2023 CROP PRODUCTION GUIDE

EASTERN CANADA

BASF

We create chemistry

CONTENTS

Another season.
More innovations to support your crops.

When it comes to your crops, BASF continues to produce new solutions to help you get the most out of every acre. That's why you can look forward to fresh innovations in the 2023 Crop Production Guide that are backed by reliable research and designed to protect your crops from planting through harvest.

New solutions for disease challenges.

Veltyma® DLX fungicide combines the key leaf disease control and proven **Plant Health Benefits**[1] of Veltyma fungicide with the added protection against ear rots caused by fusarium and gibberella found in Caramba® fungicide for premium disease control, better standability and enhanced yield potential.

Veltyma® DLX
Revysol® Fungicide

[1] **Plant Health Benefits** refer to products that contain the active ingredient pyraclostrobin.

A new and improved cereal head timing fungicide, Sphaerex® provides management of late-season diseases in wheat, barley, oats, rye and triticale with best-in-class fusarium head blight management to enhance yield and protect grain quality.

Sphaerex®
Fungicide

Start strong with new crop establishment options.

Nodulator® IP Plus professional soybean preinoculant system is the newest addition to the BASF crop establishment portfolio in 2023. The on-seed soybean treatment of Nodulator IP Plus inoculant and Velondis® Plus biofungicide enhances nodulation and early-season vigour, resulting in stronger root systems through variable and harsh spring seeding conditions tackled in Canada.

Nodulator® IP Plus

Professional Soybean Preinoculant System

For wheat growers, rely on the combined protection of Insure® Cereal FX4 plus Relenya® seed treatments. Insure Cereal FX4 brings four modes of effective action to deliver broad-spectrum protection against key seed- and soil-borne diseases. Relenya contains cutting-edge Revysol® technology that perfectly binds to pathogens and adds protection against dwarf bunt and further boosts protection under fusarium pressure.

Insure® Cereal FX4

Seed Treatment

+

Relenya®

Seed Treatment

An exciting new canola hybrid.

InVigor® hybrid canola features an impressive lineup in 2023, including one new 300 series hybrid - InVigor L350PC. With its combination of yield, standability, first-generation clubroot resistance[1] and our patented Pod Shatter Reduction technology, this is our highest-yielding hybrid in our breeding trials to date.

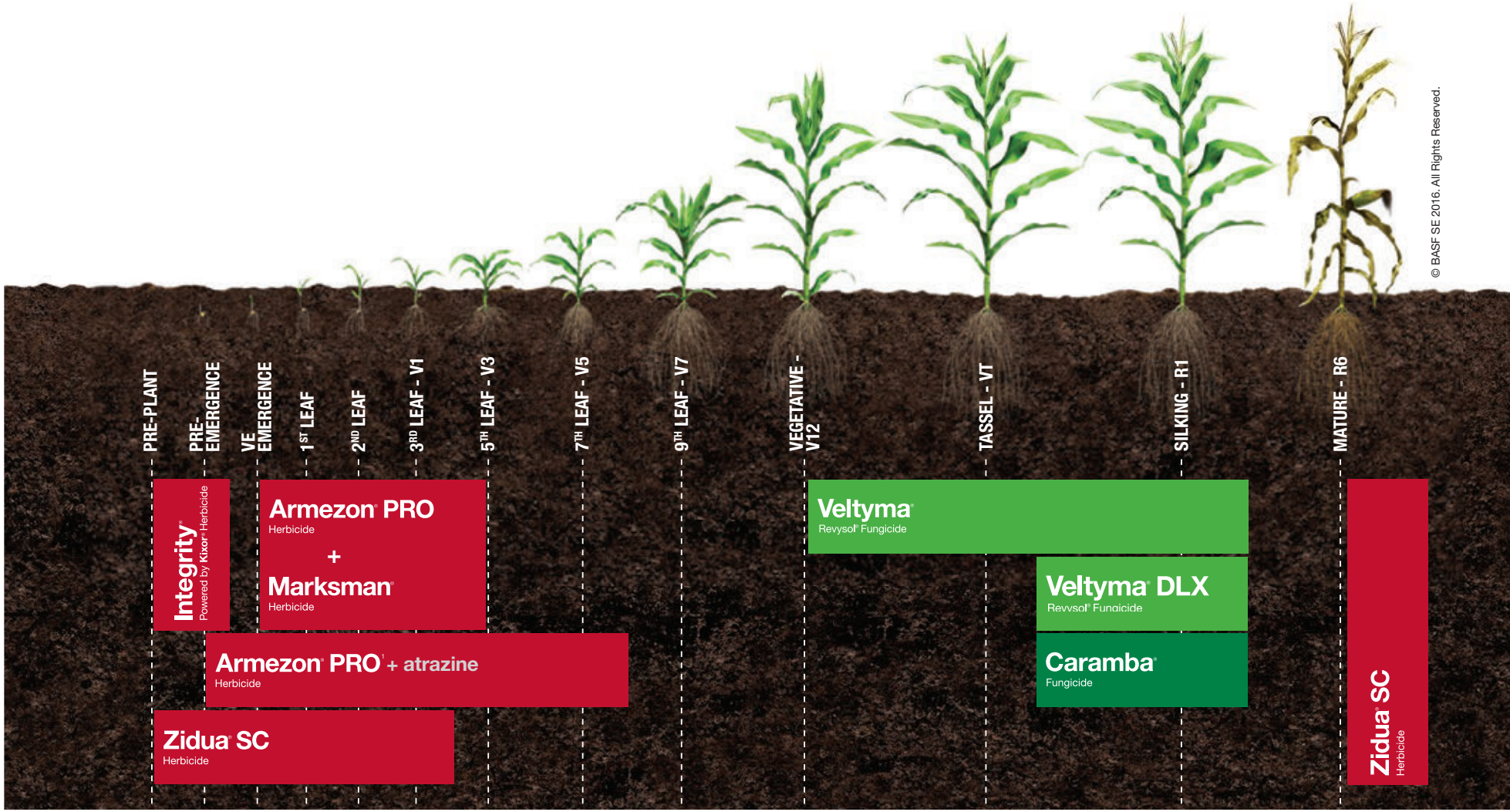
InVigor® L350PC

[1] To predominant clubroot pathotypes found in Canada at the time of registration. InVigor L350PC, InVigor L340PC and InVigor L255PC share the same first-generation clubroot resistance profile.

Click here to access our resources section for more information.

Learn more by visiting **agsolutions.ca,** contacting your BASF **AgSolutions®** Retail Representative or by calling **AgSolutions** Customer Care at 1-877-371-BASF (2273).

Solutions for corn.



Crop Staging

Staging graphics depicted here are for quick reference only. Refer to individual product pages and product labels on **agsolutions.ca** or call **AgSolutions®** Customer Care at 1-877-371-BASF (2273) for detailed staging information.

[1] In conventional field corn, apply from pre-emergence to 3rd leaf.

BASF lead recommendations.

Select the solution that's right for your operation.

WEED MANAGEMENT

Integrity®
Powered by **Kixor®** Herbicide

AND/OR

Zidua® SC
Herbicide

FOLLOWED BY

Marksman® [1]
Herbicide

Armezon® PRO
Herbicide

+

Marksman®
Herbicide

DISEASE MANAGEMENT

Veltyma®
Revysol® Fungicide

OR

Veltyma® DLX NEW
Revysol® Fungicide

OR

Caramba®
Fungicide

POST-HARVEST

Zidua® SC
Herbicide

Contact your BASF **AgSolutions®** Retail Representative for more information.

[1] Can also be tank mixed with Integrity® herbicide or Zidua® SC herbicide if applied pre-emergence.

Integrity®

Powered by **Kixor®** Herbicide

Broad-spectrum weed control to give corn a weed-free start.

- Early-season control of key grassy and broadleaf weeds
- Convenience with excellent follow-crop flexibility
- Multiple modes of effective action to help control resistant biotypes

Source: BASF research trials, Middlesex County, ON, 2022, 5 weeks after treatment

Active ingredients	Saflufenacil – Group 14 Dimethenamid-P – Group 15
Formulation	Emulsifiable concentrate
One case contains	2 x 9 L jugs Also available in 450 L tote

Crop staging
Pre-plant[1], pre-plant incorporated, pre-emergence

Weeds controlled[2]

Broadleaf weeds
Common ragweed
Eastern black nightshade[3]
Lamb's quarters
Redroot pigweed
Velvetleaf
Wild buckwheat
Wild mustard

Grasses
Barnyard grass
Crabgrass (large, smooth)
Fall panicum
Foxtail (giant, green, yellow)
Old witchgrass
Yellow nutsedge[3]

Water volume
Ground application
40 to 80 L/ac (10 to 20 gal/ac)

Application rates
One case treats 40 to 60 acres.
One tote treats 1,000 to 1,500 acres.

Full rate[4]

Integrity[5]	450 ml/ac (1.1 L/ha)

Set-up rate[6]

Integrity[5]	300 ml/ac (750 ml/ha)

or

Integrity[5]	300 to 450 ml/ac (0.75 to 1.1 L/ha)
followed by **Marksman®**	1.0 L/ac (2.5 L/ha)
Glyphosate[7]	See label for rate

Pre-harvest interval
60 days after application for sweet corn.
100 days after application for field corn.

Follow crops
Anytime after application:
Field and sweet corn
100 days after application:
Cereals other than corn
11 months after application:
All other crops
22 months after application:
Sugar beets

[1] Apply in tank mix with glyphosate. [2] Weeds listed are controlled when Integrity is applied at the full label rate of 450 ml/ac. [3] Pre-plant incorporated only. [4] Use full rate, tank mixed with glyphosate for early pre-plant. Use full rate of Integrity alone for pre-plant incorporated and pre-emergent applications. [5] Integrity can be used with 28% UAN as a carrier. [6] This reduced rate should be used pre-emergence, when an in-crop application of glyphosate is planned for glyphosate-tolerant corn. See label for weeds controlled. [7] Glyphosate is sold separately.

Armezon® PRO

Herbicide

Rapid, post-emergent weed control with residual activity in field corn.

- Fast-acting, broad-spectrum control of broadleaf weeds and grasses, with residual activity up until canopy closure
- Wide window of application from pre-emergence to 8-leaf stage in glyphosate-tolerant corn
- Combines Group 15 and 27 chemistries for multiple modes of action and can be tank mixed with atrazine or atrazine and glyphosate
- Armezon® PRO herbicide can also be applied in a tank mix with Marksman® herbicide and glyphosate[1]

Source: BASF research trial, Maryhill, ON, 2015

Active ingredients	Dimethenamid-P – Group 15 Topramezone – Group 27
Formulation	Emulsifiable concentrate
One case contains	2 x 8.1 L jugs Also available in 121.5 L shuttle

Crop staging
Pre-emergence to 8-leaf
Emergence to 5-leaf (for tank mix)[1]

Weeds controlled[2]
Broadleaf weeds
Common chickweed[3]
Common ragweed
Eastern black nightshade
Green pigweed
Lady's thumb
Lamb's quarters
Redroot pigweed
Velvetleaf[3]
Wild mustard

Grasses
Barnyard grass
Crabgrass (large)
Fall panicum
Foxtail (green, yellow)
Old witchgrass

Pre-harvest interval
80 days after application.
45 days after application for grazing or feeding treated corn forage, silage, fodder or grain to livestock.

Application rates
One case treats 40 acres.
One shuttle treats 300 acres.

Armezon PRO	405 ml/ac (1.0 L/ha)
Marksman[4]	1.0 L/ac (2.5 L/ha)
Glyphosate[4,5]	See label for rate

or

Armezon PRO	405 ml/ac (1.0 L/ha)
Aatrex® 480[4]	420 ml/ac (1.04 L/ha)
Glyphosate[4,5]	See label for rate

Water volume
Ground application
Minimum 40 L/ac (10 gal/ac)

Follow crops
4 months after application:
Winter wheat
Following spring after application:
Alfalfa, canola, field corn, potatoes, soybeans, spring wheat, white beans

If Armezon PRO is used in a tank mix, refer to tank-mix partner's label for any additional follow-crop restrictions.

[1] For tank mix of Armezon PRO plus Marksman and glyphosate, apply from emergence up to 5-leaf stage. [2] Weeds controlled when Armezon PRO is applied in a tank mix with atrazine (500 g ai/ha). [3] Suppression only. [4] Aatrex® 480, glyphosate and Marksman are sold separately. [5] Only use glyphosate products present as isopropylamine salt or potassium salt. Glyphosate rate is 364 g a.e./ac (900 g a.e./ha), see glyphosate label for corresponding product use rate.

Zidua® SC

Herbicide

Residual control of key annual grasses and select broadleaf weeds.

- Liquid Group 15 chemistry delivers control of resistant pigweed and waterhemp
- Residual activity controls germinating weed seedlings before or soon after crop emergence
- Wide window of application from early pre-plant to early post-emergence in corn
- Convenient, liquid formulation that can be used standalone or tank mixed

Source: BASF research trial, Maryhill, ON, 2015

Active ingredient	Pyroxasulfone – Group 15
Formulation	Suspension concentrate
One case contains	2 x 4.05 L jugs

Crop staging

Pre-plant[1], pre-emergence, early post-emergence up to 4-leaf

Weeds controlled

Broadleaf weeds

Cleavers[2,3], Eastern black nightshade[2,3], Kochia[2,3], Lamb's quarters[2], Redroot pigweed, Waterhemp

Grasses

Barnyard grass, Crabgrass (large), Foxtail (giant, green, yellow), Ryegrass (Italian), Wild oats[2]

Application rates

One case treats 40 to 83 acres, depending on soil texture.

	Rate by soil texture			
	Coarse	Medium-fine		Fine
		Organic matter ≤ 3%	3% < Organic matter < 7%	
Zidua SC	101 ml/ac (250 ml/ha)	134 ml/ac (332 ml/ha)	169 ml/ac (417 ml/ha)	200 ml/ac (493 ml/ha)

Tank mix

Apply post-emergence up to 4-leaf

Zidua SC	97 ml/ac (240 ml/ha)
Marksman®[4]	1.0 L/ac (2.5 L/ha)
Glyphosate[4,5]	See label for rate

Click here to learn more about tank-mix order.

Water volume

Ground application Minimum 40 L/ac (10 gal/ac)

[1] Up to 30 days before planting. [2] Early-season residual suppression only. [3] Including Group 2-resistant biotypes. [4] Sold separately. [5] Glyphosate rate is 364 g a.e./ac (900 g a.e./ha), see glyphosate label for corresponding product use rate.

TECH TIP

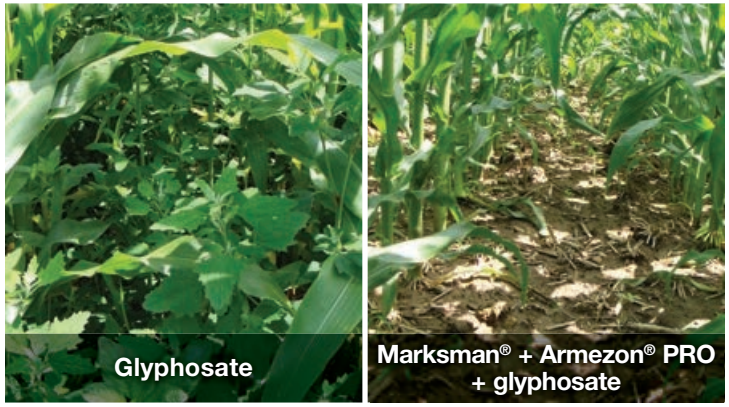
Zidua SC has low solubility in soil allowing it to stay in the top layer of the soil profile to control later-flushing weeds before they emerge. The result is residual activity during the critical period for weed control to maximize yield potential.

Marksman®

Herbicide

Proven, broad-spectrum residual control of tough broadleaf weeds.

- Combines Group 4 and Group 5 chemistries for control of emerged perennials, deep-rooted annuals and resistant biotypes
- Extended residual control of late-germinating annuals, including pigweed, velvetleaf and waterhemp



Source: BASF research trial, Maryhill, ON, 2015

Active ingredients	Dicamba – Group 4 Atrazine – Group 5
Formulation	Suspension
One case contains	2 x 10 L jugs Also available in 450 L tote

[1] Do not apply to sweet corn. [2] Apply annually for three years at the flowering stage of bindweed and the budding stage of thistles. [3] Post-emergence only. [4] Including triazine-resistant biotypes. [5] Pre-emergence only. [6] Integrity® herbicide, Armezon PRO, Prowl® H2O herbicide, glyphosate and Marksman are sold separately. [7] Use only glyphosate products present as isopropylamine salt or potassium salt. Glyphosate rate is 364 g a.e./ac (900 g a.e./ha), see glyphosate label for corresponding product use rate.

Crop staging[1]

Pre-emergence, post-emergence (spike to 5-leaf stage)

Weeds controlled

Buckwheat (tartary, wild), Canada thistle[2], Cleavers, Common cocklebur[3], Corn spurry, Cow cockle, Field bindweed[2], Green smartweed, Lady's thumb, Lamb's quarters[4], Mustard (hare's-ear, Indian, tumble, wild, wormseed), Perennial sow thistle[2], Pigweed (redroot[4], Russian), Ragweed (common[4], false, giant), Spreading atriplex[5], Velvetleaf, Volunteer adzuki beans, Waterhemp[3]

Application rates

One case treats 11 to 20 acres. One tote treats 250 to 450 acres.

Tank mixes For Zidua SC + Marksman tank mix, **click here**.

Marksman	1.0 L/ac (2.5 L/ha)
Armezon PRO[6]	405 ml/ac (1.0 L/ha)
Glyphosate[6,7]	See label for rate

Marksman	1.0 L/ac (2.5 L/ha)
Prowl H2O[6]	890 ml/ac (2.2 L/ha)
Glyphosate[6,7]	See label for rate

Marksman	1.0 L/ac (2.5 L/ha)
Glyphosate[6,7]	See label for rate

Planned 2-pass

Integrity[6]	300 to 450 ml/ac (0.73 to 1.1 L/ha)
followed by **Marksman**	1.0 L/ac (2.5 L/ha)
Glyphosate[6]	See label for rate

Water volume

Ground application
40 to 80 L/ac (10 to 20 gal/ac)

Pre-harvest interval

60 days for field corn.
Do not graze or cut for fodder before crop maturity (ear emergence).

TECH TIP

Apply Marksman or Engenia® herbicide when the air temperature is between 10 and 25°C. Do not apply when there is a risk of severe drop in night temperature. Avoid spraying under conditions of high humidity or when a temperature inversion is present.

Follow crops

None on label. Applying Marksman herbicide to fields previously treated with atrazine can increase the risk of residue carryover to rotational crops. Follow cropping restrictions on atrazine label.

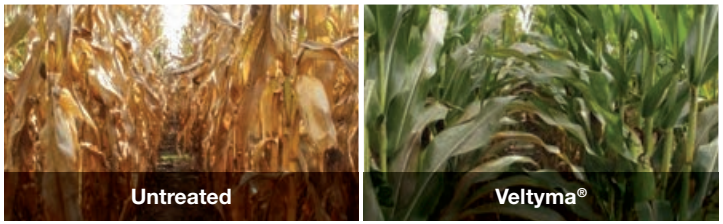
Veltyma®

Revysol® Fungicide

For use on: ALL CORN TYPES — YES

The optimal fungicide for protection against a broad spectrum of foliar diseases in corn.

- Fast-acting control with multiple modes of effective action
- Extended residual activity and enhanced performance provided by the unique binding activity of Revysol®
- Proven **Plant Health Benefits**[1] for increased growth efficiency, better management of minor stress and greater yield potential[2]
- Delivers preventative and post-infection activity



Source: BASF research trial, Middlesex County, ON, 2021, 7 weeks after treatment

TECH TIP

If tank mixing with an insecticide to control western bean cutworm, time the application based on the insecticide timing, as the fungicide has a wider window of application.

Active ingredients	Mefentrifluconazole – Group 3 Pyraclostrobin – Group 11
Formulation	Suspension concentrate
One case contains	2 x 8.1 L jugs

Crop staging
V12 to silk browning

Diseases controlled[3]
Common rust *(Puccinia sorghi)*
Eye spot *(Aureobasidium zeae)*
Grey leaf spot *(Cercospora zeae-maydis)*
Northern corn leaf blight *(Setosphaeria turcica)*
Tar spot *(Phyllachora maydis)*

Application rates
One case treats 80 acres.

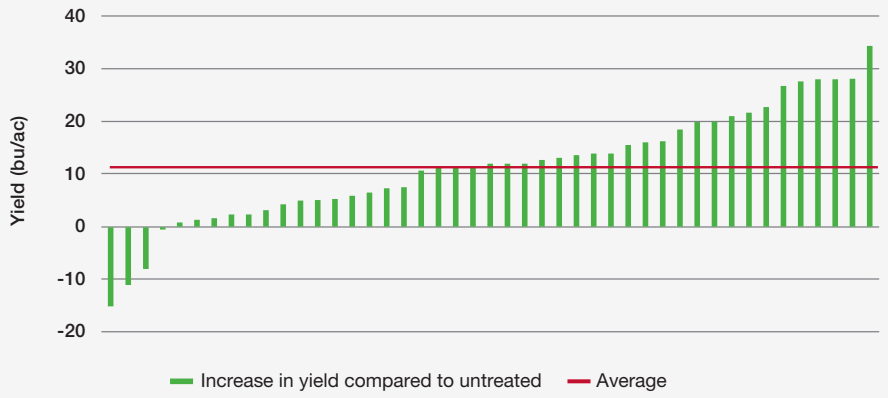
Veltyma	202 ml/ac (500 ml/ha)

Water volume
Ground application
80 L/ac (20 gal/ac)

Aerial application
20 L/ac (5 gal/ac)

Pre-harvest interval
21 days after application for corn.

Yield increase with Veltyma compared to untreated



Source: BASF Research Authorization Trials, ON & QC, 2021, n=45

[1] **Plant Health Benefits** refer to products that contain the active ingredient pyraclostrobin.
[2] All comparisons are to untreated, unless otherwise stated.
[3] Do not make more than two sequential applications of Veltyma fungicide targeting the same disease before alternating to a labelled fungicide containing a different mode of action.

Veltyma® DLX

NEW

Revysol® Fungicide

For use on: ALL CORN TYPES — YES

Veltyma® DLX fungicide delivers protection against key leaf diseases and ear rots.

- Broad-spectrum management of both key leaf and ear diseases, including fusarium and gibberella ear rots
- Unique properties leading to better management of minor stress, better standability, increased growth efficiency and greener leaves[1]
- Multiple modes of effective action for improved disease control and resistance management
- Reduces deoxynivalenol (DON) contamination to preserve grade quality

Active ingredients	(a) Metconazole – Group 3 (b) Mefentrifluconazole – Group 3 (b) Pyraclostrobin – Group 11
Formulation	(a) Liquid (b) Suspension concentrate
One case contains	(a) 8.1 L jug of Caramba® fungicide (b) 4.04 L jug of Veltyma fungicide

Crop staging
Full silking to silk browning

Diseases controlled
Common rust
(Puccinia sorghi)
Eyespot
(Aureobasidium zeae)
Fusarium ear rot
(Fusarium graminearum)[2]
Gibberella ear rot
(Gibberella zeae)[2]
Grey leaf spot
(Cercospora zeae-maydis)
Northern corn leaf blight
(Setosphaeria turcica)
Tar spot
(Phyllachora maydis)

Application rates
One case treats 20 acres.

Caramba	405 ml/ac (1.0 L/ha)
Veltyma	202 ml/ac (500 ml/ha)

Water volume
Ground application
Minimum 80 L/ac (20 gal/ac)

Aerial application
20 L/ac (5 gal/ac)

Pre-harvest interval
21 days after application for corn.

Source: BASF research trials, Belmont, ON, 2021

[1] All comparisons are to untreated, unless otherwise stated.
[2] Suppression only.

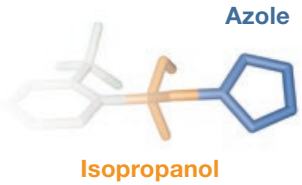
Revysol, the power behind Veltyma and Veltyma DLX.

Revysol® is a demethylation inhibitor (DMI) (Group 3) and the first and only isopropanol-azole on the market. It is engineered to provide broader, stronger and longer performance than other DMI technology.

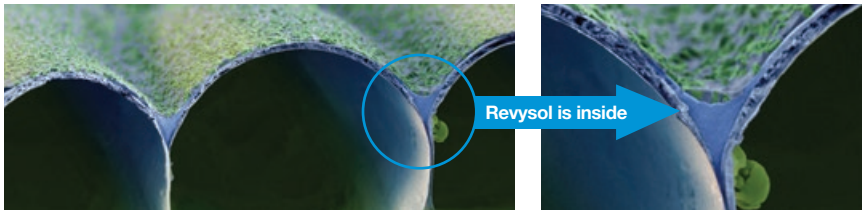
Broader.
Revysol is effective on a variety of crops (including corn, potatoes and wheat) and diseases. It is also even effective on some DMI-resistant disease strains.



