 430 SC should only be applied when the risk of fusarium head blight infection is high. Consult your local extension authority regarding the need for ORIOUS® 430 SC. Head blight is extremely difficult to control. Fusarium head blight outbreaks occur when the weather is warm and wet at the flowering to soft dough stages.

Timing of application is critical: For optimum suppression of fusarium head blight and control of septoria glume blotch, apply ORIOUS® 430 SC Foliar fungicide within the time period from when at least 75% of the wheat heads on the main stem are fully emerged to when 50% of the heads on the main stem are in flower.

Spray coverage is essential: Ensure thorough coverage of all wheat heads.

SORATEL™

Advanced disease protection powered by Asorbital™ Formulation Technology.

Offering a flexible application window, SORATEL™ fungicide is proven to protect a wide variety of crops from disease, including fusarium head blight in wheat and Gibberella ear rot in corn.

ACTIVE INGREDIENT

Prothioconazole 250 g/L = EC

PACKAGING

Case: 2 x 9.6 L jugs

APPLICATION RATE & ACRES TREATED

Rate: 160 – 320 ml/ac (standard rate: 240 ml/ac)

Acres treated: 30 – 60 ac/jug (standard rate: 40 ac/jug)

WATER VOLUME

Ground: Minimum 40 L/ac
(recommended volume: 80 L/ac)

Aerial: Minimum 20 L/ac

RAINFASTNESS

Avoid application if heavy rainfall is in the forecast.



POWERED BY
Asorbital™
FORMULATION TECHNOLOGY

REGISTERED CROPS

- Barley
- Borage
- Brassica carinata
- Canola
- Chickpeas
- Crambe
- Corn
- Flax (linseed)
- Oats
- Oriental mustard
- Rapeseed
- Soybeans
- Wheat (spring, winter)

KEY BENEFITS

- Technologically advanced formulation developed by and unique to ADAMA
- Only Canadian product available with Asorbital™ Formulation Technology
- 5% higher efficacy vs. competitive products shown in Canadian trials
- Improved leaf penetration into the plant, improved efficacy
- Preventative, curative and eradicated control of multiple diseases in multiple crops
- Wide window of application

HOW IT WORKS

SORATEL™ is a triazolothione, broad-spectrum systemic fungicide with Asorbital™ Formulation Technology. This new technology, unique to ADAMA, includes a built-in adjuvant which enhances leaf penetration and increases effectiveness.

KEY DISEASES CONTROLLED

Crop	Diseases	Rate	Timing
Cereals			
Barley	Fusarium head blight ¹	240 – 320 ml/ac	70 – 100% head emergence
	Net blotch Scald Spot blotch	160 – 240 ml/ac	First sign of disease
Oats	Crown rust	240 ml/ac	First sign of disease
Wheat (spring, winter)	Fusarium head blight ¹ Glume blotch	240 – 320 ml/ac	75% head emergence to 50% main stem flower
	Leaf rust Speckled leaf blotch Tan spot	240 ml/ac	First sign of disease

Crop	Diseases	Rate	Timing
Canola			
Canola	Sclerotinia stem rot	240–280 ml/ac	20–50% bloom
Soybeans			
Soybeans	Asian soybean rust Frog-eye leaf spot	160 ml/ac	First sign of disease
Corn			
Field, sweet and popcorn, (including seed production)	Eyespot Gibberella ear rot ¹ Grey leaf spot Northern corn leaf blight Rust	240 ml/ac	First sign of disease Apply from the development stage of corn between full silk emergence (BBCH 63) to early silk browning (BBCH 67)

¹Suppression

For a complete list of registered crops, diseases, and application rates, consult the label.

REGISTERED AND SUPPORTED TANK MIXES

- Coragen®
- Decis®
- SILENCER® 120 EC

MIXING INSTRUCTIONS

1. Add ½ of the required amount of water to the spray or mixing tank and start agitation.
2. Add the required quantity of SORATEL™ to the water and complete filling with water to the required total volume.
3. Maintain agitation throughout mixing and spraying.