Stronger.
The isopropanol unit allows the molecule to assume different conformations. When the molecule changes conformation, it forms a "hook" which allows it to bind more strongly to the plant. This provides protective and post-infection action, excellent rainfastness and enhanced binding strength for exceptional disease activity[1].



Longer.
Revysol provides residual activity once inside the plant by forming reservoirs under the leaf surface. This allows for a metered release that provides long-lasting protection. It also has low water solubility which allows for consistent translocation throughout the plant. Finally, by combining its high potency with the slow-release reservoirs, Revysol provides residual activity for long-lasting protection and extended control.[1]



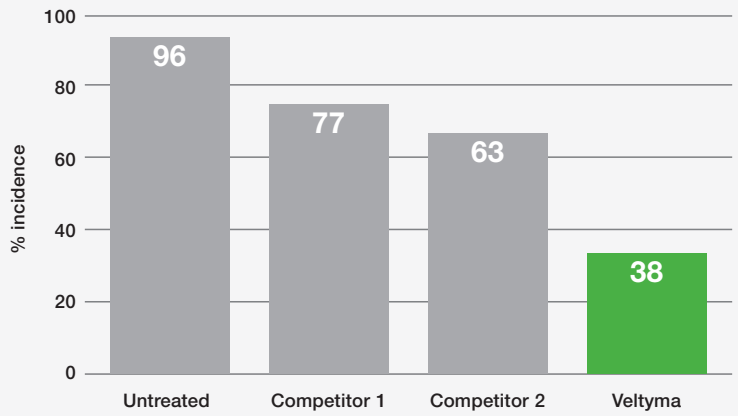
Veltyma®
Revysol® Fungicide

Veltyma® DLX
Revysol® Fungicide

Veltyma® fungicide is a northern corn leaf blight and tar spot specialist in corn. With some regions being affected by northern corn leaf blight on a yearly basis, and with tar spot moving across Ontario, Veltyma is a great asset to protect your corn from these yield-robbing diseases.

Veltyma DLX provides all the benefits of Veltyma with added protection against fusarium ear rot and gibberella ear rot.

Northern corn leaf blight



Source: 2020 randomized complete block design (RCBD) Research and Commercial Development (RCD) trials, ON, n=16

[1] When compared to other Group 3 fungicides. BASF internal trials, London and Ridgetown, ON, 2020, n=3.

Caramba®

Fungicide

For use on: ALL CORN TYPES — YES

Preventative protection against fusarium and gibberella ear rots.

- Proven suppression of ear rots caused by *Fusarium graminearum* and *Gibberella zeae*
- Reduces deoxynivalenol (DON) contamination to preserve grade quality

Active ingredient	Metconazole – Group 3
Formulation	Liquid
One case contains	2 x 8.1 L jugs

Crop staging
Full silking to silk browning

Diseases suppressed
Fusarium ear rot
(*Fusarium graminearum*)
Gibberella ear rot
(*Gibberella zeae*)

Application rates
One case treats 40 acres standalone or 80 acres when tank mixed with Headline® AMP fungicide.

Caramba	405 ml/ac (1.0 L/ha)

Applied in a tank mix with Headline AMP

Caramba	202 ml/ac (500 ml/ha)
Headline AMP	303 ml/ac (750 ml/ha)

Water volume
Ground application
Minimum 80 L/ac (20 gal/ac)

Aerial application
20 L/ac (5 gal/ac)

Pre-harvest interval
7 days after application for sweet corn (mechanical harvesting only).

18 days after application for sweet corn (hand harvesting only).

20 days after application for field and pop corn.

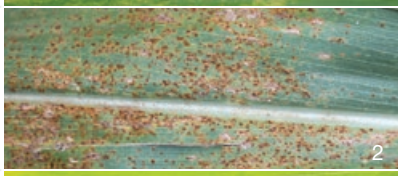
TECH TIP

To ensure adequate coverage of the silks, a higher water volume is essential. When targeting gibberella, apply when the silks are green. If they can be lit on fire, it's too late. The silks usually stay green for 7 to 10 days, but this depends on the hybrid and environmental conditions.

Caramba® fungicide application timing for ear disease management

Application window

Identifying corn diseases.

Disease	Visual symptoms	Picture
Anthracnose leaf blight	• Oval lesions about 15 mm in length • Centre is tan-brown with reddish, purplish, brownish or yellowish border • Disease progresses from the bottom and moves upwards • Top die-back can occur after silking	 1
Common rust	• Small, elliptical, reddish-brown pustules that can be seen on leaves, husks and stalks • Spores become black as they mature • In severe cases there can be some necrosis around the spores • Spores can easily be rubbed off	 2
Eyespot	• Round lesions that are 2-5 mm in diameter • Centre of the lesions are usually tan with a brown margin • Lesions are surrounded by yellow halo	 3
Grey leaf spot	• Short and narrow rectangular lesions parallel to the leaf veins appear on lower leaves after tasseling • Lesions range from tan to grey as the disease progresses	 4
Northern corn leaf blight	• Long, elliptical (cigar-shaped) lesions that are tan or grey • Lesions tend to appear on lower leaves first • Black spores can be found on the lesions when conditions are moist • When severe infection occurs, the lesions can coalesce and lead to the death of the leaf	 5
Tar spot	• Small black spots that are raised and bumpy on both sides of the leaf • Lesions can sometimes appear on the husks • Spots can be surrounded by tan-brown lesions (halo) that have a darker outer border, which are referred to as fisheye lesions	 6
Gibberella ear rot	• The tip of the ear or an insect-caused wound are both entry points for the reddish-pink mold to grow • The ear becomes spongy and can be covered in its entirety • Husks become bleached and tightly bound to the cobs with some black fruiting bodies visible	 7

[1,4] Source: Daren Mueller, Iowa State University, Bugwood.org. [2,3,5,6,7] Source: BASF.

Corn that's protected.
Selecting the proper fungicide for your corn fields.

There are many factors to consider when making the decision to protect your field or silage corn with a fungicide application including yield potential, disease pressure, susceptibility of the hybrid and level of stress during pollination.

Step 1: Target fields that benefit the most.
Select fields with the highest yield potential, as they often see the highest returns from an application.

These fields have:

- Adequate nitrogen
- Uniform plant stand
- Good fertility

Also look for fields with these characteristics:

- History of disease or a corn-on-corn rotation
- Hybrids that are susceptible to leaf disease
- Are experiencing stress during the pollination period

Step 2: Consider your objective.
Once you have made the decision to use a fungicide, ensure you are making an application at the right stage with the right product to meet your objective. This will help you achieve your production goals and improve your overall results and return on investment.

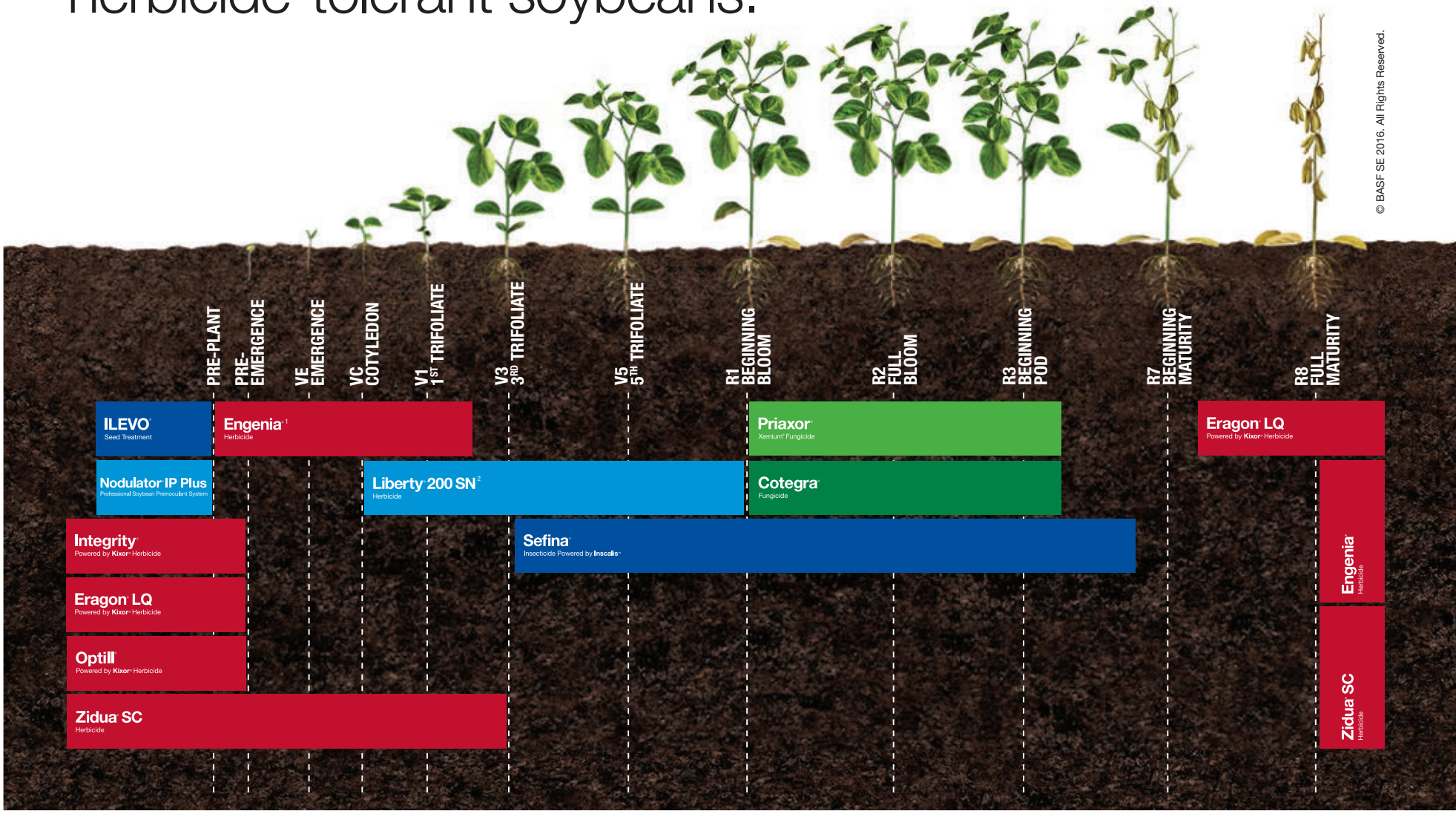
- If you want to control leaf diseases such as northern corn leaf blight, tar spot or eyespot and yield is your primary objective, apply Veltyma® fungicide at tassel (VT)
- If you are concerned about quality and the impact of DON, apply Caramba® fungicide at silking (R1)
- If you are targeting both yield and quality, apply Veltyma DLX at silking (R1)

Step 3: Scout.
Before applying your fungicide, check on your field to make sure the crop is at the right stage to meet your objective. If you are unsure of when to apply during silking, **Click here** for more details.

	Veltyma	Caramba	Veltyma DLX
Focus	Leaf disease and yield	Quality	Leaf disease, quality and yield
Benefits	- Preventative and post-infection activity on diseases with fast plant uptake - Increased benefits for improved plant health and greener leaves[1] - Multiple modes of effective action for resistance management	- Controls leaf diseases, suppresses fusarium and gibberella ear rots, reducing DON - Increases grain yield and quality	- Preventative and post-infection activity on diseases - Unique properties leading to better management of minor stress, better standability, increased growth efficiency and greener leaves[1] - Multiple modes of effective action for resistance management - Also provides all of the benefits of Caramba to give you a complete program
Application timing	V12 to silk browning (R1).	Full silking to silk browning (R1). If silks are dry, it's too late.	Full silking to silk browning (R1). If silks are dry, it's too late.
Rate	202 ml/ac (500 ml/ha)	405 ml/ac (1.0 L/ha)	Veltyma – 202 ml/ac (500 ml/ha) Caramba – 405 ml/ac (1.0 L/ha)

[1] All comparisons are to untreated, unless otherwise stated.

Solutions for herbicide-tolerant soybeans.

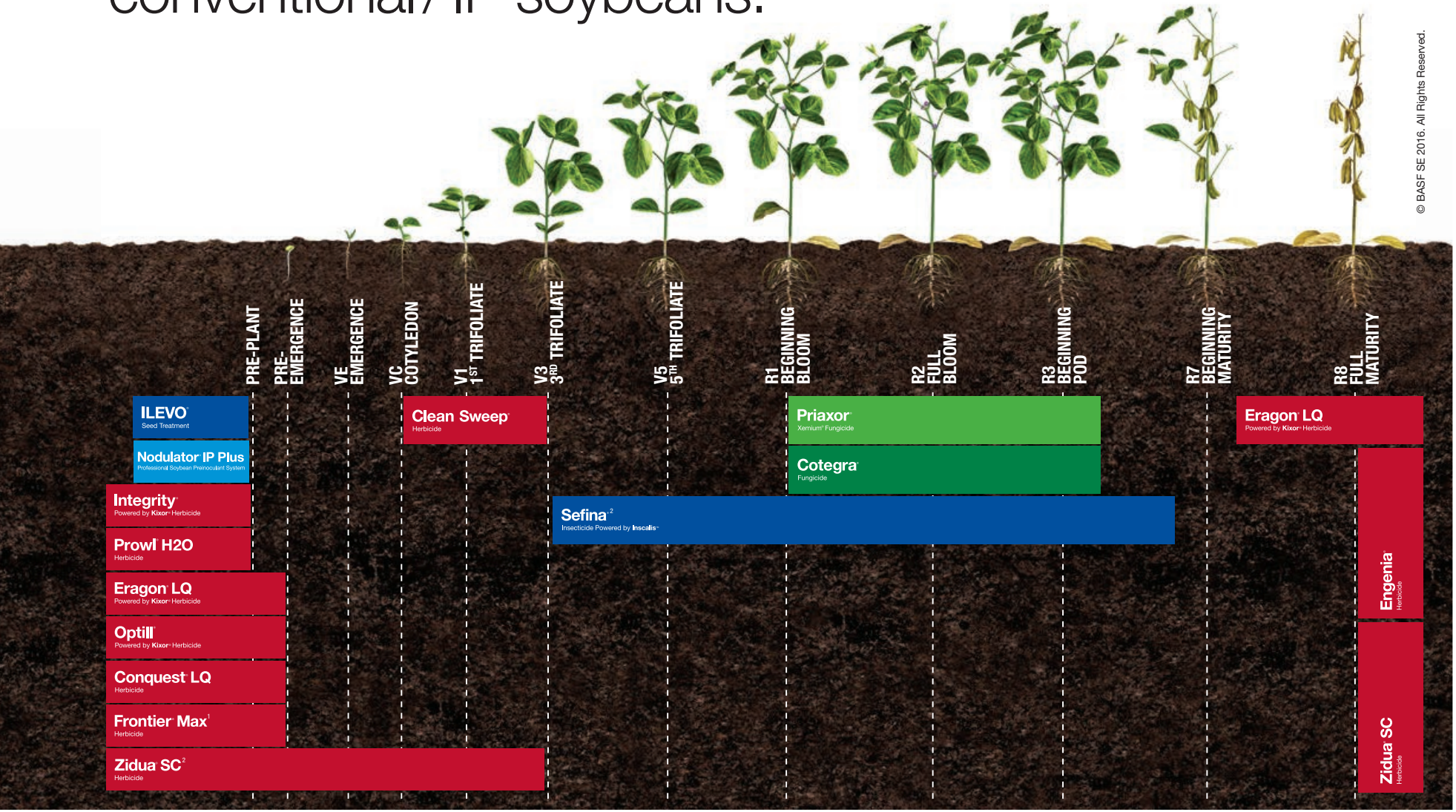


Crop Staging

Staging graphics depicted here are for quick reference only. Refer to individual product pages and product labels on **agsolutions.ca** or call **AgSolutions®** Customer Care at 1-877-371-BASF (2273) for detailed staging information.

[1] Apply by ground ONLY to dicamba-tolerant soybeans, including XtendFlex® and Roundup Ready 2 Xtend® soybeans. Soybean varieties that are not designated as dicamba-tolerant will be damaged or destroyed by this treatment.
[2] Apply by ground ONLY to Liberty®-tolerant soybeans, including Enlist E3™ and XtendFlex® soybeans. Soybean varieties that are not designated as Liberty-tolerant will be damaged or destroyed by this treatment.

Solutions for conventional / IP soybeans.



Staging graphics depicted here are for quick reference only. Refer to individual product pages and product labels on **agsolutions.ca** or call **AgSolutions®** Customer Care at 1-877-371-BASF (2273) for detailed staging information.

[1] Frontier® Max herbicide can be applied pre-plant incorporated to pre-emergence.
[2] Talk to your grain buyer regarding maximum residue limits for markets around the world before applying to conventional or IP soybeans.

BASF lead recommendations.

Select the solution that's right for your operation.

CROP ESTABLISHMENT

ILEVO®
Seed Treatment

Nodulator® IP Plus NEW
Professional Soybean Preinoculant System

WEED MANAGEMENT

Roundup Ready 2 Xtend® soybeans

Integrity®
Powered by **Kixor®** Herbicide
OR
Optill®
Powered by **Kixor®** Herbicide
OR
Eragon® LQ
Powered by **Kixor®** Herbicide
OR
Zidua® SC
Herbicide
+
Engenia®
Herbicide

XtendFlex® soybeans

Integrity®
Powered by **Kixor®** Herbicide
OR
Optill®
Powered by **Kixor®** Herbicide
OR
Eragon® LQ
Powered by **Kixor®** Herbicide
OR
Zidua® SC
Herbicide
+
Engenia®
Herbicide
FOLLOWED BY
Liberty® 200 SN
Herbicide

Enlist E3™ soybeans

Integrity®
Powered by **Kixor®** Herbicide
OR
Optill®
Powered by **Kixor®** Herbicide
OR
Eragon® LQ
Powered by **Kixor®** Herbicide
+
Zidua® SC
Herbicide
FOLLOWED BY
Liberty® 200 SN
Herbicide

Conventional/IP soybeans

Frontier® Max
Herbicide
OR
Prowl® H2O
Herbicide
OR
Zidua® SC
Herbicide
Speak to your grain buyer first
+
Conquest® LQ
Herbicide

INSECT MANAGEMENT	DISEASE MANAGEMENT	HARVEST MANAGEMENT	POST-HARVEST
Sefina® Insecticide Powered by **Inscalis**®	**Priaxor**® Xemium® Fungicide *AND/OR* **Cotegra**® Fungicide	**Eragon**® **LQ** Powered by **Kixor**® Herbicide	**Zidua**® **SC** Herbicide *OR* **Engenia**® Herbicide

Contact your BASF **AgSolutions®** Retail Representative for more information.

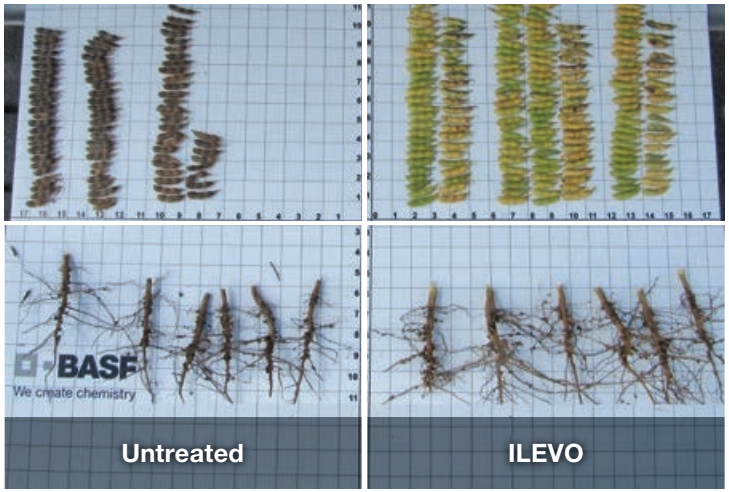
ILEVO®
Seed Treatment

For use on: ALL SOYBEAN PLATFORMS — YES

ILEVO® seed treatment provides effective protection against sudden death syndrome (SDS) and soybean cyst nematode (SCN).

- Protects against the above-ground and below-ground phases of SDS caused by *Fusarium virguliforme*
- Powerful nematocidal activity that demonstrates effectiveness across the SCN lifecycle, reducing the potential for root infection and damage

ILEVO protects against nematodes



Source: BASF internal trial, WI, USA, 2019

Active ingredient	Fluopyram – Group 7
Formulation	Suspension

Crop treatment
Standard slurry or mist-type application equipment

Target seed and seedling pests
Sudden death syndrome (SDS) caused by *Fusarium virguliforme*

Nematodes (suppression)
- Soybean cyst nematodes (*Heterodera glycines*)
- Root lesion nematodes (*Pratylenchus penetrans*)

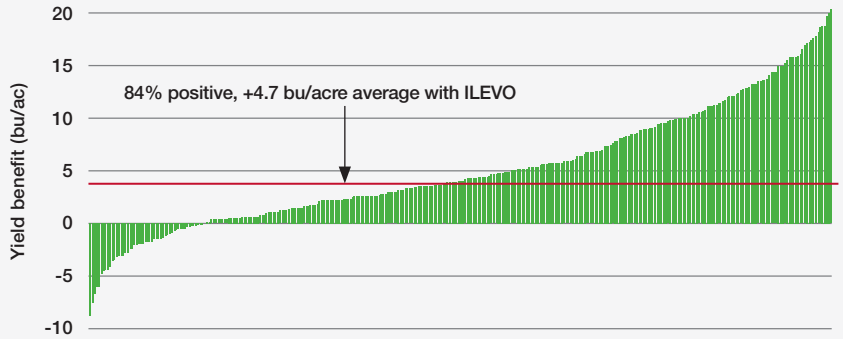
Application rates
One tote treats 19,455 to 64,935 kg of seed. The recommended application rate is 154 ml/100kg of seed.

ILEVO	154 ml/100 kg

Talk to your seed treater about application.

Inoculant compatibility
For details on seed treatment and inoculant compatibility, consult the inoculant compatibility information for the respective inoculant manufacturer, call **AgSolutions®** Customer Care at1-877-371-BASF (2273) or contact your BASF **AgSolutions** Retail Representative.

ILEVO yield benefit on soybeans



Source: 2011-2016 US & Canadian Field Trials, n=338

Nodulator® IP Plus

NEW

Professional Soybean Preinoculant System

For use on: ALL SOYBEAN PLATFORMS — YES

Biostacked® preinoculant system for soybean nodulation and root development.

- Activity by proven *Bradyrhizobium japonicum* and dual strain biofungicide
- New and exclusive to BASF patented bladder technology improves stability and vitality of biologicals
- BASF patented biologicals have impact on root architecture and plant development during key crop establishment timing

Nodulator® IP Plus professional soybean preinoculant system

Bioactive ingredient	*Bradyrhizobium japonicum* (strain 532C)
Formulation	Liquid

Velondis® Plus biofungicide

Bioactive ingredients	*Bacillus amyloliquefaciens* (strain MBI 600) *Bacillus subtilis* (strain BU 1814)
Formulation	Liquid
Package options	
200 SU	3.0 L inoculant bladder 3.0 L conditioner bladder 0.2 L Velondis Plus bottle[1]
400 SU	6.0 L inoculant bladder 6.0 L conditioner bladder 0.4 L Velondis Plus bottle[1]

Crop treatment

Applied on-seed exclusively by bulk seed treaters

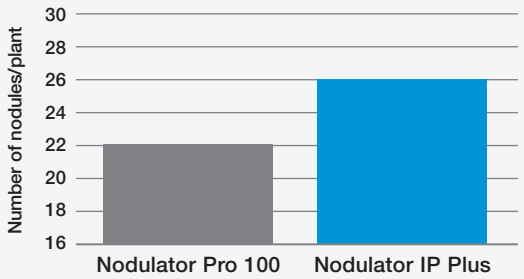
Application rates

One 200 SU case of Nodulator IP Plus will treat 4,536 kg (10,000 lbs) of seed.
One 400 SU case of Nodulator IP Plus will treat 9,072 kg (20,000 lbs) of seed.

	Rate per 100 kg seed
Nodulator IP Plus (inoculant + conditioner)	130 ml[2]
Velondis Plus	4.4 ml

Fusarium challenged plots

Source: BASF internal trials, Quitman, GA, USA, 2016



Source: BASF **AgSolutions®** Performance Trials, MB, 2018, n=6

Some seed treatments are harmful to liquid inoculants and the application method can affect the days-on-seed compatibility. Please see respective product labels or call **AgSolutions** Customer Care for further information.

[1] Packaged separately.
[2] Please refer to the product label for application rates without pesticides, as 134.4 ml/100 kg is not sufficient for even seed coverage and requires additional liquid volume (water and/or pesticide).

Eragon® LQ

Powered by Kixor® Herbicide

PRE-PLANT/PRE-EMERGENCE

For use on: ALL SOYBEAN PLATFORMS — YES

The ultimate burndown in an easy-to-use liquid formulation.

- Group 14 chemistry controls weeds resistant to glyphosate, triazine and Group 2 herbicides
- Quickly absorbed for fast control of key broadleaf weeds
- Complements and improves your glyphosate burndown application

Source: BASF research trial, Ridgetown, ON, 2020, 4 weeks after application

Active ingredient	Saflufenacil – Group 14
Formulation	Water-based suspension concentrate
One case contains	4 x 1.182 L jugs

Crop staging
Pre-plant, pre-emergence

Weeds controlled
Broadleaf plantain[1]
Canada fleabane[2]
Common ragweed[2]
Dandelion[3]
Giant ragweed[1,2]
Lady's thumb[1]
Lamb's quarters
Perennial sow thistle[1,4]
Prickly lettuce[1,5]
Redroot pigweed
Shepherd's-purse[1]
Stinkweed[1]
Wild buckwheat[1]
Wild mustard

Application rates
One case treats 160 acres.

Eragon LQ	30 ml/ac (73 ml/ha)[6]
Merge adjuvant[7]	400 ml/ac (1.0 L/ha)
Glyphosate[7]	See label for rate

Water volume
Ground application 40 to 80 L/ac (10 to 20 gal/ac)[8]

Pre-harvest interval
60 days for all pre-plant and pre-emergent applications.

Follow crops
In next season after spring pre-plant/ pre-emergent application:
Barley, canola, corn (field, sweet), dry beans, oats, soybeans, triticale, wheat (durum, spring, winter)

[1] Controlled with a tank mix of Eragon LQ and glyphosate for pre-plant and pre-emergent applications. [2] Includes glyphosate-resistant biotypes. [3] Suppression only. [4] Top growth burndown control only. [5] Top growth only. [6] Do not use rates higher than 30 ml/ac or crop injury may result. Use with glyphosate for both pre-plant and pre-emergent applications. [7] Glyphosate (required for optimum activity) and Merge adjuvant (required) are not included in the case. See respective glyphosate label for application rate of glyphosate. [8] Use a higher water volume for larger weeds or when weed densities are high.

Integrity®

Powered by **Kixor®** Herbicide

For use on: ALL SOYBEAN PLATFORMS — YES

Broad-spectrum weed control to give soybeans a weed-free start.

- Early-season control of key broadleaf weeds such as Canada fleabane, with suppression of key grasses
- Group 14 and 15 chemistries for multiple modes of action
- Control of weeds resistant to glyphosate, triazine and Group 2 herbicides
- Excellent follow-crop flexibility

On glyphosate-resistant Canada fleabane.
Source: BASF Research Trial, Ridgetown, ON, 2020

Active ingredients	Saflufenacil – Group 14 Dimethenamid-P – Group 15
Formulation	Emulsifiable concentrate
One case contains	2 x 9 L jugs Also available in 450 L tote

Crop staging
Pre-plant[1], pre-emergence[1]

Weeds controlled

Broadleaf weeds
Broadleaf plantain
Canada fleabane[2]
Common ragweed[2]
Dandelion[3]
Giant ragweed
Lady's thumb
Lamb's quarters
Perennial sow thistle[4]
Prickly lettuce[5]
Redroot pigweed
Shepherd's-purse
Stinkweed
Wild buckwheat
Wild mustard

Grasses
Barnyard grass[6]
Crabgrass (large)[6]
Foxtail (green, yellow)[6]

Application rates
One case treats 120 acres.
One tote treats 3,000 acres.

Integrity[7]	150 ml/ac (370 ml/ha)
Merge adjuvant[8]	400 ml/ac (1.0 L/ha)
Glyphosate[8]	See label for rate

Water volume
Ground application
40 to 80 L/ac (10 to 20 gal/ac)

Pre-harvest interval
60 days after application for soybeans.

Follow crops
Anytime after application:
Field and sweet corn
100 days after application:
Cereals other than corn
11 months after application:
All other crops
22 months after application:
Sugar beets

TECH TIP

Use multiple modes of effective action. If targeting larger glyphosate-resistant Canada fleabane, use a higher water volume (15 to 20 gal/ac) and add an additional mode of action. Apply to weeds that are small and actively growing.

[1] Apply in tank mix with glyphosate. Do not incorporate as injury may occur. [2] Includes glyphosate-resistant biotypes. [3] Suppression only. [4] Top growth burndown control only. [5] Top growth only. [6] Early-season suppression. [7] Do not incorporate as injury may occur. [8] Glyphosate and Merge are not included in the case. See respective glyphosate label for application rate of glyphosate.

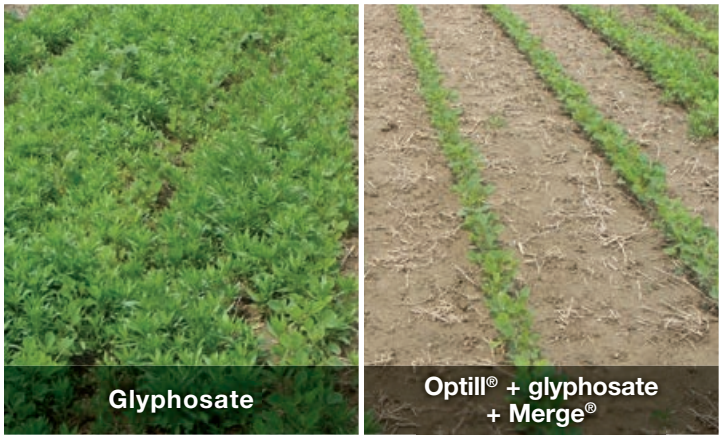
Optill®

Powered by **Kixor®** Herbicide

For use on: ALL SOYBEAN PLATFORMS — YES

Rapid burndown with residual control for cleaner fields in soybeans.

- Powered by Kixor® for rapid burndown plus early-season residual control in no-till and vertical-till productions
- Multiple modes of action to help manage resistant weeds
- Controls grassy and broadleaf weeds during the early stages of crop development



Source: BASF research trial, University of Guelph, Ridgetown, ON, 2015, 4 weeks after treatment

Active ingredients	Imazethapyr – Group 2 Saflufenacil – Group 14
Formulation	Water dispersible granules
One case contains	6 x 1.19 kg jugs

Crop staging[1]
Pre-plant, pre-emergence

Weeds controlled

Broadleaf weeds
Broadleaf plantain
Canada fleabane[2]
Common chickweed
Common ragweed[2,3,4]
Dandelion[5]
Giant ragweed[2,6]
Lady's thumb[6]
Lamb's quarters[3,4]
Perennial sow thistle[6,7]
Prickly lettuce[8]
Redroot pigweed[3,4]
Shepherd's-purse
Stinkweed[6]
Wild buckwheat[6]
Wild mustard[6]

Grasses
Barnyard grass[9]
Crabgrass (large)[9]
Foxtail (green, yellow)[3,9]

Application rates
One case treats 120 acres.

Optill	60 g/ac (147 g/ha)
Merge adjuvant[10]	400 ml/ac (1.0 L/ha)
Glyphosate[10]	See label for rate

Water volume
Ground application
40 to 80 L/ac (10 to 20 gal/ac)

Pre-harvest interval
100 days after application for soybeans.

Follow crops
Same season (in case of crop failure):[11]
Soybeans, winter wheat[12]
In next spring after application:
Dry beans, field corn, soybeans, spring barley, spring wheat, winter wheat[12]

[1] In no-till or reduced tillage operations. [2] Includes glyphosate-resistant biotypes. [3] Adequate residual control may not be achieved on Group 2-resistant biotypes. [4] Includes control of triazine-resistant biotypes. [5] Suppression only. [6] Burndown only. [7] Top growth burndown only. [8] Top growth only. [9] Burndown and residual suppression only. [10] Glyphosate and Merge are not included in the case. See respective glyphosate label for application rate of glyphosate. [11] A second application of Optill cannot be made in the rescue crop. [12] Winter wheat may be re-planted in cases of crop failure or as a rotational crop 100 days following an Optill application. Soil preparation for re-planting should be no deeper than 10 cm.

Zidua® SC

Herbicide

For use on:

CONVENTIONAL/ IP SOYBEANS	ALL OTHER SOYBEAN PLATFORMS
TALK TO GRAIN BUYER[1]	YES

Residual control of key annual grasses and select broadleaf weeds.

- Group 15 chemistry delivers control of grassy weeds such as annual bluegrass, as well as resistant pigweed and waterhemp
- Residual activity controls germinating seedlings before or soon after crop emergence
- Convenient liquid formulation

Source: BASF research trial, ON, 2017

Active ingredient	Pyroxasulfone – Group 15
Formulation	Suspension concentrate
One case contains	2 x 4.05 L jugs

Crop staging

Pre-plant[2], pre-emergence, early post-emergence up to the 3rd trifoliate

Weeds controlled

Broadleaf weeds

Cleavers[3,4], Eastern black nightshade[3,4], Kochia[3,4], Lamb's quarters[3], Redroot pigweed, Waterhemp

Grasses

Annual bluegrass, Barnyard grass, Crabgrass (large), Foxtail (giant, green, yellow), Ryegrass (Italian), Wild oats[3]

Application rates

One case treats 40 to 110 acres, depending on soil texture.

Zidua SC	Rate by soil texture for residual control			
	Coarse	Medium-fine		Fine
		Organic matter ≤ 3%	3% < Organic matter < 7%	
Pre-plant, pre-emergence	101 ml/ac (250 ml/ha)	134 ml/ac (332 ml/ha)	169 ml/ac (417 ml/ha)	200 ml/ac (493 ml/ha)
Early post-emergence	73 to 97 ml/ac (180 to 240 ml/ha)			

Water volume

Ground application — Minimum 40 L/ac (10 gal/ac)

Follow crops

4 months following application:

Winter wheat

Following spring after application:

Chickpeas, field corn, field peas, flax, lentils, potatoes, soybeans, spring wheat[5], sunflowers[5]

[1] Talk to your grain buyer regarding maximum residue limits for markets around the world before applying to conventional or IP soybeans [2] Up to 30 days before planting. [3] Early-season residual suppression only. [4] Including Group 2-resistant biotypes. [5] This applies if total seasonal rate of Zidua SC was 120 to 240 ml/ha.

Engenia®
Herbicide

For use on:	ROUNDUP READY 2 XTEND® SOYBEANS	XTENDFLEX® SOYBEANS	ALL OTHER SOYBEAN PLATFORMS
	YES	YES	NO

An advanced dicamba formulation with lower volatility properties for improved broadleaf control in XtendFlex® soybeans and Roundup Ready 2 Xtend® soybeans.[1]

- More highly concentrated liquid formulation for easier handling and lower use rates
- Effective resistance management tool for resistant biotypes (including biotypes resistant to Group 2, Group 14, triazine and glyphosate)

On glyphosate-resistant Canada fleabane.
Source: BASF research trial, Ridgetown, ON, 2020

Active ingredient	Dicamba – Group 4
Formulation	Solution
One case contains	2 x 8.09 L jugs Also available in 121.2 L shuttle

Crop staging[1]
Pre-plant, pre-emergence, early post-emergence

Weeds controlled[2,3]
Buckwheat (tartary, wild), Canada fleabane[4], Canada thistle[5], Cleavers, Common chickweed[6,7], Corn spurry, Cow cockle, Eastern black nightshade[7], Field bindweed[5], Green smartweed, Hairy nightshade[6,8], Kochia[9], Lady's thumb, Lamb's quarters, Mustards (including wild), Narrow-leaved hawk's beard[6,7], Perennial sow thistle[5], Ragweed (common, false, giant), Redroot pigweed, Russian pigweed, Velvetleaf, Volunteer canola[6,10]

Application rates
One case treats 40 to 80 acres.
One shuttle treats 300 to 600 acres.

Engenia[11,12,13,14,15]	200 to 400 ml/ac (0.5 to 1.0 L/ha)

Water volume
Ground application
Minimum 40 L/ac (10 gal/ac)

Use a higher water volume to ensure adequate coverage.[16]

Pre-harvest interval
7 to 10 days for soybean forage and 13 to 15 days for soybean hay.

Follow crops
A plant-back interval of 120 days is required for all crops not on the Engenia label.

ROUNDUP READY 2 XTEND SOYBEANS XTENDFLEX SOYBEANS

[1] Apply by ground ONLY to Roundup Ready 2 Xtend® and XtendFlex® soybeans. Soybean varieties that are not designated as dicamba-tolerant will be damaged or destroyed by this treatment. [2] For a complete list of proper weed staging, please refer to the product label. [3] Controlled by Engenia alone at 200 to 400 ml/ac (0.5 to 1 L/ha). [4] Post-emergence only. [5] Apply Engenia herbicide annually for three years at the flowering stage of bindweed and the budding stage of thistles. [6] Suppression only. [7] Including Group 2-resistant biotypes. [8] When Engenia is applied at 283 to 400 ml/ac (0.7 to 1 L/ha). [9] Including biotypes resistant to Group 2 and 9 chemistries. [10] Including conventional, Roundup Ready® and LibertyLink® cultivars, when Engenia is applied at 400 ml/ac (1 L/ha). [11] Engenia can be used alone or in tank mix with glyphosate for additional broadleaf and grassy weed control. See label for important details. [12] Only use glyphosate products registered for use in soybeans. Do not tank mix Engenia with glyphosate products where glyphosate is present as an ammonium salt. [13] For application to XtendFlex® and Roundup Ready 2 Xtend® soybeans, apply Engenia using nozzles that deliver extremely coarse to ultra-coarse spray droplets. [14] The 400 ml/ac rate of Engenia is to be used only once a season and should be used pre-plant, pre-emergence or in-crop early post-emergence. [15] 793 ml/ac of Engenia is the maximum total to be applied in a single growing season. [16] See label for water application rate.

Weed control is your goal. Stewardship is your priority.

There are several factors to consider when using a dicamba herbicide. They include:

Nozzles – use nozzles that deliver extremely coarse to ultra-coarse droplets

Wind speed – spray when wind speeds are between 3 to 15 km/h

Ground speed – maintain sprayer speed under 25 km/h

Boom height – keep spray boom height no higher than 50 cm above crop canopy

Sensitive crop awareness – identify neighbouring crop species

Application volume – use a minimum spray volume of 10 gal/ac

Additives/adjuvants – only use as required or recommended on product label

Sprayer cleanout – triple rinse, and use a detergent-based cleaner

TECH TIP

Do not apply Engenia when there is a temperature inversion. The three indicators of a temperature inversion include the following:

1) Clear sky
2) No wind
3) Dew present

Applications are only permitted beginning one hour after sunrise until two hours before sunset.

Engenia®
Herbicide

Visit **agsolutions.ca/applicationstewardship** to learn more and access the Engenia Stewardship learning module.

Access the Engenia Spray Tool at **engeniaspraytool.ca.**

Liberty® 200 SN

Herbicide

For use on:

XTENDFLEX® SOYBEANS	ENLIST E3™ SOYBEANS	ALL OTHER SOYBEAN PLATFORMS
YES	YES	NO

An excellent management tool for rotating chemistries to help keep resistance out of your fields.

- Group 10 chemistry provides broad-spectrum control of broadleaf and grassy weeds
- Flexible with respect to application timing, rates and tank mixes
- Quick, complete burndown of weeds

Zidua® SC herbicide applied pre-emergence followed by Liberty 200 SN.
Source: BASF trial, London, ON, 2020, 7 days after post-emergence treatment

TECH TIP

***Click here* to learn more about Liberty 200 SN herbicide best management practices.**

Active ingredient	Glufosinate ammonium – Group 10
Concentration	200 g/L
Formulation	Solution
One case contains	2 x 10 L jugs Also available in 400 L tote

Crop staging[1]

Apply from cotyledon to the first flower stage and when the weeds are actively growing

Weeds controlled

Broadleaf weeds

Canada fleabane[2,3], Canada thistle[4], Chickweed, Cleavers[3,5], Cocklebur, Common ragweed[2], Eastern black nightshade, Field bindweed[4], Giant ragweed[2,5], Green pigweed, Jimsonweed[6], Kochia[2,3,7], Lady's thumb, Lamb's quarters, Perennial sow thistle, Redroot pigweed, Shepherd's-purse, Stinkweed, Velvetleaf[6], Volunteer canola[8], Waterhemp[2,9], Wild buckwheat, Wild mustard, Wormseed mustard

Grasses

Barnyard grass, Bristly foxtail, Fall panicum, Giant foxtail, Green foxtail, Large crabgrass, Proso millet, Quackgrass[4,6], Wild oats, Witchgrass, Yellow foxtail

Application rates

One case treats 20 acres.
One tote treats 400 acres.

Ammonium sulfate (optional)	2.4 L/ac (6.0 L/ha)
Liberty 200 SN	1.0 L/ac (2.5 L/ha)

Water volume

Ground application
Minimum 80 L/ac (20 gal/ac)

Pre-harvest interval

70 days after application for soybeans.

Follow crops

Anytime after application (LibertyLink® varieties only):
Canola, field corn, soybeans
70 days after application:
Barley, oats, rye, triticale, wheat
120 days after application:
All other crops

[1] Apply by ground ONLY to Liberty-tolerant soybeans, including Enlist E3™ and XtendFlex® soybeans. Soybean varieties that are not designated as Liberty-tolerant will be damaged or destroyed by this treatment. [2] Including glyphosate-resistant biotypes. [3] Including Group 2-resistant biotypes. [4] Season long suppression. [5] Suppression only. [6] For enhanced activity, add ammonium sulphate to the tank at a rate of 6 L/ha (49% solution) or 3 kg/ha (99%). [7] Including Group 4-resistant biotypes. [8] Including conventional, Roundup Ready® and Clearfield® biotypes. [9] In corn and soybeans only. To control early flushes, an application of a registered pre-emergent herbicide, such as Zidua® SC herbicide, is recommended.

Planning your soybean herbicide program.

Soybean varieties can contain different traits that allow them to tolerate different herbicides. Below is a breakdown of what is available in the market today as well as some general guidelines for each of them. The bottom chart describes when to use our different Kixor® products to help you round out your herbicide program.

Trait	Roundup Ready®	Roundup Ready 2 Xtend®	XtendFlex®	LibertyLink®	Enlist E3™
Herbicide tolerance	Glyphosate	Glyphosate Dicamba	Glyphosate Dicamba Glufosinate	Glufosinate	Glyphosate Glufosinate 2,4-D
BASF multiple mode of action program recommendation	Tank mix Zidua® SC herbicide with a Kixor product pre-plant or pre-emergence followed by glyphosate	Tank mix Engenia® herbicide with a Kixor product pre-plant or pre-emergence followed by Engenia (low rate) in-crop up to the second trifoliate	Tank mix Engenia with a Kixor product pre-plant or pre-emergence followed by an in-crop application of Liberty® 200 SN herbicide before the start of flowering	Tank mix Zidua SC with a Kixor product pre-plant or pre-emergence followed by Liberty 200 SN	Tank mix Zidua SC with a Kixor product pre-plant or pre-emergence followed by an in-crop application of Liberty 200 SN before the start of flowering
More information		**Click here** for Engenia best practices		**Click here** for Liberty 200 SN best practices	

Choosing your best Kixor herbicide tank-mix option.

	Eragon LQ	Integrity	Optill
Group(s)	14	14, 15	14, 2
Staging	← Pre-plant, pre-emergence →		
Rate	30 ml/ac	150 ml/ac	60 g/ac
Water volume	← 10-20 gal/ac →		
Effects	• Adds an additional mode of effective action on broadleaf weeds (including resistant biotypes)	• Adds two additional modes of effective action on broadleaf weeds (including resistant biotypes) • Short-term residual activity • Flexible application options	• Adds up to two additional modes of effective action on broadleaf weeds (including resistant biotypes) • Extended residual activity on a broader spectrum of grasses and broadleaf weeds

Conquest® LQ

Herbicide

For use on: ALL SOYBEAN PLATFORMS — YES

For control of tough broadleaf weeds and annual grasses in soybeans.

- Multiple modes of action for managing resistant weeds
- Season-long residual control through both soil and foliar uptake
- Rate flexibility for specific weed pressures

Active ingredients	Imazethapyr – Group 2 Metribuzin – Group 5
Formulation	Imazethapyr – Solution Metribuzin – Suspension concentrate
One case contains	2 x dual chamber jugs. Each jug contains: 2.52 L Pursuit® herbicide 6.88 L Sencor® herbicide

Crop staging
Early pre-plant, pre-emergence

Weeds controlled

Broadleaf weeds
Common ragweed
Eastern black nightshade[1]
Lady's thumb
Lamb's quarters
Redroot pigweed
Velvetleaf[2]
Wild mustard

Grasses
Barnyard grass
Foxtail (green, yellow)
Old witchgrass

Application rates
One case treats 30 to 40 acres.

Pursuit[3]	126 to 168 ml/ac (312 to 420 ml/ha)
Sencor[3]	344 to 459 ml/ac (0.86 to 1.1 L/ha)

Water volume

Ground application	60 to 80 L/ac (15 to 20 gal/ac)

Pre-harvest interval
100 days after application for soybeans.

Follow crops
In next spring after application:
Field corn
Kidney beans
Soybeans
Spring barley
Spring wheat
White beans
Winter wheat[4]

TECH TIP

Ideal tank-mix partner with Eragon® LQ herbicide or Integrity® herbicide to provide multiple modes of effective action on glyphosate-resistant Canada fleabane. Ensure your applications include 344 ml/ac of metribuzin for optimal control.

[1] Pre-emergence application. Partial control only.
[2] Some velvetleaf plants that germinate deeper in the soil and emerge late may escape treatment.
[3] On coarse soils, pre-emergence application timing (conventional tillage): One case treats 40 acres with lower rate and treats 30 acres with higher rate.
[4] Winter wheat may be grown 100 days after the application of Conquest® LQ herbicide.

Frontier® Max

Herbicide

For use on: ALL SOYBEAN PLATFORMS — YES

Reliable control of tough broadleaf and grassy weeds.

- Wide window of application in soybeans
- Controls stubborn weeds such as foxtail, nightshade, nutsedge and pigweed
- Residual activity for reduced weed pressure throughout crop development
- Low use rate

Active ingredient	Dimethenamid-P – Group 15
Formulation	Emulsifiable concentrate
One case contains	2 x 9 L jugs

Crop staging

Pre-plant incorporated[1], pre-emergence[1]

Weeds controlled

Broadleaf weeds

Eastern black nightshade[2]
Redroot pigweed[3]
Waterhemp[4]

Grasses

Barnyard grass
Crabgrass (large, smooth)
Fall panicum
Foxtail (giant, green, yellow)
Old witchgrass
Yellow nutsedge[5]

Application rates

One case treats 45 to 60 acres.

Frontier® Max	305 to 390 ml/ac (756 to 963 ml/ha)[6]

Water volume

Ground application 40 to 80 L/ac (10 to 20 gal/ac)

[1] Application stage is dependent on tank-mix partner.
[2] Pre-plant incorporated or pre-emergence only (390 ml/ac).
[3] Pre-plant incorporated (350 to 390 ml/ac) or pre-emergence (390 ml/ac) only.
[4] Suppression only.
[5] Pre-plant incorporated only (390 ml/ac). Lower rates provide suppression only.
[6] Rate depends on soil texture and organic matter content, see label for more information.

Prowl® H2O

Herbicide

For use on: ALL SOYBEAN PLATFORMS — YES

Early-season control of annual grasses and key broadleaf weeds. Before they emerge.

- Residual control of target weeds
- Low-staining formulation and reduced odour for ease of use
- Outstanding performance and crop safety

Active ingredient	Pendimethalin – Group 3
Formulation	Microcapsule suspension
One case contains	2 x 8.9 L jugs Also available in 450 L tote

Crop staging
Early pre-plant, pre-plant incorporated

Weeds controlled
Barnyard grass
Crabgrass (large, smooth)
Foxtail (green, yellow)
Lamb's quarters[1,2]
Redroot pigweed[2]

Application rate
One case treats 20 acres. One tote treats 506 acres.

Prowl® H2O	890 ml/ac (2.2 L/ha)

Water volume
Ground application 40 to 80 L/ac (10 to 20 gal/ac)

Pre-harvest interval
100 days after application for soybeans.

Follow crops
1 year after application:
Field corn
Kidney beans
Soybeans
White beans

TECH TIP

If planning to use a vertical tillage implement, apply the herbicide prior to the tillage pass for better weed control.[3]

Prowl H2O totes come with a pump that needs to be calibrated before first use and requires occasional agitation if in prolonged storage. For more information please contact your BASF AgSolutions® Retail Representative.

[1] Suppression only. [2] Includes triazine-resistant biotypes. [3] Always read and follow label directions.