NOTE: If tank-mixing with an insecticide, please reference the label of the partner for specific mixing order or follow W.A.M.L.E.G.S or W.A.L.E.S. for proper mixing protocol.

CROP ROTATIONS

Treated areas may be replanted with any crop specified on the label as soon as practical after the last application. For crops not listed on the label, do not plant back within 30 days of last application.

PRE-HARVEST INTERVALS

- Corn (field, popcorn, sweet): 14 days
- Soybeans: 20 days
- Barley, Oats, Wheat (spring, winter): 30 days
- Borage, Brassica carinata, Canola, Crambe, Flax, Oriental mustard, Rapeseed: 36 days

STORAGE

Do no freeze.

QUICK TIPS:

Asorbital™ Formulation Technology was developed by and is unique to ADAMA worldwide. Products with this enhanced technology offer reduced run-off and photodegradation, improved rainfastness, increased amount of active in the plant and more thorough protection of the foliage.

SORATEL™ is the first of many ADAMA products to come that will include Asorbital™ Formulation Technology and be available to Eastern Canada growers in the future.

TOPNOTCH™

Broad-spectrum disease control in multiple crops including cereals, field peas, edible beans and soybeans.



ACTIVE INGREDIENT

Azoxystrobin 143 g/L and Propiconazole 124 g/L = SC

PACKAGING

Case: 2 x 8.6 L jugs

APPLICATION RATE & ACRES TREATED

Rate: 210 – 620 ml/ac

Acres Treated: 14 – 40 ac/jug

WATER VOLUME

Ground: 40 L/ac (10 US gal/ac)

Aerial: 20 L/ac (5 US gal/ac)

RAINFASTNESS

Avoid applying when heavy rainfall is in the forecast.

REGISTERED AND SUPPORTED CROPS

- Barley
- Edible beans
- Field peas
- Lentils
- Oats
- Rye
- Soybeans
- Triticale
- Wheat

KEY DISEASES CONTROLLED

- Anthracnose
- Ascochyta blight
- Barley leaf rust
- Mycosphaerella blight
- Net and spot blotches
- Powdery mildew
- Scald
- Septoria spot
- Stripe rust
- Tan spot
- Wheat leaf rust
- White mould¹

¹Suppression only.

HOW IT WORKS

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

APPLICATION TIMING AND CROP STAGING

Crop	Diseases	Application Timing	Rate
Barley	Barley net blotch, Barley scald, Septoria leaf spot, Stripe rust, Barley leaf rust, Tan spot	Apply once between stem elongation and half-head emergence (Growth stage 29 – 55).	210 ml/ac
Beans, Field peas, Lentils, Soybeans	Mycosphaerella blight, Anthracnose	Make the first application at the first sign of disease. Apply the high rate only under conditions of high disease pressures. A second application 14 days later may be needed if conditions persist.	310 – 620 ml/ac
	Powdery mildew, White mould (suppression only)	Good spray coverage and canopy penetration are important for best results.	310 ml/ac

Crop	Diseases	Application Timing	Rate
Oats	Barley net blotch, Crown rust, Septoria leaf spot	Apply once between stem elongation and half-head emergence (Growth stage 29 – 55).	210 ml/ac
Rye	Septoria leaf spot, Barley scald, Tan spot		
Triticale	Septoria leaf spot, Tan spot		
Wheat	Septoria leaf spot, Tan spot, Stripe rust, Wheat leaf rust		

REGISTERED AND SUPPORTED TANK MIXES

- ARROW® 240 EC
- ARROW ALL IN®
- Coragen®
- Decis®
- glufosinate
- Poast Ultra®
- LEOPARD®
- SILENCER® 120 EC
- Voliam Xpress®

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

Field peas, Beans, Lentils, Soybeans: 30 days
Cereals: 45 days

GRAZING RESTRICTIONS

No restrictions

STORAGE

Do not freeze.

QUICK TIPS:

Good spray coverage and canopy penetration are important to achieve the best results.