Clean Sweep®

Herbicide

For use on: ALL SOYBEAN PLATFORMS — YES

In a planned two-pass system, Clean Sweep® herbicide lets you take control of your weeds.

- Works on contact with emerged weeds and through residual activity
- Controls a broad spectrum of grassy and broadleaf weeds including foxtail, nightshade, ragweed and velvetleaf

20 days after planting.
Source: **AgSolutions®** Performance Trial, London, ON, 2011

Active ingredients	Bentazon – Group 6 Imazethapyr – Group 2
Formulation	Bentazon – Liquid Imazethapyr – Solution
One case contains	2 x dual-chamber jugs Each jug contains: 1.26 L Pursuit® herbicide 7 L Basagran® Forte herbicide

Crop staging
Cotyledon to 3rd trifoliate

Weeds controlled

Broadleaf weeds
Bird rape, Canada thistle[1], Cocklebur, Common ragweed, Eastern black nightshade, Field bindweed[2], Flower-of-an-hour, Lady's thumb, Lamb's quarters, Redroot pigweed, Shepherd's-purse, Stinkweed, Velvetleaf, Wild buckwheat[3], Wild mustard, Yellow nutsedge[1]

Grasses
Barnyard grass, Green foxtail, Large crabgrass[4], Old witchgrass[3], Proso millet[4], Yellow foxtail

Application rates
One case treats 20 acres.

Pursuit	126 ml/ac (312 ml/ha)
Basagran Forte	708 ml/ac (1.75 L/ha)
28% UAN[5]	809 ml/ac (2.0 L/ha)

Water volume
Ground application 80 to 120 L/ac (20 to 30 gal/ac)

Pre-harvest interval
100 days after application for soybeans.

TECH TIP

For optimal efficacy, plan to apply Clean Sweep 21 days after planting.

[1] May require an additional application of Basagran Forte at 708 ml/ac (1.75 L/ha) only for control.
[2] Suppression only.
[3] Early post-emergence application.
[4] Early post-emergence application; partial control.
[5] Not included in the case.

Match these herbicides with your IP soybeans.

	Conquest® LQ			Optill®	Prowl® H2O	Frontier® Max
	+ Prowl H2O	+ Frontier Max	+ Zidua® SC[1]	+ Frontier Max	Followed by Clean Sweep®	
Groups	2, 3, 5	2, 5, 15	2, 5, 15	2, 14, 15	2, 3, 6	2, 6, 15
Staging	PP	PRE	PP, PRE	PP, PRE	Prowl H2O: PP or PPI Clean Sweep: cotyledon – 3rd trifoliate	Frontier Max: PP, PPI or PRE Clean Sweep: cotyledon – 3rd trifoliate
Rate	Conquest LQ: Pursuit® 126-168 ml/ac, Sencor® 344-459 ml/ac Prowl H2O: 890 ml/ac	Conquest LQ: Pursuit 126-168 ml/ac, Sencor 344-459 ml/ac Frontier Max: 305-390 ml/ac	Conquest LQ: Pursuit 126-168 ml/ac, Sencor 344-459 ml/ac Zidua SC: 101-200 ml/ac	Optill: 60 g/ac Frontier Max: 305-390 ml/ac	Prowl H2O: 890 ml/ac Clean Sweep[2]: Pursuit 126 ml/ac, Basagran® Forte 708 ml/ac	Frontier Max: 305-390 ml/ac Clean Sweep[2]: Pursuit 126 ml/ac, Basagran Forte 708 ml/ac
Broadleaf weeds[3]	Common ragweed Eastern black nightshade Lady's thumb Lamb's quarters Redroot pigweed Velvetleaf	Common ragweed Eastern black nightshade Lady's thumb Lamb's quarters Redroot pigweed Velvetleaf	Cleavers[4,5] Common ragweed Eastern black nightshade[4] Kochia[4,5] Lady's thumb Lamb's quarters Redroot pigweed Velvetleaf Waterhemp Wild mustard	Canada fleabane Common chickweed Common ragweed Dandelion Eastern black nightshade Giant ragweed Lady's thumb Lamb's quarters Perennial sow thistle Redroot pigweed Shepherd's-purse Wild buckwheat	Canada thistle[6] Cocklebur Common ragweed Eastern black nightshade Field bindweed[6] Lady's thumb Lamb's quarters Redroot pigweed Shepherd's purse Velvetleaf Wild buckwheat	Canada thistle[6] Cocklebur Common ragweed Eastern black nightshade Field bindweed[6] Lady's thumb Lamb's quarters Redroot pigweed Shepherd's purse Velvetleaf Wild buckwheat
Grasses[3]	Barnyard grass Crabgrass (large) Fall panicum Foxtail (green, yellow)	Barnyard grass Crabgrass (large, smooth) Fall panicum Foxtail (giant, green, yellow) Old witchgrass Yellow nutsedge	Barnyard grass Crabgrass (large) Foxtail (giant, green, yellow) Old witchgrass Ryegrass (Italian) Wild oats[5]	Barnyard grass Crabgrass (large, smooth) Fall panicum Foxtail (giant, green, yellow) Old witchgrass Yellow nutsedge	Barnyard grass Crabgrass (large, smooth) Fall panicum Foxtail (green, yellow) Old witchgrass Proso millet[6] Yellow nutsedge[6]	Barnyard grass Crabgrass (large, smooth) Fall panicum Foxtail (giant, green, yellow) Old witchgrass Proso millet[6] Yellow nutsedge[6]
Use when	Best for heavy grass pressure including crabgrass, or additional activity on lamb's quarters.	Best for heavy grass or nightshade pressure.	Best for waterhemp pressure. Best for heavy grass pressure including crabgrass, or additional activity on lamb's quarters and eastern black nightshade.	Do not have to incorporate. Use when there is heavy grass or nightshade pressure.	Planned 2-pass program. The soil applied residual at planting will allow for more uniform weed emergence, which will decrease the selection pressure of the in-crop herbicide and make it easier to time the in-crop herbicide application. Use Prowl H2O on light soils or if there is a lot of grass and lamb's quarters. Apply Clean Sweep 17-24 days after the initial burndown or tillage pass.	Planned 2-pass program. The soil applied residual at planting will allow for more uniform weed emergence, which will decrease the selection pressure of the in-crop herbicide and make it easier to time the in-crop herbicide application. Frontier Max is strong on nightshade. Apply Clean Sweep 17-24 days after the initial burndown or tillage pass.

[1] Talk to your grain buyer regarding maximum residue limits for markets around the world before applying to conventional or IP soybeans. [2] The recommended application water volume is 20 to 30 gal/ac for Clean Sweep. [3] For the complete list of weeds controlled and/or suppressed, consult the product labels. [4] Including Group 2-resistant biotypes. [5] Early-season residual suppression only. [6] Suppression only.

PPI = pre-plant incorporated PP = pre-plant PRE = pre-emergence

Sefina®

Insecticide Powered by **Inscalis®**

For use on:

CONVENTIONAL/ IP SOYBEANS	ALL OTHER SOYBEAN PLATFORMS
TALK TO GRAIN BUYER[1]	YES

Lasting protection against aphids.

- Quickly halts aphid feeding, which reduces production losses
- Extended control of aphids
- Powered by Inscalis®, a unique mode of action that controls soybean aphids, including those that are resistant to other insecticides
- Effective tool in an integrated pest management strategy with a low impact on beneficial insects, including predatory and parasitic insects

Active ingredient	Afidopyropen – Group 9D
Formulation	Dispersion concentrate
One case contains	2 x 3.24 L jugs

Crop staging
Emergence to full maturity[2]

Pest controlled
Soybean aphid *(Aphis glycines)*

Application rate[3,4]
One case treats 80 acres.

Sefina®	81 ml/ac (200 ml/ha)

Water volume

Ground application	40 to 80 L/ac (10 to 20 gal/ac)
Aerial application	20 L/ac (5 gal/ac) minimum

Pre-harvest interval
7 days after application.

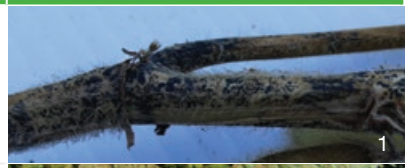
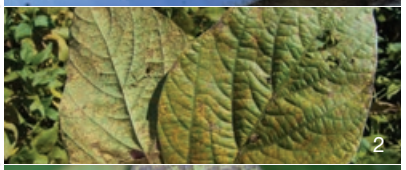
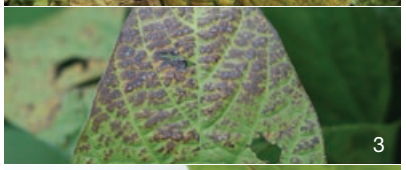
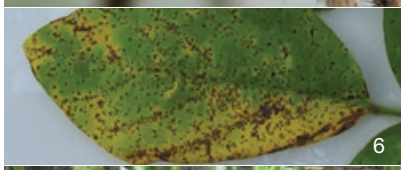
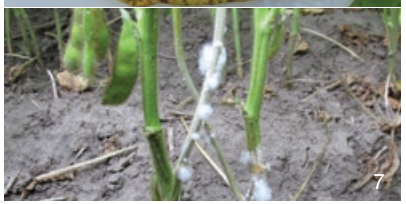
TECH TIP

Use a higher water volume to ensure adequate coverage.

Integrated pest management (IPM) strategies rely on different methods of control such as biological (predatory or parasitic insects) and chemical (insecticides) practices to be used in the same field. Sefina does just that since its low impact on beneficial insects allows growers to control aphids while the beneficials remain to help keep future aphid populations low.

[1] Talk to your grain buyer regarding maximum residue limits for markets around the world before applying to conventional or IP soybeans. [2] Damage is typically only economic from R1 to R5. [3] Allow a minimum of 7 days between applications. [4] Do not apply more than 162 ml/ac (400 ml/ha) per year.

Identifying soybean diseases.

Disease	Visual symptoms	Picture
Anthracnose	• Irregular reddish/dark brown to black lesions (blotches) are found on the stems • Foliar symptoms include red/brown discolouration of veins, leaf rolling and premature leaf drop • Petiole infection can make the stem resemble a shepherd's crook • Pods can produce smaller seeds or have missing seeds	 1
Asian soybean rust	• Small grey/yellow water-soaked lesions that become tan/dark brown and increase in size • Symptoms start in the lower canopy before moving to the mid to upper canopy • Lesions are mostly found on the leaves but can also be on the petioles, stems and pods • High lesion density will cause leaves to drop and plants to mature early	 2
Cercospora blight and purple seed stain	• Red to purple lesions; from needle tip size up to 1 cm • Lesions can coalesce to form larger irregular lesions • Symptoms can be found on the midrib, lateral veins, stems, petioles and pods • Develops during senescence	 3
Frog eye leaf spot	• Round lesions that are 1 to 5 mm in diameter; lesions will coalesce over time • The centre of the lesions are usually tan with a brown or dark red margin • Grey spores can be seen on the lesions • Symptoms tend to appear during flowering and pod development	 4
Phomopsis	• Affects the stems, petioles, pods and seeds mostly in the lower part of the plant • Black dots (pycnidia) placed in rows can be seen on parts of the stem • Infected seeds are dull, chalky white and look shriveled • Usually a late-season disease	 5
Septoria brown spot	• Small irregular-shaped dark brown lesions that can coalesce • Lesions are on both sides of the leaves • Progresses from the bottom of the plant to the upper leaves • Infected leaves turn yellow and will drop	 6
White mold	• White to grey/bleached lesions are present on stems, leaves and petioles • Fluffy white mycelium can be found on the lesions under humid temperatures • Lesions are mostly found in the lower half of the canopy • Once the plant is infected, it will start wilting, turn brown and die • Hard, black sclerotia can be found on or in the stem lesions and in infected pods	 7

[1,4,6,7] Source: BASF. [2] Source: Edward Sikora, Auburn University, Bugwood.org. [3,5] Source: Daren Mueller, Iowa State University, Bugwood.org.

Deciding which soybean fungicide is right for you.

Ensure that you are making the best decisions when it comes to managing white mold. It can have a high impact on yield and is on the rise due to tighter crop rotations, increased fertility and the growth of higher yielding and bushier varieties. White mold is estimated to lower yield by 2.5 to 5 bu/ac for every 10% incidence of the disease.[1]

Step 1. Get to know the risk indicators for white mold.

Low Risk

- Below-average moisture
- No-till
- Tolerant varieties

High Risk

- Above-average moisture
- Moderate temperatures
- Field history
- Tight crop rotation
- Manure
- Tillage
- High plant population
- Narrow row spacing
- Susceptible varieties

Step 2. Determine which fungicide(s) correspond to your white mold risk level.

Risk Level	1st Fungicide Application	Application Rate	Timing	2nd Fungicide Application	Application Rate	Timing
Low[2,3]	Priaxor® Xemium® Fungicide	120 ml/ac (300 ml/ha)	R2.5	–	–	–
Moderate	Priaxor® Xemium® Fungicide	180 ml/ac (450 ml/ha)	R2	Cotegra® Fungicide (If needed)	280 ml/ac (700 ml/ha)	10-14 days later
High	Cotegra® Fungicide	280 ml/ac (700 ml/ha)	R2	Priaxor® Xemium® Fungicide	180 ml/ac (450 ml/ha)	10-14 days later

[1] Yang, Lundeen and Uphoff, 1999.

[2] Prevent leaf disease and maintain plant health even under low-risk conditions.

[3] Apply Priaxor® fungicide at the increased rate of 180 ml/ac for suppression of sclerotinia stem rot.

Step 3. Apply at proper timing.

- Make your first application in a 2-pass program or your only application in a single-pass system at full flower to early pod development (R2 to R2.5)
- The second application in a 2-pass program should be made 10 to 14 days after the first pass

TECH TIP

Fungicides are more effective when applied preventatively. When in doubt, it's better to apply earlier in the application window for white mold during flowering (white mold spores feed on flower petals). Remember, when grass is green, white mold is keen.

Priaxor®

Xemium® Fungicide

For use on: ALL SOYBEAN PLATFORMS — YES

Proven and consistent. A more advanced fungicide that enhances your soybean yield potential.[1]

- More consistent and continuous control of diseases including frog eye leaf spot and septoria brown spot
- Combines the active ingredient Xemium® with proven **Plant Health Benefits**[2] including increased seed weight[1]
- Multiple modes of action for increased performance and reduced risk for the onset of fungicide resistance

Source: **AgSolutions**® Performance Trials, ON, 2013

Active ingredients	Pyraclostrobin – Group 11 Fluxapyroxad – Group 7
Formulation	Liquid suspension
One case contains	2 x 9.6 L jugs

Crop staging[3]

Early flower to mid-pod development (R1 to R3)

Diseases controlled

Asian soybean rust *(Phakopsora pachyrhizi)*

Frog eye leaf spot *(Cercospora sojina)*

Septoria brown spot *(Septoria glycines)*

White mold[4] *(Sclerotinia sclerotiorum)*

Application rates

One case treats 107 to 160 acres.

Priaxor[4]	120 to 180 ml/ac (300 to 450 ml/ha)

Water volume

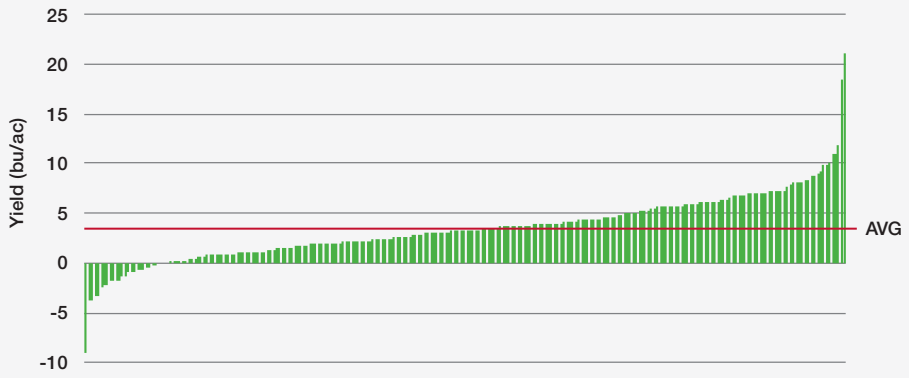
Ground application
40 to 80 L/ac (10 to 20 gal/ac)[5]

Aerial application
20 L/ac (5 gal/ac)

Pre-harvest interval

21 days after application for soybeans.

Increased soybean yield with Priaxor compared to untreated



Source: **AgSolutions** Performance Trials, ON & QC, 2013-2019, n=252 on-farm trials

[1] All comparisons are to untreated, unless otherwise stated. [2] **Plant Health Benefits** refer to products that contain the active ingredient pyraclostrobin. [3] While Priaxor can be applied at earlier growth stages, research suggests the stated timing provides optimal **Plant Health Benefits**. [4] Apply Priaxor fungicide at the increased rate of 180 ml/ac for suppression of sclerotinia stem rot. [5] BASF recommends using a higher water volume to ensure adequate coverage and better activity on leaf disease.

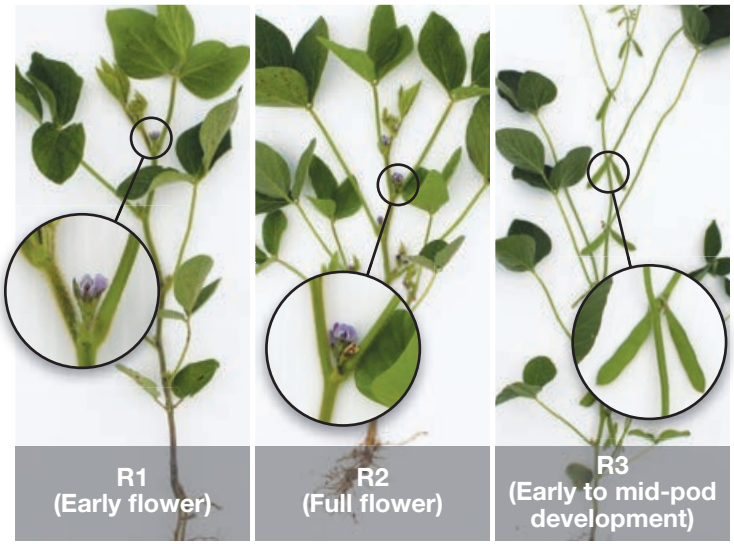
Cotegra®

Fungicide

For use on: ALL SOYBEAN PLATFORMS — YES

The standard for sclerotinia management.

- Combines two leading active ingredients in a convenient liquid premix
- Provides significant yield improvements in canola, dry beans and soybeans



R1 (Early flower) | R2 (Full flower) | R3 (Early to mid-pod development)

Active ingredients	Boscalid – Group 7 Prothioconazole – Group 3
Formulation	Suspension concentrate
One case contains	2 x 9.8 L jugs

Crop staging
Early flower to mid-pod development (R1 to R3)

Diseases controlled
Asian soybean rust (*Phakopsora pachyrhizi*)

Frog eye leaf spot (*Cercospora sojina*)

Pod and stem blight *(Diaporthe phaseolorum)*

Septoria brown spot (*Septoria glycines*)[1]

White mold (*Sclerotinia sclerotiorum*)[1]

Application rate
One case treats 70 acres.

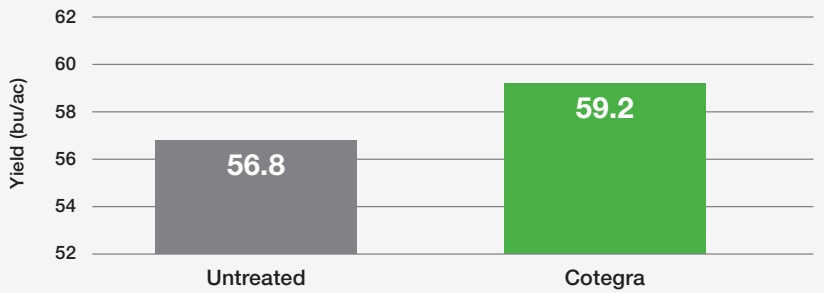
Cotegra®	280 ml/ac (700 ml/ha)

Water volume
Ground application
Minimum 80 L/ac (20 gal/ac)

Aerial application
20 L/ac (5 gal/ac)

Pre-harvest interval
21 days after application for soybeans.

Increased soybean yield with Cotegra fungicide



Source: **AgSolutions®** Performance Trials, ON & QC, 2015-2019, n=59 on-farm trials

[1] Suppression only.

SOYBEANS

Disease Management

Eragon® LQ

Powered by **Kixor®** Herbicide

PRE-HARVEST

For use on: ALL SOYBEAN PLATFORMS — YES

An easy-to-use liquid formulation for complete crop and weed dry down in soybeans.

- Fast, complete crop dry down and reduced risk of regrowth
- Improved crop uniformity for easier harvestability
- Tank mixed with glyphosate to control fall perennials for cleaner fields in the next crop
- To ensure optimal results, correct timing is essential for pre-harvest applications

Active ingredient	Saflufenacil – Group 14
Formulation	Water-based suspension concentrate
One case contains	4 x 1.182 L jugs

Crop staging

Apply when 90% of the pods have changed colour, with lower pods essentially being all brown and the upper pods a yellowish-brown or grey in some varieties. At this point 80% of leaves should have dropped with the remaining leaves being yellow.

Application rates

One case treats 80 acres stand-alone or 80 to 160 acres when tank mixed with glyphosate.

TECH TIP

Get your herbicide application deeper into the canopy for a more complete dry down with these tips:

- ***Minimum 20 gal/ac water volume***
- ***Keep boom height approximately 50 cm above canopy***
- ***Spray on a clear sunny day, in the middle of the day***
- ***Avoid spraying when dew is present***
- ***Avoid spraying during cooler, overcast or wet conditions***

Recommended use pattern

Eragon® LQ[1]	30 to 59 ml/ac (73 to 146 ml/ha)
Merge® adjuvant[2]	400 ml/ac (1.0 L/ha)
Glyphosate[2]	1.0 L/ac (2.5 L/ha)

For seed production or restrictions on glyphosate use

Eragon LQ	59 ml/ac (146 ml/ha)
Merge adjuvant[2]	400 ml/ac (1.0 L/ha)

Water volume

Ground application
80 L/ac (20 gal/ac)

Pre-harvest interval

3 days after application of Eragon LQ.
7 days after application if tank mixed with glyphosate.

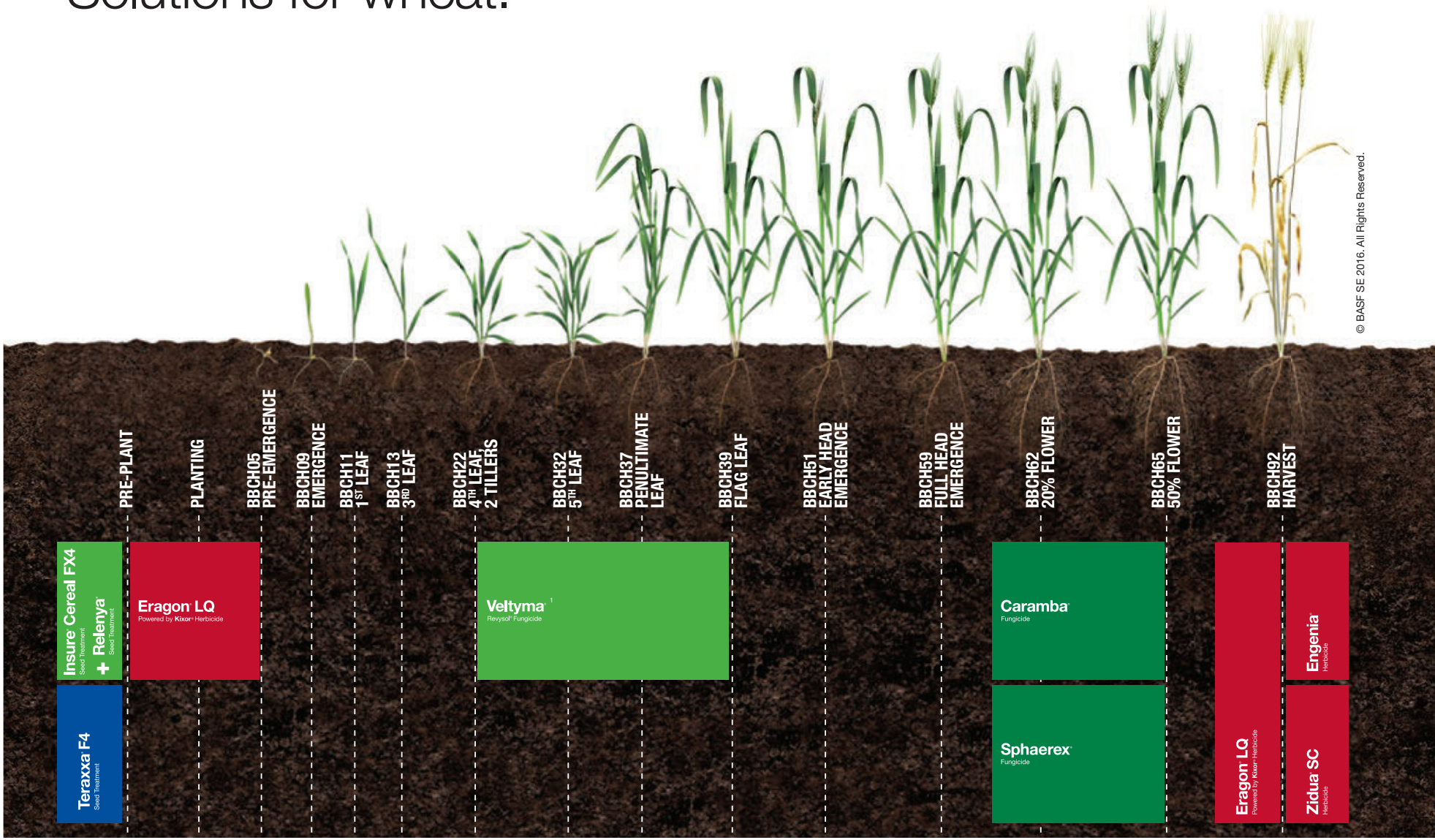
[1] Use higher rate for heavier weed pressure or if glyphosate-resistant weeds are present.
[2] Glyphosate and Merge adjuvant (required) are not included in the case.