ADDITIONAL RESOURCES

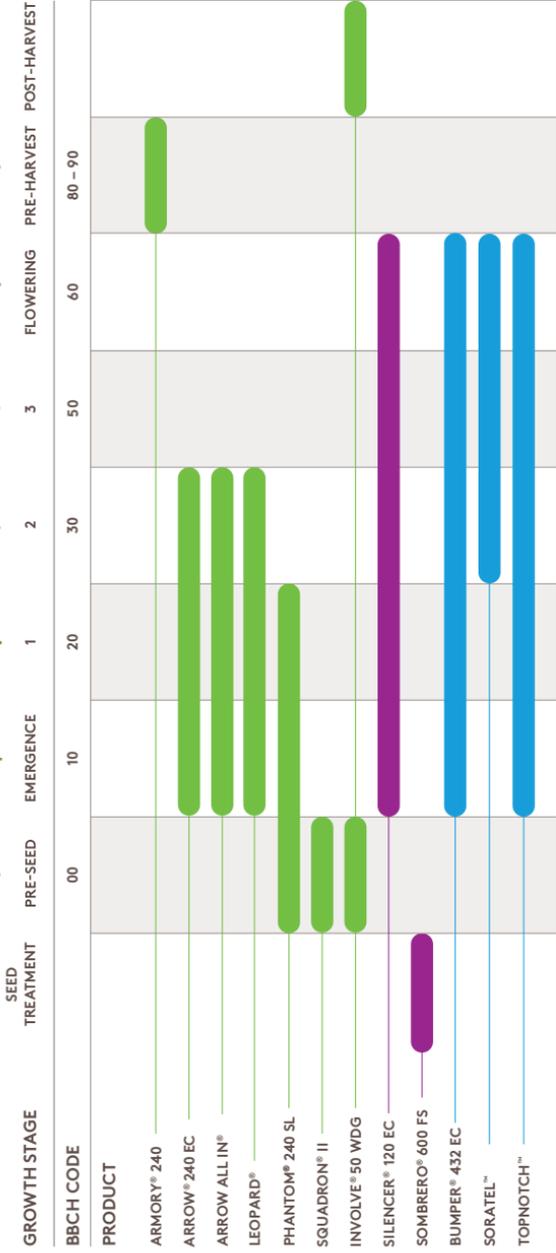
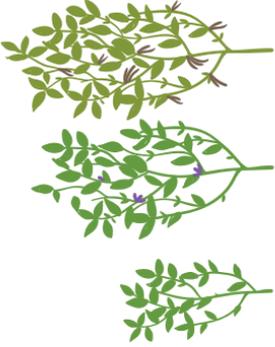


ADDITIONAL RESOURCES

GROWTH STAGE CHARTS & PRODUCT TIMING	88
AERIAL APPLICATION CHART	91
METRIC/IMPERIAL CONVERSIONS	92
PHENOXY USE RATES	93
TANK-MIXING GUIDELINES	94
GENERAL CLEANING PRACTICES FOR SPRAYER EQUIPMENT	95
GOVERNMENT & ASSOCIATION CONTACT INFO	96

GROWTH STAGE CHARTS & PRODUCT TIMING

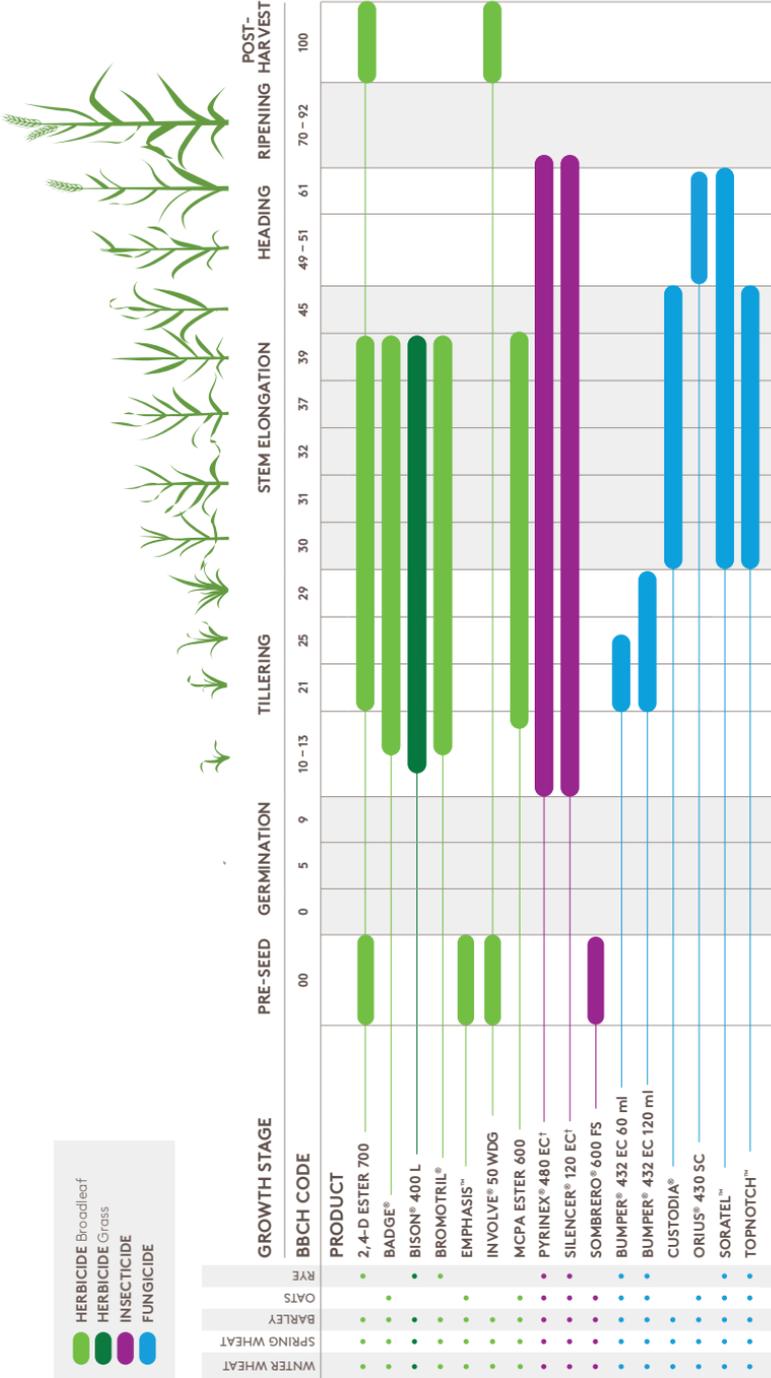
SOYBEANS



Timing based on using the product alone. Please refer to tank-mix partners label for crop timing.