Access the Eragon LQ staging guide at **agsolutions.ca/eragonlq-guide.**

SOYBEANS

Harvest Management

Solutions for wheat.



Crop Staging

Staging graphics depicted here are for quick reference only. Refer to individual product pages and product labels on **agsolutions.ca** or call **AgSolutions®** Customer Care at 1-877-371-BASF (2273) for detailed staging information.

[1] Veltyma® fungicide can also be applied at other stages (earlier at the penultimate leaf stage, before the development of disease or early onset of disease). However, research suggests that flag-leaf timing provides optimal **Plant Health Benefits**.

BASF lead recommendations.

Select the solution that's right for your operation.

CROP ESTABLISHMENT

Insure® Cereal FX4
Seed Treatment + NEW

Relenya®
Seed Treatment

OR

Teraxxa® F4
Seed Treatment

WEED MANAGEMENT

Eragon® LQ
Powered by **Kixor®** Herbicide

DISEASE MANAGEMENT

Veltyma®
Revysol® Fungicide

FOLLOWED BY

Sphaerex® NEW
Fungicide

OR

Caramba®
Fungicide

HARVEST MANAGEMENT

Eragon® LQ
Powered by **Kixor®** Herbicide

POST-HARVEST

Zidua® SC
Herbicide

OR

Engenia®
Herbicide

Contact your BASF **AgSolutions®** Retail Representative for more information.

NEW

Insure® Cereal FX4 + Relenya®

Seed Treatment | Seed Treatment

Combining Insure® Cereal FX4 with Relenya® seed treatment for enhanced yield potential and broad-spectrum disease protection on wheat.

Insure Cereal FX4

- Four modes of effective action, including three active ingredients targeting fusarium
- **Plant Health Benefits**[1] offer greater germination for improved emergence and enhanced seedling vigour, including better management of minor stress[2]

Relenya

- Designed to outperform with cutting-edge Revysol® technology that perfectly binds to pathogens
- Partners with Insure Cereal FX4 to add protection against dwarf bunt and boost protection under fusarium pressure

Insure Cereal FX4	
Active ingredients	Triticonazole – Group 3 Metalaxyl – Group 4 Fluxapyroxad – Group 7 Pyraclostrobin – Group 11
Formulation	Water-based suspension
Packaging contains	120 L drum

Relenya	
Active ingredient	Mefentrifluconazole – Group 3
Formulation	Water-based suspension
One case contains	4 x 5 L jugs

Crop treatment

Insure Cereal FX4 and Relenya:
Standard slurry, gravity flow or mist-type seed treatment

Diseases controlled with Insure Cereal FX4

Wheat

Seed rot and damping off (pre-emergent) caused by *Fusarium* spp., *Rhizoctonia solani, Cochliobolus sativus* and *Pythium* spp.

Damping off (post-emergent), seedling blight and root rot caused by *Fusarium* spp., *Rhizoctonia solani* and *Pythium* spp.

Loose smut (*Ustilago tritici*) and common bunt (*Tilletia tritici, T. lavies*)

Diseases controlled with Relenya

Wheat

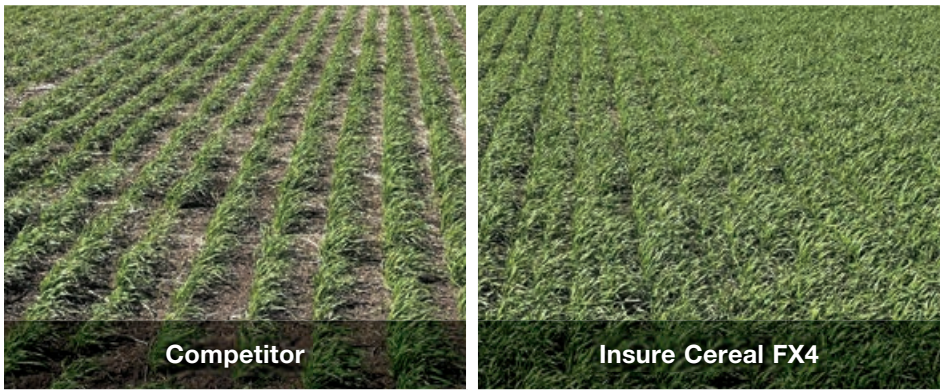
Seed rot, damping off (pre- and post-emergent) and seedling blight caused by *Fusarium* spp.

Dwarf bunt caused by *Tilletia controversa*

Application rates

Insure Cereal FX4	300 ml/100 kg seed
Relenya	12.5 ml/100 kg seed

Increased emergence in wheat



Source: BASF **AgSolutions®** Performance Trial, Cut Knife, SK, 2021

[1] **Plant Health Benefits** refer to products that contain the active ingredient pyraclostrobin.
[2] All comparisons are to untreated unless otherwise stated.

Teraxxa® F4

Seed Treatment

The only seed treatment that eliminates wireworms in cereals.

- The only cereal seed treatment on the market that provides true wireworm control by breaking the lifecycle
- Novel insecticide mode of action delivers a new standard for wireworm control by rapidly eliminating wireworms upon contact and reducing resident populations in season for true control
- Includes four fungicide active ingredients for premium broad-spectrum protection against key seed- and soil-borne diseases, including fusarium
- New formulation for reduced viscosity and optimized usability

Insecticide active ingredient	Broflanilide – Group 30
Fungicide active ingredients	Triticonazole – Group 3 Metalaxyl – Group 4 Fluxapyroxad – Group 7 Pyraclostrobin – Group 11
Formulation	Water-based suspension
One case contains	2 x 9.8 L jugs Also available in 120 L drum

Crop treatment
Standard slurry, gravity flow or mist-type application equipment

Pest controlled
Wireworms

Diseases controlled

Barley, oats, rye, triticale and wheat
Seed rot, damping off (pre- and post-emergent)[1], seedling blight[2], root rot[2], crown rot[3] and foot rot[3] caused by *Cochliobolus sativus, Fusarium* spp., *Pythium* spp. and *Rhizoctonia solani*

Barley only
Covered smut *(Ustilago hordei)*, false loose smut *(U. nigra)* and true loose smut *(U. nuda)*

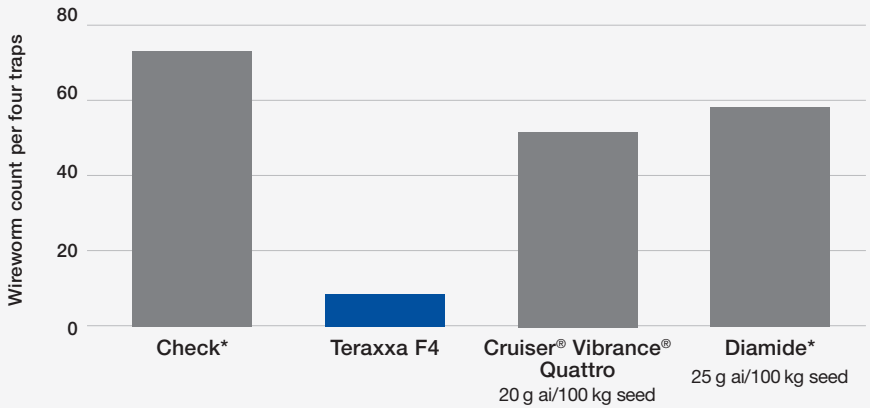
Oats only
Covered smut *(U. kolleri)* and loose smut *(U. avenae)*

Rye, triticale and wheat only
Common bunt *(Tilletia tritici, T. lavies)* and loose smut *(U. tritici)*

Application rate

Teraxxa® F4	300 ml/100 kg seed

Reduced wireworm populations



* Mixed with Insure® Cereal FX4 seed treatment at 300 ml/100 kg rate.
Source: BASF Internal Research Trials, Agassiz, BC, 2019, n=1

[1] Except in *Cochliobolus sativus* (pre-emergent only). [2] Suppression only when caused by *Cochliobolus sativus*.
[3] Only applies to *Fusarium* spp.; suppression only.

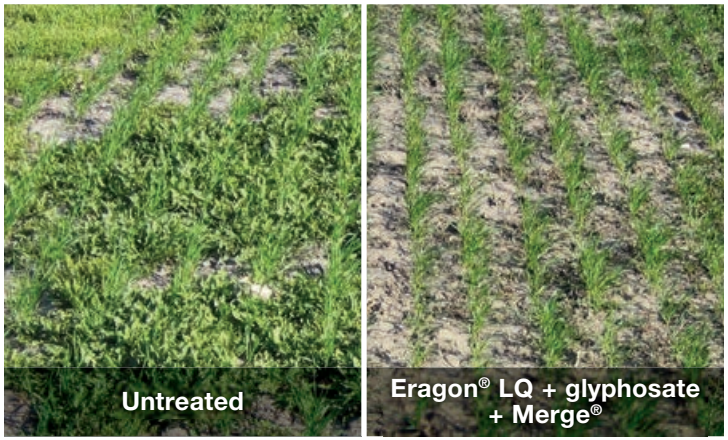
Eragon® LQ

Powered by **Kixor®** Herbicide

PRE-PLANT/PRE-EMERGENCE

The ultimate pre-emergent burndown in an easy-to-use liquid formulation.

- A fall application prior to winter wheat allows you to optimize your foliar fungicide application the following spring for increased yield
- Complements and improves the efficacy of your glyphosate application while providing an additional mode of effective action for resistance management
- Use as a fall application for winter wheat or as a spring application for spring cereals



Source: BASF research trial, Maryhill, ON, 2012

Active ingredient	Saflufenacil – Group 14
Formulation	Water-based suspension concentrate
One case contains	4 x 1.182 L jugs

Crop staging
Pre-plant, pre-emergence in barley, oats and wheat (spring, winter)

Weeds controlled
Broadleaf plantain[1]
Canada fleabane[2]
Common ragweed[2]
Dandelion[3]
Giant ragweed[1,2]
Lady's thumb[1]
Lamb's quarters
Perennial sow thistle[1,4]
Prickly lettuce[1,5]
Redroot pigweed
Shepherd's-purse[1]
Stinkweed[1]
Wild buckwheat[1]
Wild mustard

TECH TIP

Ensuring a clean start in the fall with Eragon LQ can delay, and sometimes eliminate, the need for an in-season herbicide application. This can also result in a fungicide application that's closer to the ideal flag-leaf timing.

Application rates
One case treats 80 acres.

Eragon LQ	59 ml/ac (146 ml/ha)
Merge adjuvant[6]	400 ml/ac (1.0 L/ha)
Glyphosate[6]	See label for rate

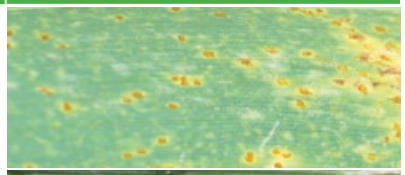
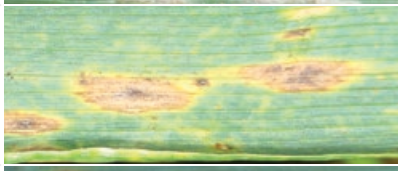
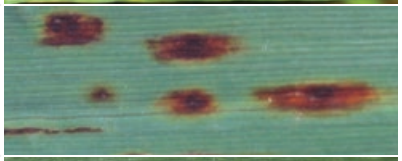
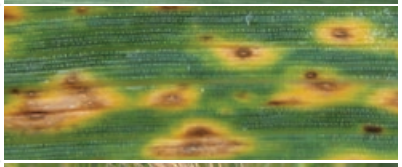
Water volume
Ground application
40 to 80 L/ac (10 to 20 gal/ac)[7]

Pre-harvest interval
60 days for all pre-plant and pre-emergent applications.

Follow crops
In next season after spring pre-plant/ pre-emergent application:
Barley, canola, corn (field, sweet), dry beans, oats, soybeans, triticale, wheat (durum, spring, winter)
In next season after fall pre-plant/ pre-emergent application:
Barley, canola, corn (field, sweet), oats, soybeans, triticale, wheat (durum, spring, winter[8])

[1] Controlled with a tank mix of Eragon LQ and glyphosate for pre-plant and pre-emergent applications. [2] Includes glyphosate-resistant biotypes. [3] Suppression only. [4] Top growth burndown control only. [5] Top growth only. [6] Glyphosate (required for optimum activity) and Merge adjuvant (required) are not included in the case. See respective glyphosate label for application rate of glyphosate. [7] Use a higher water volume for larger weeds or when weed densities are high. [8] Can underseed red clover the following spring after a fall application in winter wheat.

Identify common wheat diseases.

Disease	Visual symptoms	Picture
Leaf rust	• Pustules are small, round and yellowish to red and become darker with time • They mainly occur on the leaves and occasionally on the leaf sheaths • Brown rust pustules appear in random scatter distribution • If there are a lot of pustules, the leaves may appear orange	
Powdery mildew	• White greyish mycelium colonies on the upper leaf surface • Over time, the whole plant can be covered by colonies which become more grey with black spots (fruiting bodies) • Leaves that are infected will shrivel	
Septoria leaf spot	• Yellow flecking of the lower leaves at the start • Yellow, grey, white or brown blotches then appear on the plant • Tiny black dots (pycnidia) may appear within the lesions • On the leaves, the lesions create elongated blotches (up to 15 mm) that can coalesce	
Spot blotch	• 2-4 mm dark brown lesions • Lesions can coalesce when infection is severe • A chlorotic area can form around the lesions	
Stripe rust	• Elongated yellow pustules that can occur on the leaves and the head • The pustules appear in parallel along leaf veins • As the infection progresses, the pustules become dark brown • Can cause defoliation or shrinking of the seeds	
Tan spot	• Lesions first appear on the lower leaves and spread upward via rain-splash • Brown/tan-coloured lesions appear with a distinct dark centre, surrounded by a yellow halo • Lesions expand to form 5-13 mm oval lesions that can coalesce to form irregular lesions	
Fusarium head blight	• Causes bleaching of the spikelets • The grain of infected heads becomes shriveled, lightweight and chalky in appearance • Dark fruiting bodies and white mycelium (with tints of orange and pink) can be found on the bleached spikelets	

Source: BASF

Protect your wheat all season long.

Disease pressure is influenced by many factors including the weather conditions and your crop rotation; it can contribute to yield loss, as well as decreased grain and straw quality. Fortunately, there are many opportunities to protect your wheat against disease during the growing season. The chart below summarizes important application timing to know when to best protect your crop.

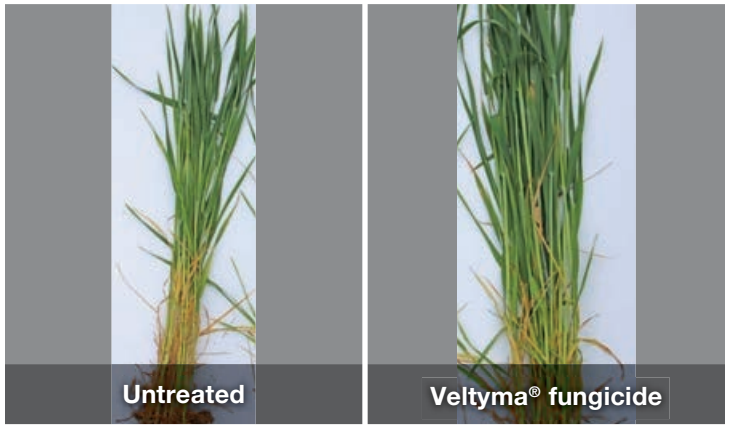
Timing	T1	T2	T3
Application window	The first window to apply an in-crop fungicide is at **herbicide** timing when the wheat is in its vegetative stages. Tank mix the herbicide with the fungicide when tank mixes are permitted.	The second application window is also known as the **flag-leaf** application. Time the application when the flag leaf is unrolled and the tip is about to lose its upright position.	The last opportunity to protect your wheat against leaf diseases as well as the only opportunity to protect against head diseases is at **fusarium head blight** (FHB) timing. You know you've reached this window when the heads are emerging from the boot. However, the optimal timing is from 20 to 50% flowering. **Click here** for more details on this timing.
Why should I apply?	Manage early-season disease.	It's the most impactful timing for disease control and yield benefits since 75% of the yield potential is due to the light that is absorbed by the flag leaf. The greener the leaf, the better your yield will be.	Manage FHB for better grain quality.
BASF solutions	Veltyma® fungicide	Veltyma	Sphaerex® or Caramba® fungicide
Groups	3, 11	3, 11	3
Rates	152 to 202 ml/ac (375 to 500 ml/ha)	152 to 202 ml/ac (375 to 500 ml/ha)	Sphaerex: 216 ml/ac (530 ml/ha) Caramba: 405 ml/ac (1.0 L/ha)

Veltyma®

Revysol® Fungicide

The optimal fungicide for protection against a broad spectrum of foliar diseases in wheat.

- Fast-acting control with multiple modes of effective action
- Extended residual activity and enhanced performance provided by the unique binding activity of Revysol®
- Proven **Plant Health Benefits**[1] for increased growth efficiency, better management of minor stress and greater yield potential[2]
- Delivers preventative and post-infection activity



Source: BASF research trial, Maryhill, ON, 2021

Active ingredients	Mefentrifluconazole – Group 3 Pyraclostrobin – Group 11
Formulation	Suspension concentrate
One case contains	2 x 8.1 L jugs

Crop staging

Stem elongation to flag leaf

Diseases controlled[3]

In wheat.

Leaf rust *(Puccinia recondita)*
Septoria leaf blotch *(Septoria tritici* or *Stagonospora nodorum)*
Stripe rust *(Puccinia striiformis)*
Tan spot *(Pyrenophora tritici-repentis)*

TECH TIP

If tank mixing Veltyma + a herbicide, remember the rule of 3 for 3 days:

- ***Nighttime temperature the day before, day of and day after application should be > 3°C***
- ***For frost events or temperatures <3°C, wait at least 48 hours before spraying***
- ***Spray during warm periods (>5°C) to avoid risk of crop injury***
- ***Be cautious when adding more than two products in the tank***

Application rates

One case treats 80 to 106 acres.

Veltyma	152 to 202 ml/ac (375 to 500 ml/ha)

Water volume

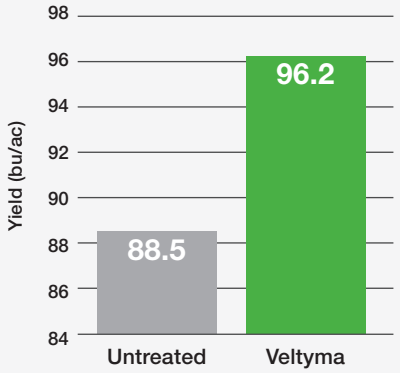
Ground application
Minimum 40 L/ac (10 gal/ac)

Aerial application
Minimum 20 L/ac (5 gal/ac)

Pre-harvest interval

21 days after application for wheat.

Yield results with an application at flag-leaf



Source: BASF Research Authorization Trials, ON & QC, 2020-21, n=10

[1] **Plant Health Benefits** refer to products that contain the active ingredient pyraclostrobin.
[2] All comparisons are to untreated, unless otherwise stated.
[3] Do not make more than two sequential applications of Veltyma fungicide targeting the same disease before alternating to a labelled fungicide containing a different mode of action.

NEW

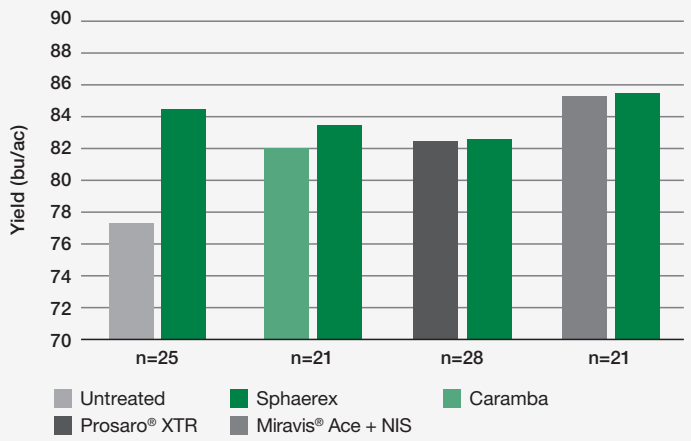
Sphaerex®

Fungicide

New and improved cereal head timing fungicide.

- Enhanced yield increase and quality protection
- Best-in-class fusarium head blight (FHB) efficacy to drive improved quality management
- Provides management of late-season leaf diseases in barley, oats, rye, triticale and wheat

Increased yield with Sphaerex® fungicide[1]



Source: BASF Research Authorization Trials (Spring Wheat Trials), Western Canada, 2020

Active ingredients	Metconazole – Group 3 Prothioconazole – Group 3
Formulation	Emulsifiable concentrate
One case contains	2 x 8.65 L jugs

Crop staging

Barley: 75% spike emergence to 3 days after full emergence

Oats: Early panicle to flowering

Rye, triticale: 75% head emergence to early panicle

Wheat (all types): 75% head emergence to end of flowering

Diseases controlled

In barley.

Ergot (*Claviceps purpurea*)[2]
Fusarium head blight (*Fusarium graminearum*)[2,3]
Leaf rust (*Puccinia hordei*)
Net blotch (*Pyrenophora teres*)
Powdery mildew (*Erysiphe graminis*)
Scald (*Rhynchosporium secalis*)
Spot blotch (*Cochliobolus sativus*)[2]
Stripe rust (*Puccinia striiformis*)

In oats.

Crown rust (*Puccinia coronata*)
Ergot (*Claviceps purpurea*)[2]
Fusarium head blight (*Fusarium graminearum*)[2,4]
Stagonospora (septoria) leaf blotch and black stem (*Stagonospora avenae syn. Septoria avenae*)

In rye and triticale.

Ergot (*Claviceps purpurea*)[2]
Fusarium head blight (*Fusarium graminearum*)[2,5]
Leaf rust (*Puccinia recondita*)
Powdery mildew (*Erysiphe graminis*)
Stripe rust (*Puccinia striiformis*)

In wheat (all types).

Ergot (*Claviceps purpurea*)[2]
Fusarium head blight (*Fusarium graminearum*)[2,6]
Leaf rust (*Puccinia recondita*)
Powdery mildew (*Erysiphe graminis* f. sp. *tritici*)
Septoria/stagonospora leaf blotch (*Septoria tritici* or *Stagonospora nodorum*)
Spot blotch (*Cochliobolus sativus*)[2]
Stem rust (*Puccinia graminis*)
Stripe rust (*Puccinia striiformis*)
Tan spot (*Pyrenophora tritici-repentis*)

Application rate

One case treats 80 acres.

For fusarium head blight

Sphaerex	216 ml/ac (530 ml/ha)

Water volume

Ground application	80 L/ac (20 gal/ac)
Aerial application	20 L/ac (5 gal/ac)

Pre-harvest interval

30 days after application for barley, oats, rye, triticale and wheat.

[1] Results may vary on your farm due to environmental factors and preferred management practices. [2] Suppression only. [3] Apply when 75-100% of main stem barley spikes are emerged until 3 days after. [4] Apply at anthesis stage or at early panicle stage when anthers are yellow to white. [5] Apply when at least 75% of mainstem cereal heads are fully emerged until the end of anthesis. [6] Apply preventively, beginning when at least 75% of mainstem wheat heads are fully emerged until anthesis stage (Growth Stage (GS) 61–69), early heading stage when anthers are yellow to white. Optimal timing is at anthesis, or until 50% flower.

Optimal application timing for fusarium head blight (FHB) management in wheat.