GROWTH STAGE CHARTS & PRODUCT TIMING

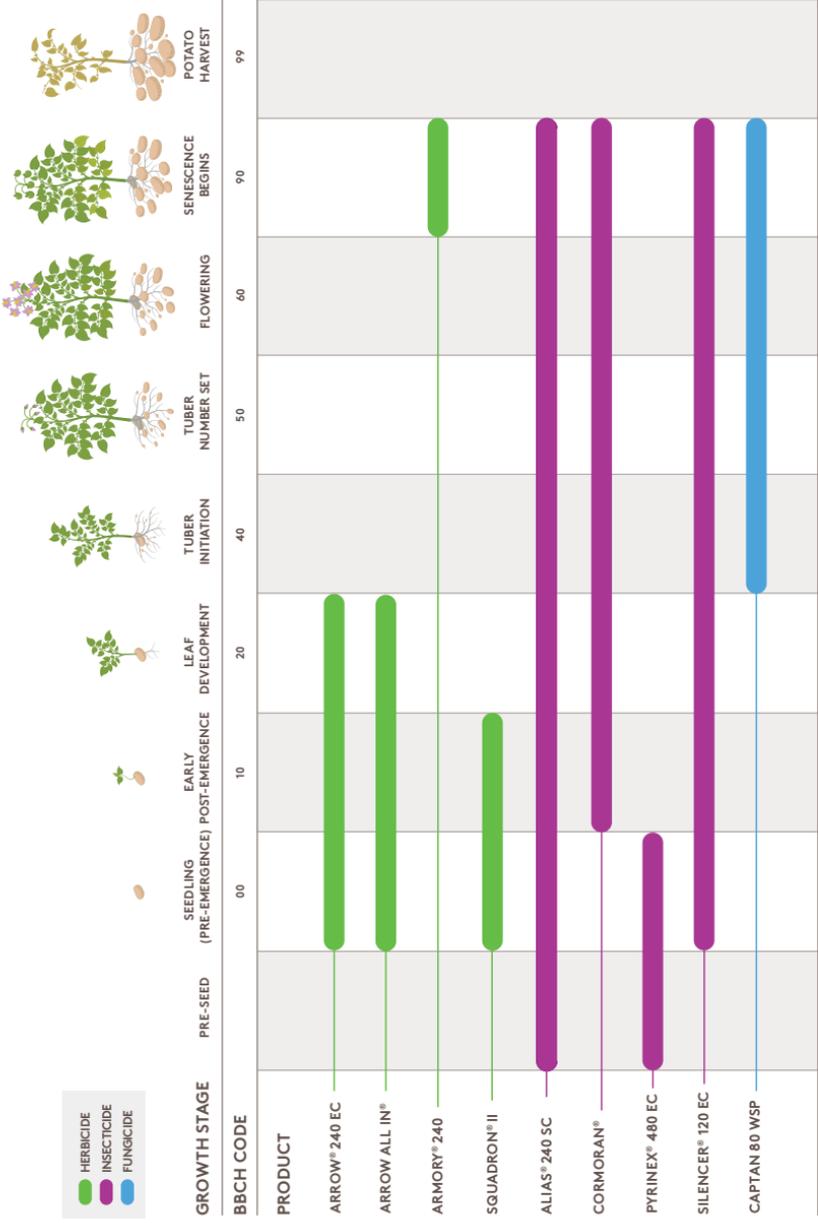
CEREALS



Timing based on using the product alone. Please refer to tank-mix partner labels for crop timing.
 ¹Dependent on PHI

GROWTH STAGE CHARTS & PRODUCT TIMING

POTATOES



Timing based on using the product alone. Please refer to tank-mix partner labels for crop timing. Always read and follow registered product label instructions. It is an offense under the Pest Control Products Act to use this product in a way that is inconsistent with the directions on the label.

AERIAL APPLICATION CHART

	ADAMA PRODUCT NAME	AERIAL APPLICATION	WATER VOLUME
HERBICIDES	2,4-D ESTER 700	Yes	12 L/ac
	ARMORY® 240	Yes	90 – 200 L/ac
	ARROW® 240 EC	No	–
	ARROW ALL IN®	No	–
	BADGE®	Yes (wheat, barley, and oats only)	8 – 20 L/ac
	BISON® 400 L	Yes (cereal crops)	12 – 18 L/ac
	BROMOTRIL®	Yes (wheat and barley only)	8 – 16 L/ac
	EMPHASIS™	No	–
	INVOLVE® 50 WDG	No	–
	KARMEX®	No	–
	LEOPARD®	Yes	10 L/ac
	MCPA ESTER 600	Yes	12 L/ac
	PHANTOM® 240 SL	No	–
	SQUADRON® II	No	–
	THRASHER®	Yes	12 – 16 L/ac
INSECTICIDES	ALIAS® 240 SC	No	–
	CORMORAN®	No	–
	NIMITZ® 480 EC	No	–
	PYRINEX® 480 EC	Yes	4 – 12 L/ac
	SILENCER® 120 EC	Yes	4 – 16 L/ac
	SOMBREIRO® 600 FS	No	–
FUNGICIDES	BUMPER® 432 EC	Yes	16 – 20 L/ac
	CAPTAN 80 WSP	Yes (with restrictions, see label)	See label
	CUSTODIA®	Yes	20 L/ac
	FOLPAN® 80 WG	No	–
	ORIUS® 430 SC	Yes	20 L/ac
	SORATEL™	Yes	20 L/ac
	TOPNOTCH™	Yes	20 L/ac