	75 - 100% OF HEADS EMERGED	FIRST ANTHERS VISIBLE	20% FLOWER	30% FLOWER	40% FLOWER	50% FLOWER	END OF FLOWER
DAYS[1]	0	+1	+2	+3	+4	+5	+6
BBCH	59	61	62	63	64	65	69
			SPRAY TIME FOR BEST RESULTS				
		APPLICATION WINDOW					

[1] Can vary based on environmental conditions.

TECH TIP

Wheat starts flowering in the centre of the head and spreads to the tips. It also has awns that can intercept spray droplets. Remember these application tips to improve your application for fusarium head blight:

- ***Ensure sprayer is thoroughly clean prior to starting***
- ***Use forward and backward facing nozzles with coarse droplets***
- ***Use a minimum 20 gal/ac of water to improve coverage***
- ***Keep boom height approximately 50 cm above target***
- ***Use slower travel speeds to optimize coverage***

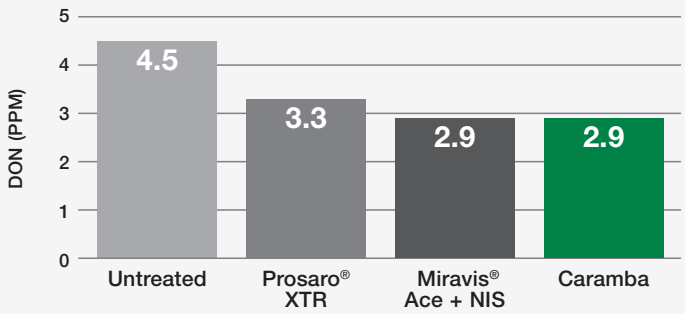
Caramba®

Fungicide

Preventative protection against late leaf diseases and fusarium.

- Proven protection against fusarium head blight
- Effective control of later-season foliar diseases
- Reduces deoxynivalenol (DON) contamination to preserve grade quality

Reduction in DON contamination with Caramba® fungicide



Source: BASF Field Trials, Western Canada, 2020, n=11

Active ingredient	Metconazole – Group 3
Formulation	Liquid
One case contains	2 x 8.1 L jugs

Crop staging
Oats, rye, tritcale, wheat (all types): 20% flower[1,2]
Barley: Full head to 3 days after full emergence[1]

Diseases controlled

In barley.
Fusarium head blight[3] *(Fusarium graminearum)*
Leaf rust *(Puccinia hordei)*
Net blotch *(Pyrenophora teres)*
Powdery mildew *(Erysiphe graminis)*
Scald *(Rhynchosporium secalis)*
Spot blotch[3] *(Cochliobolus sativus)*
Stripe rust *(Puccinia striiformis)*

In oats.
Crown rust *(Puccinia coronata)*
Fusarium head blight[3] *(Fusarium graminearum)*
Septoria leaf blotch *(Septoria avenae)*

In rye.
Fusarium head blight[3] *(Fusarium graminearum)*
Leaf rust *(Puccinia recondita)*
Powdery mildew *(Erysiphe graminis)*
Stripe rust *(Puccinia striiformis)*

In wheat (all types) and triticale.
Fusarium head blight[3,4] *(Fusarium graminearum)*
Leaf rust *(Puccinia recondita)*
Powdery mildew *(Erysiphe graminis* f. sp. *tritici)*
Septoria glume blotch *(Stagonospora nodorum)*
Septoria leaf spot *(Septoria tritici* or *Stagonospora nodorum)*
Spot blotch[3] *(Cochliobolus sativus)*
Stem rust *(Puccinia graminis)*
Stripe rust *(Puccinia striiformis)*
Tan spot *(Pyrenophora tritici-repentis)*

Application rate
One case treats 40 acres.
One shuttle treats 320 acres.

For fusarium head blight

Caramba	405 ml/ac (1.0 L/ha)

Water volume
Ground application
Minimum 80 L/ac (20 gal/ac)

Aerial application
20 L/ac (5 gal/ac)

Pre-harvest interval
30 days after application for barley, oats, rye and wheat.

[1] For suppression of fusarium head blight and leaf disease control at heading. For leaf disease control prior to heading, apply prior to symptoms. [2] This is BBCH 62. [3] Suppression only. [4] Not controlled or suppressed in triticale. Wheat only.

Eragon® LQ

Powered by Kixor® Herbicide

PRE-HARVEST

The ultimate pre-harvest weed dry down in wheat, barley and triticale.

- Improved dry down of tough weeds, including Canada fleabane and common ragweed
- Quick weed dry down to help facilitate a more efficient harvest
- Provides multiple modes of action, when tank mixed with glyphosate, to manage weeds resistant to glyphosate, triazine and Group 2 herbicides

Active ingredient	Saflufenacil – Group 14
Formulation	Water-based suspension concentrate
One case contains	4 x 1.182 L jugs

Crop staging

Look for either the hard dough stage or the peduncle colour change. With the hard dough stage, cereals turn colour when maturing and sometimes the plant will be completely dry before the kernel is firm. At this stage, the kernel should be firm and when pressed with a thumbnail, the impression is held. Kernel moisture content is approximately 30%.

With the peduncle colour change, the peduncle being the upper internode of the stem that carries the spike, look for the change from green to yellow as a good indicator of maturity.

Application rates

One case treats 80 acres standalone or 80 to 160 acres when tank mixed with glyphosate.

Recommended use pattern

Eragon® LQ[1]	30 to 59 ml/ac (73 to 146 ml/ha)
Merge® adjuvant[2]	400 ml/ac (1.0 L/ha)
Glyphosate[2]	1.0 L/ac (2.5 L/ha)

For seed production or restrictions on glyphosate use

Eragon LQ	59 ml/ac (146 ml/ha)
Merge adjuvant[2]	400 ml/ac (1.0 L/ha)

Water volume

Ground application 80 L/ac (20 gal/ac)

Pre-harvest interval

3 days after application of Eragon LQ.
7 days after application if tank mixed with glyphosate.

Follow crops

In the first spring following a fall application: Barley, canola, corn (field, sweet), oats, soybeans, triticale, wheat (durum, spring, winter)
In the second spring following a fall application: All crops can be grown

[1] Use higher rate for heavier weed pressure or if glyphosate-resistant weeds are present.
[2] Glyphosate and Merge adjuvant (required) are not included in the case.

Solutions for canola.

Staging graphics depicted here are for quick reference only. Refer to individual product pages and product labels on **agsolutions.ca** or call **AgSolutions®** Customer Care at 1-877-371-BASF (2273) for detailed staging information.

[1] For hybrids tolerant to Liberty® herbicide. [2] Apply when 80% of seeds have changed colour.

Crop Staging

BASF lead recommendations.

Select the solution that's right for your operation.

CROP ESTABLISHMENT

InVigor®

WEED MANAGEMENT

Liberty® 200 SN
Herbicide

SELECT®
Herbicide

DISEASE MANAGEMENT

Priaxor®
Xemium® Fungicide

FOLLOWED BY

Cotegra®
Fungicide

HARVEST MANAGEMENT

Eragon® LQ
Powered by Kixor® Herbicide

POST-HARVEST

Zidua® SC
Herbicide

Contact your BASF **AgSolutions**® Retail Representative for more information.

InVigor® | BASF We create chemistry

The innovation adds up.

This year, we're introducing a new member to the InVigor® hybrid canola lineup that takes the trusted InVigor performance you've come to expect to a whole new level.

NEW InVigor® L350PC

Looking for a high-yielding hybrid in the mid to long growing zones? InVigor L350PC has it all. Our highest-yielding hybrid in BASF breeding trials to date, this hybrid combines yield, standability, first-generation clubroot resistance[1] and our patented Pod Shatter Reduction technology. Give this one a try in 2023.

115.6% of the checks (InVigor L255PC and Pioneer® 45H33) in 2020 & 2021 BASF internal trials.

InVigor® L343PC

InVigor L343PC performed very well in our 2021 Demonstration Strip Trials and is a go-to hybrid when you need a high-yielding, second-generation clubroot-resistant[2] and Pod Shatter Reduction hybrid.

111.3% of the checks (InVigor L233P and Pioneer® 45H33) in 2019 & 2020 WCC/RRC[3] trials.

InVigor® L340PC

InVigor L340PC has it all—high yield, Pod Shatter Reduction, first-generation clubroot resistance and strong standability. It is a great fit for growers who irrigate or are concerned about lodging.

108.9% of the checks (InVigor L233P and Pioneer® 45H33) in 2019 WCC/RRC trials.

InVigor® L233P

InVigor L233P has been grown on more acres than any other InVigor canola hybrid in Canada. Featuring patented Pod Shatter Reduction technology, this early-maturing, high-yielding hybrid provides the harvest flexibility you can count on.

108.8% of the checks (InVigor 5440 and Pioneer® 45H29) in 2014 & 2015 WCC/RRC trials.

InVigor® L255PC

InVigor L255PC is a Pod Shatter Reduction hybrid with first-generation clubroot resistance. It's a great fit for growers in the mid to long growing zones and in fields under irrigation, fields with high levels of fertility or when lodging is a concern.

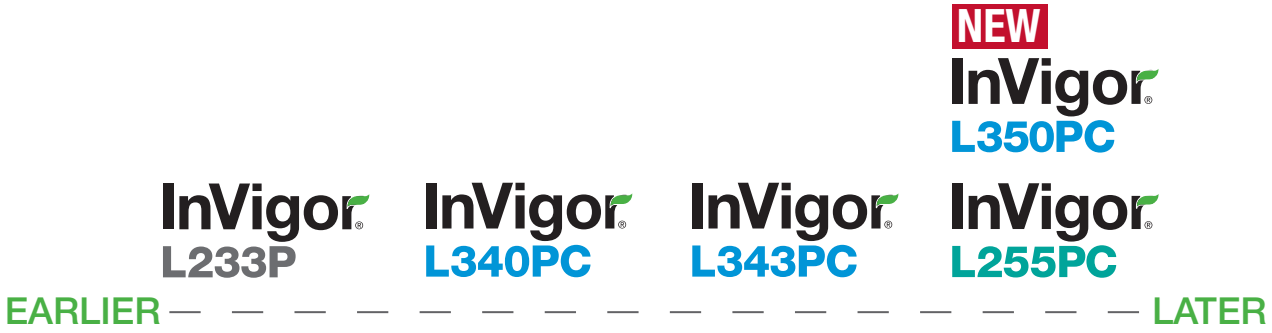
109% of the checks (InVigor 5440 and Pioneer® 45H29) in 2016 WCC/RRC trials.

[1] To predominant clubroot pathotypes found in Canada at the time of registration. InVigor L350PC, InVigor L340PC and InVigor L255PC share the same first-generation clubroot resistance profile. InVigor L343PC has this resistance profile plus it contains second-generation multigenic clubroot resistance to additional clubroot pathotypes to help combat evolving clubroot pathotypes. [2] We recommend growing InVigor L343PC with second-generation clubroot resistance after two cycles of growing first-generation clubroot-resistant hybrids in clubroot-affected areas or when clubroot symptoms appear in first-generation clubroot-resistant hybrids (whichever comes first). [3] Western Canadian Canola/Rapeseed Recommending Committee.

Please note: All growers must sign a Liberty & Trait Agreement (LTA) prior to their first purchase of InVigor hybrid canola. For more information visit **agsolutions.ca/LTA**.

BASF solutions for canola.

MATURITY



STANDABILITY

Please note: Information displayed on this chart is based on performance ratings and data compiled from several InVigor internal trials over multiple years. Results may vary on your farm due to environmental factors and preferred management practices.

Liberty & Trait Agreement.

The Liberty & Trait Agreement (LTA) is an evergreen contract between BASF and the grower, granting a limited license to possess and use certain innovative traits and technologies including LibertyLink® certified canola seed and LibertyLink certified soybean seed.

LTA facts:

- All growers must sign the LTA prior to their first purchase
- Growers who sign the LTA agree to use these products according to the terms and conditions, for example:
  - Certified seed purchased from an authorized retailer can only be used by the individual or entity who initially purchased the seed, to plant one commercial crop in Canada (planting or growing a crop from harvested grain, volunteer seeds or plants is not permitted)
  - No seed, crop or grain can be used for breeding or research. These may not be used in trials without written permission from BASF
  - Growers allow transactional information to be used for administration and enforcement of the LTA. This includes monitoring and safeguarding the intellectual property of BASF

How can you help?

- Ensure you have a signed LTA in place and follow the terms and conditions
- Contact your local InVigor® hybrid canola or Liberty® herbicide retailer, talk to your BASF **AgSolutions®** Retail Representative or call **AgSolutions** Customer Care at 1-877-371-BASF (2273)

Seed treatment stewardship.

Treated seed must be handled properly to protect wildlife, pollinators, human health and the environment.

- Read and adhere to the product label and seed tag directions
- Wear the appropriate personal protective equipment when handling treated seed
- Always handle treated seed with care to reduce abrasion, dust generation and spillage
- Seed that has fallen or spilled out of the planter should be covered with soil or removed to avoid potential risks to birds and wildlife
- Store treated seed appropriately and keep it away from feed, food and livestock
- Never reuse the empty seed bags and dispose of them properly

The dirt on clubroot.

Clubroot is a soil-borne disease in canola. Infected roots develop galls that impede water and nutrient uptake which can lead to lower yields. The best way to confirm the presence of clubroot is to dig up plants that appear to be dying or prematurely ripening. Infection leads to galls on the roots, ranging from tiny nodules to large club-shaped outgrowths. Galls are firm and white but become soft and greyish-brown as they mature and decay. Infected plants show signs of wilting, stunting and yellowing, but considerable damage can be done below ground before symptoms above ground begin to appear. The crop may also ripen prematurely and lead to shrivelled seeds.

Clubroot management in the field.

Resting spores can last in the soil for many years. While there is no way to completely eradicate the disease, it's possible to slow down the spread and reduce the severity of infection.

Practise good sanitation.

This helps reduce the transfer of diseases through contaminated soil and crop debris. Be sure to clean equipment prior to moving to your next field. Limit or eliminate external traffic on fields.

Pull infected plants.

If you catch the disease early and there is a relatively small patch of visibly-affected plants, consider pulling the infected plants and either burn them or bury them in a landfill.

Galls on infected roots

Source: BASF, QC, 2019

Patches of prematurely ripened canola could be a sign of clubroot

Source: Strelkov, S., 2015. Found in clubroot disease of canola and mustard, Agri-Facts, Alberta Agriculture and Rural Development

Use resistant hybrids.

Grow first-generation clubroot-resistant hybrids at the first sign of clubroot in the field or if clubroot is present in your farming community. We recommend seeding a second-generation clubroot hybrid after two cycles of growing first-generation clubroot-resistant hybrids in clubroot-affected areas or when clubroot symptoms appear in first-generation clubroot-resistant hybrids (whichever comes first).

Control weeds and volunteers.

Cruciferous weeds, such as wild mustard and shepherd's-purse, can serve as hosts for clubroot in non-canola years.

Rotate crops.

A one-in-three-year or greater rotation is recommended.

Scout crops regularly and carefully.

Pay particular attention to field entrances and areas of high traffic. Dig up plants throughout the season to monitor for visible symptoms. Assess the field as a whole and look for patches of crop showing wilting, premature ripening or stress symptoms.

For everything clubroot, visit **clubroot.ca** or see our frequently asked questions at **agsolutions.ca/clubrootFAQ**.

Liberty® 200 SN

Herbicide

For use on:	GLYPHOSATE TOLERANT CANOLA	LIBERTY TOLERANT CANOLA	CONVENTIONAL CANOLA
	NO	YES	NO

An excellent management tool for rotating chemistries to help keep resistance out of your fields.

- Group 10 chemistry provides broad-spectrum control of broadleaf and grassy weeds
- Flexible application timing, rates and tank mixes
- Quick, complete burndown of weeds

TECH TIP

To learn more about Liberty® 200 SN herbicide best management practices click here.

All growers must sign a Liberty & Trait Agreement (LTA) prior to their first purchase of InVigor hybrid canola. For more information visit agsolutions.ca/LTA

Active ingredient	Glufosinate ammonium – Group 10
Concentration	200 g/L
Formulation	Solution
One case contains	2 x 10 L jugs Also available in 400 L tote

Crop staging

For InVigor® hybrid canola with the LibertyLink® trait only

Apply from cotyledon to prior to bolting[1]

Weeds controlled

Broadleaf weeds

Canada fleabane[2,3], Canada thistle[4], Chickweed, Cleavers[3,5], Cocklebur, Common ragweed[2], Eastern black nightshade, Field bindweed[4], Giant ragweed[2,5], Green pigweed, Jimsonweed[6], Kochia[2,3,7], Lady's thumb, Lamb's quarters, Perennial sow thistle, Redroot pigweed, Shepherd's-purse, Stinkweed, Velvetleaf[6], Volunteer canola[8], Wild buckwheat, Wild mustard, Wormseed mustard

Grasses

Barnyard grass, Bristly foxtail, Fall panicum, Giant foxtail, Green foxtail, Large crabgrass, Proso millet, Quackgrass[4,6], Wild oats, Witchgrass, Yellow foxtail

Application rate

One case treats 20 acres. One tote treats 400 acres.

Ammonium sulfate (optional)	2.4 L/ac (6.0 L/ha)
Liberty 200 SN	1.0 L/ac (2.5 L/ha)

Water volume

Ground application Minimum 80 L/ac (20 gal/ac)

Pre-harvest interval

60 days from date of treatment (or last treatment when a second application has been made).

Follow crops

Anytime after application (LibertyLink varieties only):
Canola, field corn, soybeans
70 days after application: Barley, oats, rye, triticale, wheat
120 days after application: All other crops

[1] Apply when weeds are actively growing. [2] Including glyphosate-resistant biotypes. [3] Including Group 2-resistant biotypes. [4] Season long suppression. [5] Suppression only. [6] For enhanced activity, add ammonium sulphate to the tank at a rate of 6 L/ha (49% solution) or 3 kg/ha (99%). [7] Including Group 4-resistant biotypes. [8] Including conventional, Roundup Ready®, and Clearfield® biotypes.

SELECT®

Herbicide

Post-emergent control of the toughest grassy weeds in canola.

- Wide window of application
- Tank-mix flexibility for enhanced weed control
- No follow-crop restrictions
- Complements Liberty® 200 SN herbicide for enhanced control of grassy weeds

Active ingredient	Clethodim – Group 1
Formulation	Emulsifiable concentrate
One case contains	1 x 3 L jug of Select® herbicide 1 x 9 L jug of Amigo® adjuvant

Crop staging
Apply from the cotyledon stage up to early bolting and when weeds are actively growing

Weeds controlled
Barnyard grass
Fall panicum
Green foxtail
Large crabgrass
Persian darnel
Proso millet
Quackgrass
Smooth crabgrass
Volunteer canary grass
Volunteer cereals
Volunteer corn
Wild oats
Witchgrass
Yellow foxtail

Water volume
Ground application
Minimum 60 L/ac (15 gal/ac)

Pre-harvest interval
60 days after application for canola.

Application rates
Standard rate: one case treats 40 acres.
High rate: one case treats 20 acres.
Liberty 200 SN tank-mix rate: one case treats 120 acres.

Select[1]	77 to 154 ml/ac (190 to 380 ml/ha)
Amigo adjuvant[2]	0.5 to 1.0% v/v (5 to 10 L per 1000 L spray solution)

Tank-mix recommendation and order
When tank mixing Liberty 200 SN and Select for InVigor® canola hybrids

1	**Ammonium sulphate** 2.4 L/ac (6.0 L/ha)
2	**Amigo adjuvant** 0.5% v/v (5 L per 1000 L spray solution)
3	**Liberty 200 SN** 0.8 to 1.0 L/ac (2.0 to 2.5 L/ha)
4	**Select** 25 ml/ac (63 ml/ha)

[1] Consult the label for rates to control specific weeds.
[2] Use Amigo adjuvant at 0.5% v/v for the 40 and 120 acre/case (25 and 77 ml/ac) application rates of Select. Use at 1.0% v/v for the 20 acre/case (154 ml/ac) application rate of Select.

Priaxor®

Xemium® Fungicide

A more advanced fungicide that helps enhance your canola yield potential.

- Tank mixed with your canola system herbicide[1], Priaxor® fungicide combines the active ingredient Xemium® with proven **Plant Health Benefits**[2]
- Multiple modes of action for increased performance and reduced risk of developing fungicide resistance
- Increased growth efficiency and better management of minor stress[3]

Taller plants with Priaxor on canola

Source: BASF Research Authorization Trials, Rosetown, SK, 2014

Active ingredients	Fluxapyroxad – Group 7 Pyraclostrobin – Group 11
Formulation	Liquid suspension
One case contains	2 x 9.6 L jugs

Crop staging

2 to 6 leaf (rosette)

In areas of high blackleg pressure, apply Priaxor earlier for best results

Diseases controlled

Alternaria black spot
(*Alternaria brassicae* and *A. raphani*)

Blackleg
(*Leptosphaeria maculans*)

Application rate

One case treats 160 acres.

Priaxor	120 ml/ac (300 ml/ha)

Water volume

Ground application
Minimum 40 L/ac (10 gal/ac)

Aerial application
20 L/ac (5 gal/ac)

Pre-harvest interval

21 days after application for canola.

Priaxor vs. untreated

- **5% Taller plants**
- **29% More pods**
- **11% Less aborted pods**
- **8% More leaves**
- **7% Thicker stems**
- **10% Longer roots**

Priaxor sprayed at the 2- to 6-leaf stage.

Source: **AgSolutions®** Performance Trials and Research Authorization Trials, MB, SK and AB, 2014, n=35

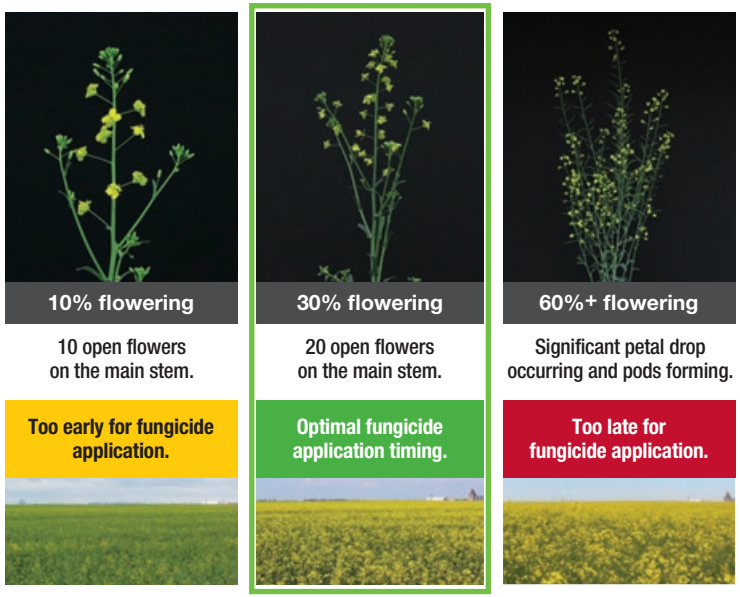
[1] See label for permitted herbicide tank mixes in canola. [2] **Plant Health Benefits** refer to products that contain the active ingredient pyraclostrobin. [3] All comparisons are to untreated, unless otherwise stated.

Cotegra®

Fungicide

The standard for sclerotinia management.

- Combines the two leading active ingredients that target sclerotinia in a convenient liquid premix
- Vigorously tested with proven performance under the toughest disease conditions



Active ingredients	Boscalid – Group 7 Prothioconazole – Group 3
Formulation	Suspension concentrate
One case contains	2 x 9.8 L jugs

Crop staging
20 to 50% flowering

Disease controlled
Sclerotinia stem rot
(*Sclerotinia sclerotiorum*)

Application rates
One case treats 70 to 80 acres.

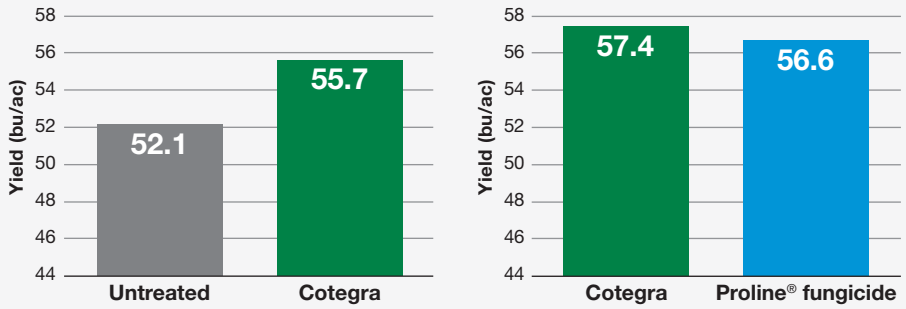
Cotegra®	240 to 280 ml/ac (600 to 700 ml/ha)[1]

Water volume
Ground application
Minimum 80 L/ac (20 gal/ac)

Aerial application
20 L/ac (5 gal/ac)

Pre-harvest interval
36 days after application for canola.

The Cotegra advantage in canola



For all trials, Cotegra was applied at the 80 ac/case rate (240 ml/ac).
Source: **AgSolutions®** Performance Trials, 2016-2020, n=36 (untreated comparison); n=32 (Proline comparison)

[1] The recommended application rate is 240 ml/ac. The 280 ml/ac rate is only recommended for severe disease conditions.

Eragon® LQ

Powered by Kixor® Herbicide

PRE-HARVEST

Cut straight to an easier harvest.

- Consistent crop and weed dry down
- Improved harvest efficiency
- Cleaner fields the following spring

Active ingredient	Saflufenacil – Group 14
Formulation	Water-based suspension concentrate
One case contains	4 x 1.182 L jugs

Crop staging

Apply when the canola crop has reached 80% seed colour change on the main stem. Canola timing for application cannot be determined by pod colour. Pods must be opened to determine the amount of seed colour change. Canola flowers upwards, so the lowermost pods will contain the first mature seeds, while the upper pods will contain the last maturing seeds. Seeds on the bottom 2/3 to 3/4 of the plant will have changed from green to dark brown or black.

Application rate

One case treats 80 acres when tank mixed with glyphosate.

Recommended use pattern

Eragon® LQ	59 ml/ac (146 ml/ha)
Merge® adjuvant[1]	400 ml/ac (1.0 L/ha)
Glyphosate[1]	1.0 L/ac (2.5 L/ha)

Water volume

Ground application 80 L/ac (20 gal/ac)

Pre-harvest interval

3 days after application for canola.

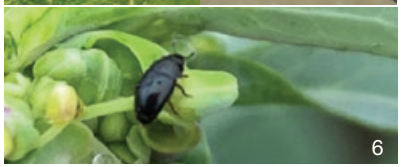
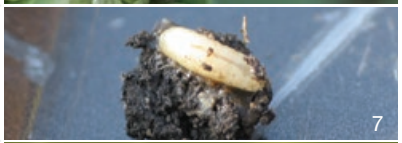
Follow crops

In the first spring following a fall application: Barley, canola, corn (field, sweet), oats, soybeans, triticale, wheat (durum, spring, winter)
In the second spring following a fall application: All crops can be grown

[1] Glyphosate and Merge adjuvant (required) are not included in the case.

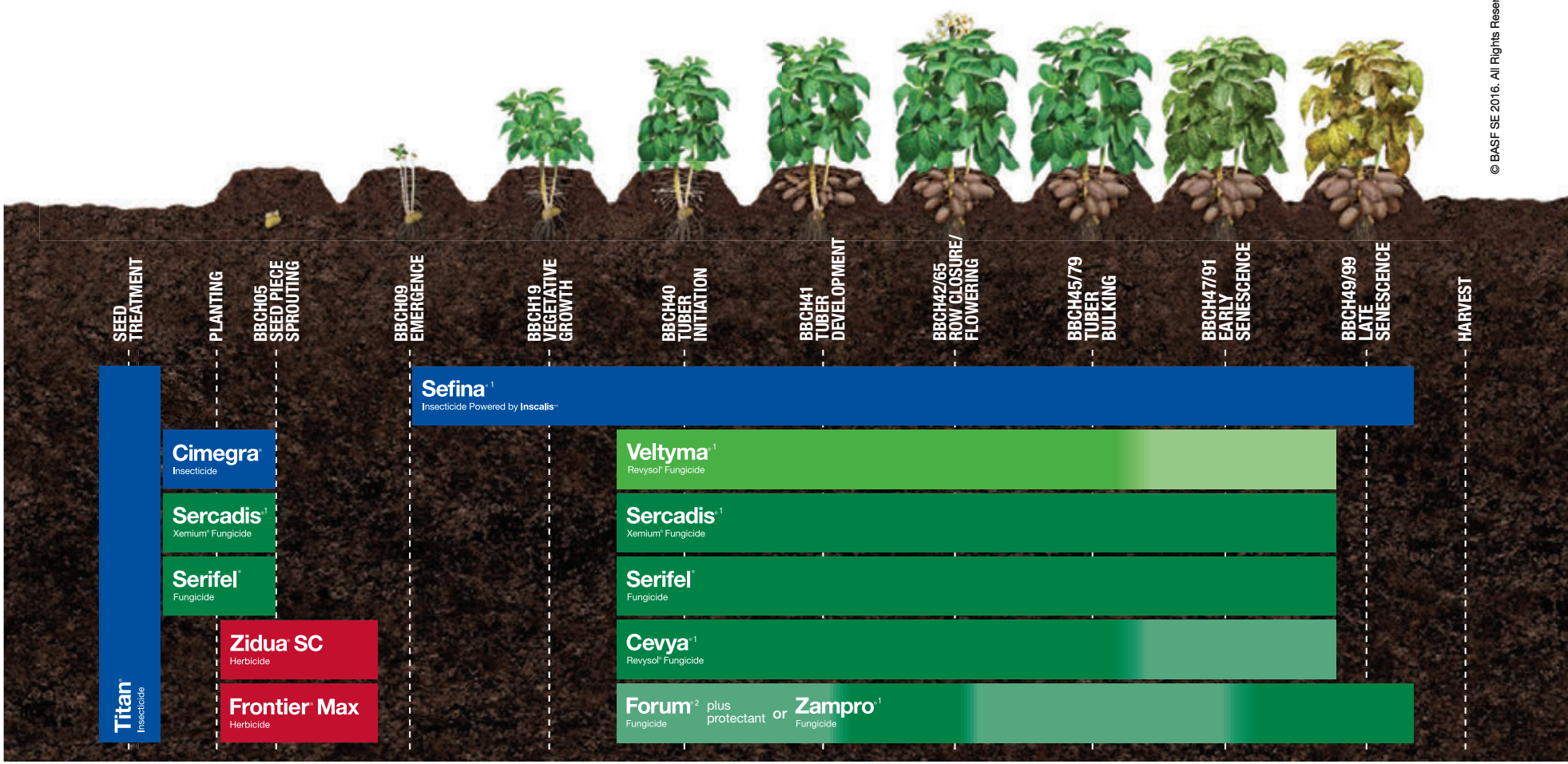
Access the Eragon LQ staging guide at **agsolutions.ca/eragonlq-guide.**

Insect identification.

Insect name	Economic threshold	Picture
Bertha armyworm	Provided by government websites and depends on insecticide cost and canola value.	 1
Cabbage seedpod weevil	3 to 4 adults/sweep.	 2
Diamondback moth	100 to 150 larvae/m^2 in immature and flowering canola. 200 to 300 larvae/m^2 in podded canola.	 3
Flea beetles	Consider a foliar insecticide when 25% of cotyledon leaves are damaged. Threshold is typically lower under drought conditions. No current threshold for stem feeding, look for damage on small plants that likely won't survive stem feeding.	 Crucifer flea beetle 4 Striped flea beetle 5
Pollen beetle	None established in Canada. Europe advises 3 to 4 adults/plant between BBCH 51 to 56 and 7 to 8 adults/plant at BBCH 57 to 59. Damage varies depending on plant's vigour and growth stage.	 6
Root maggot	No established thresholds.	 7
Swede midge	When 20 adults have been captured from the start of trapping (pheromone traps).	 8

[1] Source: Manitoba Agriculture. [2,7] Source: Canola Council of Canada. [3] Source: Government of Australia, Department of Agriculture and Food. [4,5] Source: Agriculture and AgriFood Canada. [6] Source: BASF.
[8] Source: Cheung, D., Swede Midge Identification & Hallett, R., Swede Midge Damage, School of Environmental Sciences, University of Guelph.

Solutions for potatoes.



Staging graphics depicted here are for quick reference only. Refer to individual product pages and product labels on **agsolutions.ca** or call **AgSolutions®** Customer Care at 1-877-371-BASF (2273) for detailed staging information.

Darker areas reflect recommended application period.

Darker areas reflect recommended application period for Veltyma® fungicide

[1] Do not exceed the total number of sequential applications or total number of applications per season as stated by specific product labels.
[2] To reduce the risk of the development of fungicide resistance, tank mix Forum® fungicide with other fungicides. Do not apply more than three applications per season.

Crop Staging

BASF lead recommendations.

Select the solution that's right for your operation.

INSECT MANAGEMENT	WEED MANAGEMENT	DISEASE MANAGEMENT
Cimegra® Insecticide	**Zidua**® **SC** Herbicide	**Veltyma**® Revysol® Fungicide
Titan® Insecticide	**Frontier**® **Max** Herbicide	**Sercadis**® Xemium® Fungicide
Sefina® Insecticide Powered by **Inscalis**®		**Cevya**® Revysol® Fungicide
		Serifel® Fungicide
		Forum® Fungicide

Contact your BASF **AgSolutions®** Representative for more information.

Cimegra®

Insecticide

Cimegra® insecticide provides control of wireworms in potatoes and reduces resident populations.

- Unique mode of action that works effectively on contact with wireworms in the soil
- Convenience of simplified handling[1]
- Can easily be incorporated into an integrated pest management strategy
- Broflanilide is the first compound in the newly designated IRAC Group 30 mode of action

Active ingredient	Broflanilide – Group 30
Formulation	Suspension concentrate
One case contains	2 x 3 L jugs

Crop treatment

Apply in-furrow spray to uniformly cover the seed pieces and surrounding soil. Do not apply Cimegra to the soil surface of a closed furrow.

Pest controlled

Wireworms[2]

Application rate

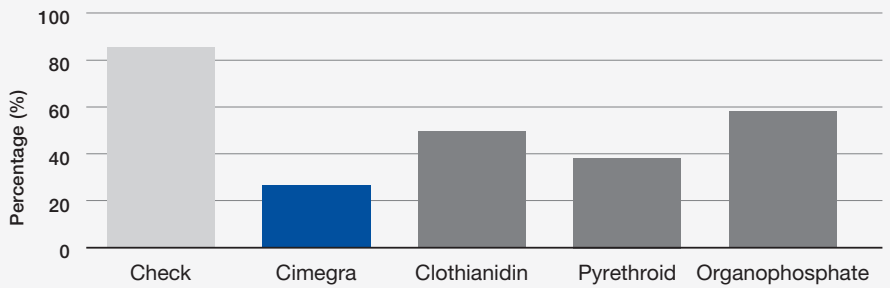
One case treats 60 acres (24 hectares).

Cimegra[3]	100 ml/ac (250 ml/ha)
For 90 cm (36″) row spacing[4]	2.3 ml per 100 metres of row

Water volume

Dilute Cimegra product in a minimum of 20 L of water per acre (5 gallons of water per acre). Use sufficient water to ensure thorough coverage of the seed piece and surrounding seed furrow.

Percent of unmarketable tubers by treatment



Source: BASF RCD trial, PEI, 2016, n=1

[1] Consult the product label for safety information.

[2] Including *Agriotes obscurus, Agriotes sputator, Conderus* sp., *Hypnoides bicolor, Limonius californicus, Limonius infuscatus, Melanotus cribulosus, Melatonus* sp. *and Selatosomus destructor.*

[3] Do not exceed 100 ml/ac (250 ml/ha).

[4] For different row spacing, see label for calculation.

Titan®

Insecticide

A broad-spectrum seed-piece insecticide.

- Controls major above-ground pests, including aphids, Colorado potato beetle, flea beetle and leafhopper
- Reduces tuber damage caused by wireworms
- Easy-to-use liquid formulation

Active ingredient	Clothianidin – Group 4
Formulation	Suspension
One case contains	2 x 3 L jugs

Crop treatment
Apply as a seed-piece treatment

Pests controlled
Buckthorn aphid *(Aphis nasturtii)*, Colorado potato beetle *(Leptinotarsa decemineata)*, foxglove aphid *(Aulacorthum solani)*, green peach aphid *(Myzus persicae)*, potato aphid *(Macrosiphum euphoribae*), potato flea beetle *(Epitrix cucumeris)*[1], potato leafhopper *(Empoasca fabae)*, wireworm *(Agriotes obscurus, A. lineatus, Limonius agonus, Melanotus* spp., *M. communis)*[2,3]

Application rates

Aphids, Colorado potato beetle, potato flea beetle, potato leafhopper	10.4 to 20.8 ml per 100 kg potato seed pieces
Wireworms[2]	20.8 ml per 100 kg potato seed pieces

Water volume
Do not dilute with any more than 6 parts water to 1 part Titan® insecticide.

Restricted entry interval: 12 hours.

Resistance management
When using Titan as a seed-piece treatment do not apply subsequent Group 4 insecticides that growing season.

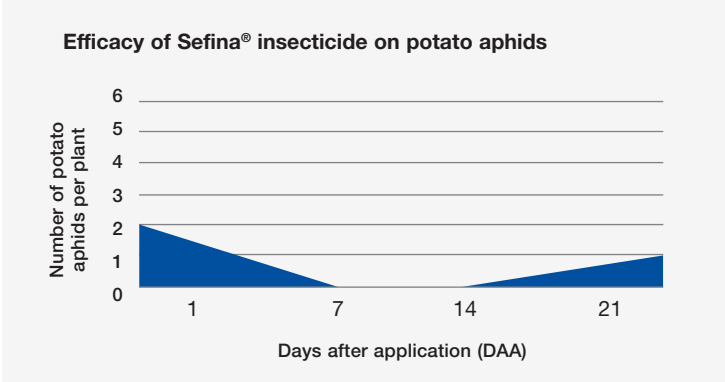
[1] Control of overwintered adults and suppression of second generation.
[2] Suppression only.
[3] May reduce the damage caused by other wireworm species.

Sefina®

Insecticide Powered by **Inscalis®**

A lasting barrier that protects against labeled piercing and sucking insects.

- Quickly halts feeding, which reduces production losses and virus transmission
- Extended control of labeled pests
- Powered by Inscalis®, a unique mode of action that controls labeled insect pests, including those that have developed resistance
- Effective tool in an integrated pest management strategy with low impact on beneficial insects, including predatory and parasitic insects



Source: BASF **AgSolutions®** Performance Trials, NB, 2019, n=3

Active ingredient	Afidopyropen – Group 9D
Formulation	Dispersion concentrate
One case contains	2 x 3.24 L

Crop staging
Apply between emergence and harvest during all life stages of the pests

Pests controlled
Green peach aphid *(Myzus persicae)*
Potato aphid *(Macrosiphum euphoribae)*
Silverleaf whitefly *(Bemisia argentifolii)*
Sweet potato whitefly *(Bemisia tabaci)*

Application rates[1,2]
One case treats 16 to 80 acres (6 to 32 hectares).

Green peach aphid and potato aphid	81 ml/ac (200 ml/ha)
Silverleaf whitefly and sweet potato whitefly	283 to 405 ml/ac (0.7 to 1.0 L/ha)

Water volume

Ground application	Minimum 40 to 80 L/ac (10 to 20 gal/ac)
Aerial application	Minimum 20 L/ac (5 gal/ac)

Rainfastness: 1 hour. Avoid application if heavy rain is forecast.

Restricted entry interval: 12 hours.

Pre-harvest interval: 7 days after application.

Resistance management
Do not make more than two sequential applications of Sefina insecticide before using an effective insecticide with a different mode of action.

[1] Allow a minimum of 7 days between applications.
[2] Do not apply more than 1 L/ac (2.5 L/ha) per year.

Identify common potato insects and diseases

Pest	Visual symptoms			Picture
Aphids	**Nymphs** • No bigger than a pen tip • Smaller version of adult aphid • Egg hatched in spring, live birth in summer		**Adult** • Only a few millimetres in size • Colour ranges from greens to yellows to red/pink depending on crop • In summer all aphids are female and reproduce asexually • Females can produce both wingless and winged aphids	 1
Wireworm	**Eggs** • Hatch in the soil in spring	**Larvae** • Wireworms can live in soil for 3 to 5 years	**Adult** • Wireworm pupates in soil from late summer to early fall • Click beetle overwinters in soil, emerging in spring to lay eggs	 2
Black dot	• Black dot-infected plants display pepper-black dots on stems and leaves • Often mistaken for verticilium wilt – verticillium-affected plants show yellowing leaves and brown discolouration in the cross-section of the roots or lower stem area • Brown to grey-blackish discolouration on tubers • Often confused with silver scurf, with pronounced micro-sclerotia dots on tubers			 3
Brown spot	• Lesions on leaves are often mistaken for early blight, but can be differentiated because in the case of brown spot, they transform into large masses • Elongated, superficial brown or black lesions on stems • Small black pits form on the tuber surface • Similar in appearance to pits caused by common scab, but usually deeper, narrower and darker			 4
Early blight	• Dark brown concentric lesions on mature foliage • Elongated brown and black lesions on the stems • Eventually spreads as brown-black sunken lesions on tubers			 5
Late blight	• Small necrotic spots surrounded with pale green border on leaves • White mycelium on underside of leaf or on stems – visible when plants are moist • Dark green or black water-soaked lesions on stems • Irregular and shallow copper brown dry rot on tubers			 6

[1, 2, 3, 4] Source: BASF. [5] Source: Howard F. Schwarz, Colorado State University.

Zidua® SC

Herbicide

Zidua® SC herbicide provides early-season residual suppression of key annual grasses and broadleaf weeds.

- Group 15 chemistry delivers residual management of tough weeds, including eastern black nightshade, lamb's quarters, redroot pigweed, waterhemp and wild oats
- Residual activity helps to stop germinating weed seedlings before weeds emerge
- Ideal tank-mix partner for pre-emergent weed control in potatoes

Source: BASF field trial, ON, 2020

Active ingredient	Pyroxasulfone – Group 15
Formulation	Suspension concentrate
One case contains	2 x 4.05 L jugs

Crop staging
Pre-emergence to crop and weeds

Apply after planting and before potatoes emerge from the final hilling of the season

Weeds suppressed[1]
Broadleaf weeds
Cleavers[2]
Eastern black nightshade[2]
Kochia[2]
Lamb's quarters
Redroot pigweed
Waterhemp

Grasses
Foxtail (green, yellow)
Wild oats

Application rates
One case treats 83 to 165 acres (34 to 67 hectares).

Zidua SC	49 to 97 ml/ac (120 to 240 ml/ha)[1,3]

Water volume
Ground application Minimum 40 L/ac (10 gal/ac)

Restricted entry interval: 12 hours.

[1] Early-season residual suppression.
[2] Including Group 2-resistant biotypes.
[3] Do not apply Zidua SC in soils classified as sand.

Frontier® Max

Herbicide

Protect potato yields through the critical weed-free period.

- Pre-emergent control of annual grasses and key broadleaf weeds, including biotypes resistant to triazine and Group 2 herbicides
- Consistent performance in challenging weather conditions
- Residual activity for reduced weed pressure throughout crop development

Consistent performance

Source: BASF research trial, PEI, 2012

[1] Includes Group 2-resistant and triazine-resistant biotypes.
[2] Controlled at 390 ml/ac (963 ml/ha); lower rates provide suppression only.
[3] Suppression only.

Active ingredient	Dimethenamid-P – Group 15
Formulation	Emulsifiable concentrate
One case contains	2 x 9 L jugs

Crop staging

Pre-emergence to crop and weeds. Apply after planting and before potatoes emerge from the final hilling of the season.

Weeds controlled

Barnyard grass, Crabgrass (large, smooth), Eastern black nightshade[1,2], Fall panicum, Foxtail (giant, green, yellow), Old witchgrass, Redroot pigweed[1,2], Yellow nutsedge[3]

Application rates

One case treats 46 to 59 acres (19 to 24 hectares).

Frontier Max	Application rates based on % organic matter		
Soil type	**Organic matter ≤ 3%**	**3% < Organic matter < 7%**	**7% < Organic matter <10%**
Coarse textured soils	305 ml/ac (756 ml/ha)	305 ml/ac (756 ml/ha)	348 ml/ac (860 ml/ha)
Medium textured soils	305 ml/ac (756 ml/ha)	348 ml/ac (860 ml/ha)	390 ml/ac (963 ml/ha)
Fine textured soils	305 ml/ac (756 ml/ha)	348 ml/ac (860 ml/ha)	390 ml/ac (963 ml/ha)

Apply at the higher rates in the table on fine textured or high organic soils and for heavier weed problems.

Water volume

Ground application 40 to 80 L/ac (10 to 20 gal/ac)

Restricted entry interval: 24 hours.

Pre-harvest interval: 40 days after application for potatoes.

Resistance management: Rotate Frontier Max or other Group 15 herbicides in a growing season (sequence) or among growing seasons, with different herbicide Groups that control the same weeds in a field. Use tank mixtures with herbicides from a different Group.

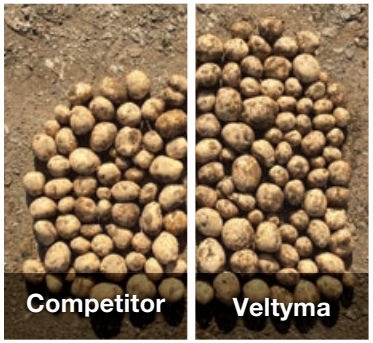
Veltyma®

Revysol® Fungicide

The optimal fungicide for protection against key foliar diseases in potatoes, including early blight, black dot and brown spot.

- Multiple modes of effective action on early blight, including enhanced performance provided by the unique binding activity of Revysol®
- Proven **Plant Health Benefits**[1] for increased growth efficiency, better management of minor stress and greater yield potential[2]
- Delivers preventative and post-infection activity
- Liquid formulation for optimized usability

Potential yield increase with Veltyma® fungicide



Source: BASF field trial, NB, 2021

Active ingredients	Mefentrifluconazole – Group 3 Pyraclostrobin – Group 11
Formulation	Suspension concentrate
One case contains	2 x 8.1 L jugs

Timing
7 to 14 day application interval

Diseases controlled
Black dot *(Colletotrichum coccodes)*
Brown spot *(Alternaria alternata)*[3]
Early blight *(Alternaria solani)*[4]

Application rate
One case treats 80 acres (32 hectares).

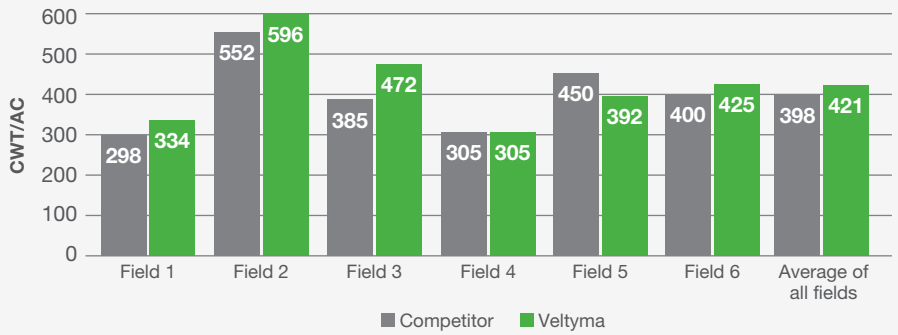
Veltyma	202 ml/ac (500 ml/ha)

Rainfastness
When product has dried on crop. Do not apply when heavy rain is forecast.

Restricted entry interval
12 hours.

Pre-harvest interval
7 days after application for potatoes.

Potato yield compared to competitor



Source: BASF field scale trials, PEI, NB, ON, 2021, n=6

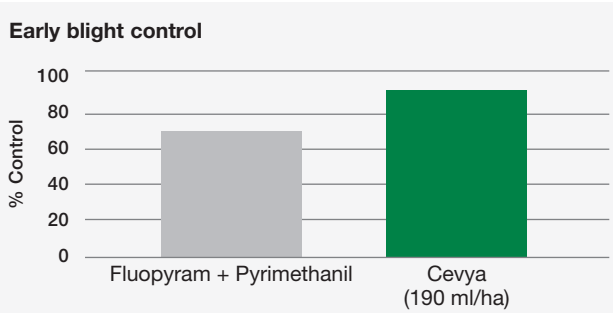
[1] **Plant Health Benefits** refer to products that contain the active ingredient pyraclostrobin. [2] All comparisons are to untreated, unless otherwise stated. [3] Suppression. [4] Includes control of Group 11-resistant biotypes.

Cevya®

Revysol® Fungicide

Ceyva® fungicide is powered by Revysol® to provide fast, systemic, continuous pre- and post-infection control of key diseases.

- Fast and continuous control of key diseases in potatoes, fruits and vegetables
- Preventative and post-infection control
- Unique, new binding activity to control biotypes that may have developed resistance to other Group 3, 7, 9 and 11 fungicides



Source: BASF RCD trials, MB & ON, 2016-2018, n=3

Active ingredient	Mefentrifluconazole – Group 3
Formulation	Suspension concentrate
One case contains	2 x 4 L jugs

Timing
7 to 14 day interval

Disease controlled
Early blight *(Alternaria solani)*

Diseases suppressed
Black dot *(Colletotrichum coccodes)*
Brown spot *(Alternaria alternata)*

Application rates
One case treats 80 to 107 acres (32 to 43 hectares).