METRIC/IMPERIAL CONVERSIONS

Metric Unit	Imperial Multiply by	Imperial Unit	Metric Multiply by	Metric Unit
LINEAR centimetre (cm)	x 0.39	inch	x 2.54	LINEAR centimetre (cm)
AREA square metre (m ²) hectare (ha)	x 1.2 x 2.5	square yard acres	x 0.84 x 0.4	AREA square metre (m ²) hectare (ha)
VOLUME litre (L) litre (L)	x 0.22 x 0.27	Imperial gallon U.S. gallon	x 4.55 x 3.79	VOLUME litre (L) litre (L)
PRESSURE kilopascals (kPa)	x 0.14	psi	x 6.9	PRESSURE kilopascals (kPa)
WEIGHT gram (g) kilogram (kg)	x 0.04 x 2.2	oz lb	x 28.35 x 0.45	WEIGHT gram (g) kilogram (kg)
AGRICULTURAL litres per hectare (L/ha) litres per hectare (L/ha) litres per hectare (L/ha) litres per hectare (L/ha) millilitres per hectare (ml/ha) millilitres per hectare (ml/ha) kilograms per hectare (kg/ha) grams per hectare (g/ha)	x 0.09 x 0.11 x 0.36 x 0.71 x 0.015 x 0.014 x 0.89 x 0.014	Imperial gallons per acre U.S. gallons per acre quarts per acre pints per acre Imperial fl. oz per acre U.S. fl. oz per acre lb per acre oz per acre	x 11.23 x 9.35 x 2.81 x 1.41 x 70.17 x 73.05 x 1.12 x 70	AGRICULTURAL litres per hectare (L/ha) litres per hectare (L/ha) litres per hectare (L/ha) litres per hectare (L/ha) millilitres per hectare (ml/ha) millilitres per hectare (ml/ha) kilograms per hectare (kg/ha) grams per hectare (g/ha)

EXAMPLE: To convert centimetres to inches, multiply by 0.39; conversely, to convert inches to centimetres, multiply by 2.54.

PHENOXY USE RATES

Active Ounces per Acre	Formulation (ml per acre)					Acres Treated per 10 L jug				
	300	400	500	600	700	300	400	500	600	700
1	94	70	57	47	41	107	142	177	212	247
2	187	140	113	94	81	53	71	88	106	124
3	281	211	170	142	121	36	47	59	71	82
4	374	281	227	189	162	27	36	44	53	62
5	468	351	283	236	202	21	28	35	42	49
6	562	421	340	283	243	18	24	29	35	41
7	655	491	397	331	283	15	20	25	30	35
8	749	562	453	378	324	13	18	22	27	31
9	842	632	510	425	364	12	16	20	24	28
10	936	702	567	472	405	11	14	18	21	25

Recommended rates have been rounded to whole numbers.

TANK-MIXING GUIDELINES

W.A.M.L.E.G.S. METHOD

W Wettable powders, dispersible granules, soluble granules (WG, DF, SG, WP, SP)

A Agitate tank mix thoroughly

M Micro-encapsulated suspensions (ME)

L Liquid flowables and suspensions (SC, SL, SN, LI, SU, SE)

E Emulsifiable concentrate formulations (EC)

Fill spray tank nearly full with water.

G Glyphosate formulations

S Surfactants

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.M.L.E.G.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.

GENERAL CLEANING PRACTICES FOR SPRAYER EQUIPMENT

- CLEAN SPRAYER:** Once tank is empty, clean sprayer in an area that will not allow the contamination of water bodies, sources, crops or other areas that are not accessible to others, pets and livestock.
- RINSE 1:**
 - Rinse equipment, removing any product adhering to the inside of the tank. Fill tank to 10% full of water and herbicide recommended rinse solution (see below). Agitate for 15 minutes.
 - Flush RINSE 1 through the booms, hoses and nozzles then drain.
 - Once done flushing, disassemble all strainers, filters, nozzles, screens, diaphragms and boom ends where residue can get tied up. Clean separately with an ammonia solution of 100 mL/10 L water. Inspect thoroughly and reassemble.
- RINSE 2:** Fill tank to 10% full of water and add the RINSE 2 solution if needed (see below) while agitating. Charge up the booms and continue to agitate for 15 minutes before flushing out again.
- ADDITIONAL RINSES:** Complete additional rinses, as requested from the table below, by filling, agitating and flushing the system with the recommended solution each time.
- FINAL RINSE:** Fill tank to 10% full of clean water and flush through the booms and hoses. Remove end caps/open ball valves and flush water through to ensure no spray solution is trapped. Drain any remaining water.

HERBICIDES	HERBICIDE NUMBER OF RINSES			
	1	2	3	4
2,4-D ESTER 700	W	D or 1%A	W	
ARMORY® 240	W	1%S	W	
ARROW® 240 EC	W	D	W	
ARROW ALL IN®	W	D	W	
BADGE®	W	D or 1%A	W	
BISON® 400 L	W	D or 1%A	W	
BRAZEN™ II	D	W		
BROMOTRIL®	D	W		
EMPHASIS™	D	W	3%A	W
INVOLVE® 50 WDG	W	1%A	C	W
LEOPARD®	W	1%A	1%A	W
MCPA ESTER 600	W	D or 1%A	W	
PHANTOM® 240 SL	W			
OUTSHINE®	W	1%A	W	
PICKET™ 75 WDG	W	D or 1%A	W	
SQUADRON® II	D	D	D	W
THRASHER®	1%P	1%A	W	

IMPORTANT NOTES

If a tank-mix partner is used, always check tank-mix partner label for any additional clean up procedures.

Be cautious with dry granular products, like florasulm, which can severely harm a sensitive broadleaf crop if not properly cleaned out.

WARNING: Never mix chlorine (bleach) and ammonia as a reaction-producing toxic gas can occur.

SOLUTION

A	Ammonia Solution (min. 3% ammonia – Finish or Flush)
D	Detergent Solution
S	Non-Ionic Surfactant
W	Water

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In the event of a spill, leak or fire, call INFOTRAC immediately at 1.800.535.5053 (24 hours a day).

WHY IS ADAMA DIFFERENT?

We are all in this business because we love agriculture...the business of 'growing'...the passion of feeding our communities, our country, and the world. **It's that simple.**

But getting to that end result, especially in this last decade, has unfortunately become anything but simple.

At ADAMA, we think it's time for a change. And our driving philosophy—**Listen > Learn > Deliver**—was developed with that change in mind.

We **LISTEN** to the retailers and distributors, the growers, our employees, and the agronomic scientists who are continually working to ensure our industry is the most profitable, agronomically sound and sustainable that it can be.

From those same people, we **LEARN** what they need from crop protection companies, and from ADAMA specifically, to help them achieve and exceed those goals.

What we have learned is:

- The myriad of products available is overwhelming.
- Getting supply and delivery of products on time and correctly can be a challenge.
- Sales tools provided offer what the crop protection company wants you to *know*, but misses the mark on tools you actually *need*, and
- Complicated grower programs take precious time away from dealing with what matters most.

Basically, what could be simple, is not anymore.

So, with that in mind, ADAMA has a desire to be different! We hire people who truly embody our philosophy, not only to listen, and learn but to develop and **DELIVER**:

- 270+ available actives that allow our customers to deal with fewer companies, reducing the complexity of ordering and grower recommendations,
- simplified delivery methods and packaging developed from your input, and
- straight-forward programs, and sales tools that actually help you sell more effectively and efficiently.

In short, products, solutions and services that help us all to focus on what we collectively are and have always been passionate about.

Listen > Learn > Deliver

It *can* be that simple.



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