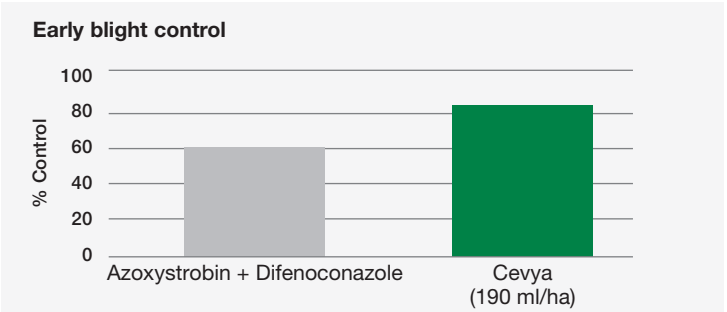
Cevya	75 to 100 ml/ac (190 to 250 ml/ha)[1]

Rainfastness
1 hour.

Restricted entry interval
12 hours.

Pre-harvest interval
7 days after application for potatoes.

Resistance management
Cevya is an excellent resistance management tool to include in an IPM program. It can be used in combination or rotation with other chemistries to prevent the development of resistant strains. To limit the potential for development of resistance, rotate the use of Cevya or other Group 3 fungicides with different Groups that control the same pathogens.



Source: BASF RCD trials, MB & ON, 2016-2018, n=3

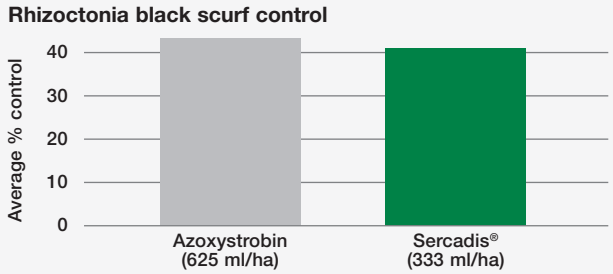
[1] Do not apply more than 455 ml/ac (1.125 L/ha) per year.

Sercadis®

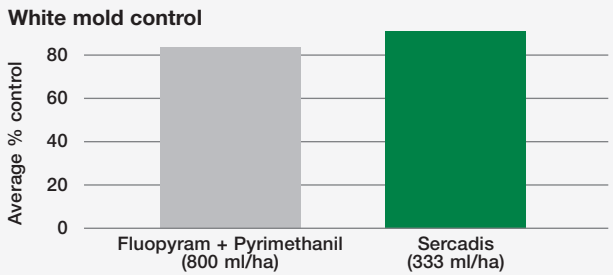
Xemium® Fungicide

Innovative chemistry for consistent, continuous control of key diseases.

- Control of early blight, white mold and rhizoctonia canker
- Timing and tank-mix flexibility to adapt to the season's needs
- Highly systemic activity helps protect new growth



Source: BASF internal trials, 2010, n=2



Source: BASF internal trials, Oregon, USA, 2010, n=1

Active ingredient	Fluxapyroxad – Group 7
Formulation	Suspension
One case contains	2 x 1.35 L jugs

Crop staging

For rhizoctonia canker (soil-borne)	At planting (in-furrow spray)
For early blight	Preventatively, from tuber initiation to row close as part of a regular early-blight control program
For white mold	Begin applications at flowering when there is a risk of disease

Diseases controlled

In-furrow applications: Rhizoctonia canker (*Rhizoctonia* spp.)
Foliar applications: Early blight (*Alternaria solani*), white mold (*Sclerotinia sclerotiorum*)

Application rates

One case treats 20 to 40 acres (8 to 16 hectares).

In-furrow applications

Rhizoctonia canker	135 ml/ac (333 ml/ha) 36″ rows: 30 ml per 1000 m of row

Foliar applications

Early blight	67 to 135 ml/ac (167 to 333 ml/ha)
White mold	135 ml/ac (333 ml/ha)

Using a non-ionic surfactant at 0.125% v/v is recommended for foliar applications.

Refer to the label for more information on product rates and row spacing.

Rainfastness

1 hour.

Restricted entry interval

12 hours.

Pre-harvest interval

7 days after application for potatoes.

Resistance management

May be tank mixed with a non-Group 7 fungicide when such use is permitted. Do not apply more than two sequential applications of Sercadis before alternating to a fungicide with a different mode of action that controls the same pathogens.

Serifel®

Fungicide

An innovative biological fungicide with multiple modes of action that forms a shield of protection on plants' surfaces to protect against disease.

- Highly effective biological fungicide that targets early blight and rhizoctonia in potatoes
- Complements chemistry-based solutions, with multiple unique modes of action, to form a protective shield against disease
- Zero PHI, 4-hour REI and 36-month shelf life offer new flexibility and choice to address crop production challenges
- Sets the standard for purity, performance and quality

Active ingredient	*Bacillus amyloliquefaciens* strain MBI 600 – Group BM02
Formulation	Wettable powder
One case contains	4 x 2 kg jugs

Timing
7 to 10 day interval

Diseases suppressed
Early blight (*Alternaria solani*)
Rhizoctonia stem canker/black scurf (*Rhizoctonia solani*)[1,2]

Application rates
One case treats 40 to 80 acres (16 to 32 hectares).

Serifel®	0.1 to 0.2 kg/ac (0.25 to 0.5 kg/ha)

Rainfastness
Avoid application if heavy rain is forecast.

Restricted entry interval
4 hours.

Pre-harvest interval
0 days after application for potatoes.

Resistance management
Serifel is an excellent resistance management tool to include in an IPM program. It can be used in combination or rotation with other chemistries to prevent the development of resistant strains.

TECH TIP

***Click here* to learn more about integrated pest management strategies.**

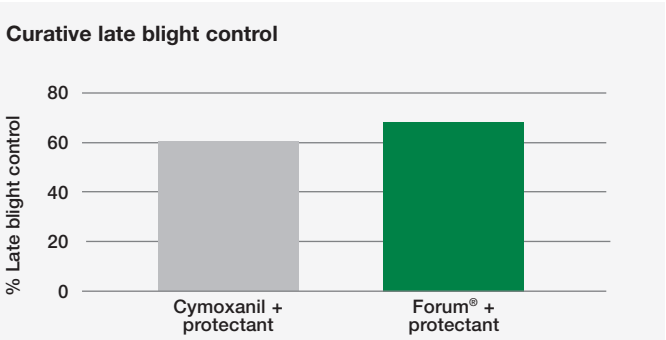
[1] Partial suppression.
[2] In-furrow. See label for application instructions.

Forum®

Fungicide

Excellent control of late blight in potatoes, both in the field and into storage.

- Highly systemic fungicide for control of late blight in potatoes
- Antisporulant activity controls spores and stops the spread of disease
- Easy-to-use liquid formulation



Source: BASF, 2001-2006, average of 7 trials with ratings taken 1 to 4 months after harvest

Active ingredient	Dimethomorph – Group 40
Formulation	Suspension concentrate
One case contains	2 x 4.5 L jugs

Timing

5 to 7 day interval under high disease pressure

7 to 10 day interval under low disease pressure

Diseases controlled[1]

Late blight *(Phytophthora infestans)*

Tuber blight in storage *(Phytophthora infestans)*[2]

Application rate

One case treats 50 acres (20 hectares).

Forum	182 ml/ac (450 ml/ha)

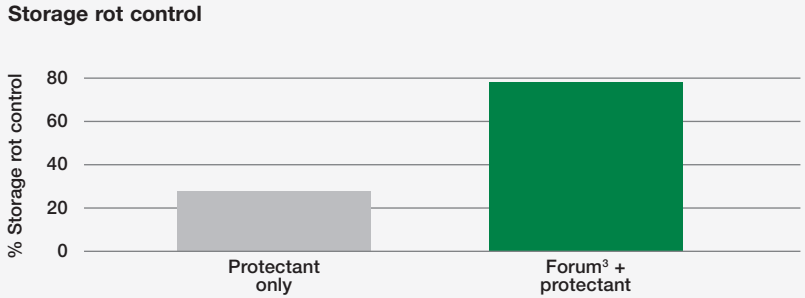
Rainfastness: 2 hours.

Restricted entry interval: 12 hours.

Pre-harvest interval: 4 days after application for potatoes.

Resistance management

In order to reduce the risk of developing fungicide resistance, Forum fungicide should be used in a tank mix or in rotation with a fungicide from a different FRAC Group labeled for control of late blight.



Source: BASF, 2001-2006, average of 7 trials with ratings taken 1 to 4 months after harvest

[1] To reduce the risk of the development of fungicide resistance, tank mix Forum fungicide with other fungicides. Do not apply more than three applications per season. [2] Suppression only. [3] Applied pre-harvest.

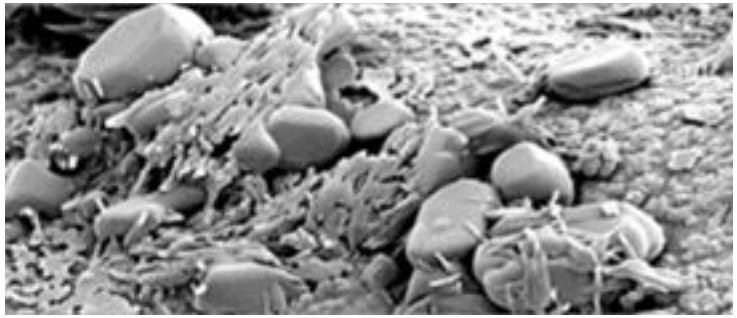
Zampro®

Fungicide

Powerful control of late blight that recharges with moisture.

- Multiple modes of action to control late blight
- Antisporulant, protectant and systemic disease control prevents initial infection and stops disease spread
- Recharges with moisture

Zampro® fungicide on leaf



Ametoctradin is tightly bound to the waxy cuticle and rapidly absorbed.
Magnification: 3.0 µm

Active ingredients	Dimethomorph – Group 40 Ametoctradin – Group 45
Formulation	Suspension concentrate
One case contains	4 x 4.14 L jugs

Timing

Apply preventatively (prior to disease development) on a 5 to 10 day interval

During periods of high disease pressure, use a higher rate and shorter interval

Diseases controlled

Late blight *(Phytophthora infestans)*
Tuber blight *(Phytophthora infestans)*[1]

Application rates

One case treats 41 to 51 acres (17 to 21 hectares).

Late blight	324 to 404 ml/ac (0.8 to 1.0 L/ha)[2]
Tuber blight	404 ml/ac (1.0 L/ha)

Rainfastness

2 hours.

Restricted entry interval

12 hours.

Pre-harvest interval

4 days after application for potatoes.

Resistance management

Do not make more than two sequential applications before alternating to another effective fungicide with a different mode of action.

[1] When used in accordance to the label recommendations, Zampro also reduces tuber blight when applied immediately prior to or after vine kill.
[2] Addition of spreading/penetrating adjuvants are recommended.

Don’t get caught up in weeds. Stay ahead of them.

Have you thought about post-harvest solutions? Fall is a busy time, but it’s also the perfect time to control perennial and winter annual weeds.

Challenges

Perennial and winter annual weeds including annual bluegrass, Canada fleabane, chickweed, dandelion, field bindweed, scentless chamomile and sow thistle present different challenges:

- Perennials are tough to control once they’ve established deep, extensive root systems
- Winter annuals germinate in the fall and continue to grow through early winter, bringing them back the following spring

Benefits

The benefits of using a post-harvest herbicide can really make a difference in your field:

- Cleaner fields in the spring
- Faster soil warming
- Faster plant growth due to a warmer and drier seedbed
- Less disease and insect pressure
- Excellent weed control


Sow-thistle


Field bindweed[1]


Chickweed


Annual bluegrass


Dandelion[2]


Canada fleabane[3]

[1] Source: Howard F. Schwartz, Colorado State University, Bugwood.org
[2] Source: Chris Evans, University of Illinois, Bugwood.org
[3] Source: Forest and Kim Starr, Starr Environmental, Bugwood.org

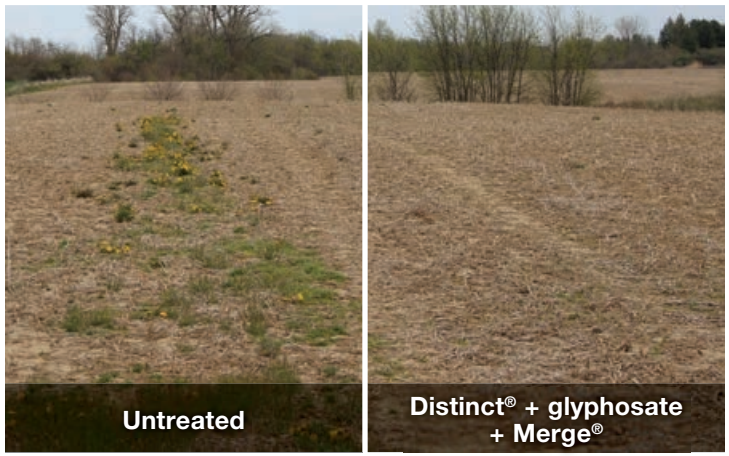
Distinct®
Herbicide

POST-HARVEST

Complements glyphosate for superior post-harvest weed control.

- Multiple modes of action with glyphosate to control resistant biotypes post-harvest
- Keeps fields cleaner to set them up for success the next season
- Excellent follow-crop flexibility that includes canola, cereals, corn and soybeans

Weed control in spring, following previous September application



Source: BASF, St-Joachim, ON, May 2020

Active ingredients	Dicamba – Group 4 Diflufenzopyr – Group 19
Formulation	Wettable granules
One case contains	2 x 2.32 kg jugs

Staging
Prior to first significant frost

Weeds controlled[1]
Biennial wormwood[2]
Canada thistle[3]
Common cocklebur
Common ragweed
Dandelion[3]
Lady's thumb
Lamb's quarters
Perennial sow thistle[4,5]
Redroot pigweed
Velvetleaf
Volunteer canola[6]
Waterhemp
Wild buckwheat

[1] Tank mixed with glyphosate at 115 g/ac.
[2] Apply at 2- to 8-leaf.
[3] Top growth.
[4] Suppression only.
[5] Apply at 2- to 10-leaf.
[6] Apply at cotyledon to 4-leaf.
[7] Glyphosate and Merge adjuvant (required for optimum activity) are not included in the case.

Application rate
One case treats 40 acres.

Distinct	115 g/ac (285 g/ha)
Merge adjuvant[7]	400 ml/ac (1.0 L/ha)
Glyphosate[7]	See label for rate

Water volume
Ground application only
40 to 80 L/ac (10 to 20 gal/ac)

TECH TIP

Apply the preferred fall herbicide, Distinct, if you are not planting winter wheat.

- ***Select the correct rate of glyphosate based on weed species and size to mix with Distinct; it can take a few weeks to see symptomology in cooler temperatures.***
- ***If a frost event occurs, wait 24 to 48 hours before applying and add Merge (400 ml/ac). Weeds such as perennial sow thistle are more effectively controlled AFTER the first frost, which triggers the movement of nutrients to the roots.***

Engenia®
Herbicide

POST-HARVEST

An advanced dicamba formulation with lower volatility properties.

- More highly concentrated liquid formulation for easier handling and a lower use rate
- Effective resistance management tool for resistant biotypes (including biotypes resistant to Group 2, Group 14, triazine and glyphosate)

Active ingredient	Dicamba – Group 4
Formulation	Solution
One case contains	2 x 8.09 L jugs Also available in 121.2 L shuttle

Staging
Apply to actively growing weeds

Weeds controlled[1]
Buckwheat (tartary, wild)
Canada fleabane[2]
Canada thistle[3]
Cleavers
Corn spurry
Cow cockle
Field bindweed[3]
Green smartweed
Lady's thumb
Lamb's quarters
Mustards
Perennial sow thistle[3]
Ragweed (common, false, giant)
Redroot pigweed
Russian pigweed
Velvetleaf

Application rate
One case treats 40 acres.

One shuttle treats 300 acres.

Engenia®[4]	404 ml/ac (1.0 L/ha)
Glyphosate[5]	See label for rate

Water volume
Ground application
Minimum 40 L/ac (10 gal/ac)

Use a higher water volume to ensure adequate coverage.

[1] Controlled by Engenia alone at 200 to 400 ml/ac (0.5 to 1.0 L/ha).
[2] Post-emergence only.
[3] Apply Engenia herbicide annually for three years at the flowering stage of bindweed and the budding stage of thistles.
[4] See label for a complete list of additional available tank mixes and their rates. Tank-mix options are not included in the case.
[5] Glyphosate (required for optimum activity) is not included in the case.

Zidua® SC

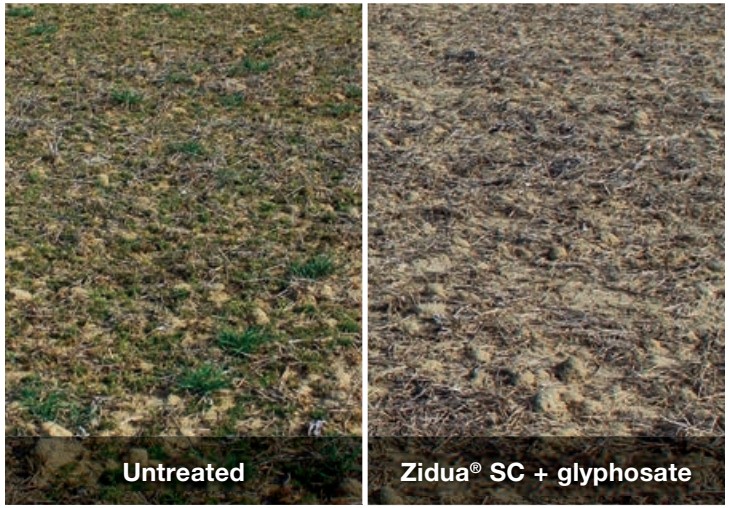
Herbicide

POST-HARVEST

Residual control of key annual grasses and select broadleaf weeds.

- Group 15 chemistry delivers control of grassy weeds such as annual bluegrass
- Residual activity on late-season germinating seedlings
- Convenient liquid formulation

Bluegrass control in the spring following a fall application



Source: Thamesville, ON, 2021

Active ingredient	Pyroxasulfone – Group 15
Formulation	Suspension concentrate
One case contains	2 x 4.05 L jugs

Crop staging
Post-harvest

Weeds suppressed

Broadleaf weeds
Cleavers[1]
Eastern black nightshade[1]
Kochia[1]
Lamb's quarters
Redroot pigweed
Waterhemp

Grasses
Annual bluegrass[2]
Foxtail (green, yellow)
Wild oats

[1] Including Group 2-resistant biotypes.
[2] Control.

Application rate
One case treats 83 acres.

Zidua SC	97 ml/ac (240 ml/ha)

Water volume
Ground application
Minimum 40 L/ac (10 gal/ac)

TECH TIP

Annual bluegrass emerges both in the spring and the fall. Fall is a great time to apply Zidua SC to provide short-term residual activity on annual bluegrass and set up your field for a cleaner start the following spring.

Resources are ready for you. (And your crops.)

OTHER CROPS

Dry bean solutions
Eragon® LQ herbicide on dry beans
Priaxor® fungicide on alfalfa

AGRONOMIC SUPPORT MATERIAL

Identifying corn stages
Identifying soybean stages
Integrated pest management
Spray your best with Liberty® 200 SN herbicide
Spray system hygiene
Temperature inversions
Managing Canada fleabane and waterhemp
Managing aphids
Modes of action
Product details
Crop rotation
WAMLEGS
Bulk packaging

BASF AG REWARDS

BASF Ag Rewards

Dry bean solutions you can depend on.

Dry beans are a high value crop that come with production challenges such as yield loss from weeds and diseases. That's why BASF offers a lineup of solutions to help manage these issues.

Become familiar with all of your dry bean options.

Information presented is for quick reference only. Always refer to product label.

Herbicide[1]	Timing	Rate	Tips	Dry bean classes
Frontier® Max	PPI	350 to 390 ml/ac	Can incorporate up to 7 days after application. Strong on nightshade (use the high rate if nightshade is present).	All except adzuki beans
Prowl® H2O	PPI	960 ml/ac	Good on sandy soil. Incorporate as part of a tank mix.	All
Pursuit®	PP, PPI, PRE	126 ml/ac	For broad-spectrum control of grasses and broadleaf weeds, apply PPI as part of a tank mix.	All
Basagran® Forte	POST	700 to 900 ml/ac	Use the high rate if the weeds have more than four leaves. Apply after the 1st trifoliate until the 3rd trifoliate. Spray in the middle of the day on small, actively growing weeds using a minimum of 20 gal/ac of water.	All except adzuki beans
Poast® Ultra	POST	445 ml/ac	Strong on grasses.	All

PPI = pre-plant incorporated PP = pre-plant PRE = pre-emergence POST = post-emergence

TECH TIP

For complete weed control in your dry beans, apply a pre-plant incorporated tank mix of Frontier Max + Prowl H2O + Pursuit.[2] In addition to three modes of effective action on broadleaf weeds and grasses, this tank mix will provide extended residual weed control.

Fungicide	Disease	Timing	Rate	Tips	Dry bean classes
Priaxor®	Anthracnose Powdery mildew Rust	Beginning of flower or the onset of symptoms.	120 ml/ac	Use 180 ml/ac for white mold suppression.[3]	All
Cotegra®	White mold	20-50% flowering and again 7-14 days after the first application if disease persists or weather conditions are favourable for disease development.	400 ml/ac	Can be applied twice per season. Rotate to a fungicide with a mode of action other than a Group 3 or 7 before making a second application of Cotegra.	All

TECH TIP

Priaxor can be applied in a tank mix with Cotegra at the beginning of flowering as the 1st fungicide pass.

NOTE: Always check with your buyer or processor prior to applying a harvest aid in dry beans to avoid limiting market access.

Harvest aid[4]	Timing	Rate	Tips	Dry bean classes
Eragon® LQ[5]	Apply when stems are green to brown, pods are mature (yellow, brown) and 80-90% of leaves have dropped.	59 ml/ac + 400 ml/ac of Merge® adjuvant	Spray in the middle of a sunny day with a higher water volume. Avoid spraying on overcast days or at dawn and dusk.	Check with your grain buyer.
Ignite®[6]	Apply when approximately 50-75% of the bean pods have naturally changed colour from green to yellow or brown.	1.2 L/ac	Use when lamb's quarters are the predominant weed.	

TECH TIP

Eragon LQ or Ignite?	Activity on grasses?	Surfactant required?	Use on seed dry bean?	Use on soybean?	Spray on sunny days?	Pre-harvest interval?
Eragon LQ	No	Yes	Yes	Yes	Yes	2 days
Ignite	Yes	No	No	No	Yes	9 days

[1] Dry common bean varieties may vary in tolerance to herbicides. Since not all dry common bean varieties have been tested for tolerance to the listed herbicides, first use of any of the listed herbicides should be limited to a small area of each variety to confirm tolerance prior to adoption as a general field practice. Additionally, consult your seed supplier for information on the tolerance of specific varieties of dry common beans to the listed herbicides. [2] Make sure all components of the tank mix can be applied to your specific dry bean variety. [3] See label to know on which dry bean varieties to use Priaxor for white mold suppression. [4] Check with your grain buyer before applying. [5] When tank mixing with glyphosate, consult the glyphosate label or talk to your grain buyer for information regarding use on specific varieties of dry beans. [6] Do not apply to dry beans grown for seed.

Is your dry bean field ready for Eragon LQ herbicide?

Application timing for Eragon® LQ herbicide.[1]

From a field perspective, the timing for individual dry bean varieties looks similar. Please look to the field images here for a general comparison of optimal and too early timing.

NOTE: Always check with your buyer or processor prior to applying a harvest aid in dry beans to avoid limiting market access.

Too early for application

No pods have turned brown and green pods are found all through the canopy. Application at this stage may cause a reduction in seed size and have a negative effect on yield and quality.

Optimal timing

Approximately 90% of the pods will have a colour change from green to yellow and/or light brown. 80% to 90% of the leaves will have dropped. The stems are green to brown in colour.

TECH TIP

Optimize your coverage.

1. ***Use a minimum of 20 gal/ac of water.***
2. ***Avoid spraying when dew is present, on an overcast day or before a cold front; apply during midday for a faster burndown.***
3. ***It's better to apply too late than too early; a later application can reach growing points previously covered by leaves to mitigate regrowth.***

[1] When tank mixed with glyphosate, consult the glyphosate label or talk to your grain buyer for information regarding use on specific varieties of dry beans.

Learn more about herbicide timing for different varieties of dry beans in the staging guide at **agsolutions.ca/eragonlq-guide.**

Priaxor®

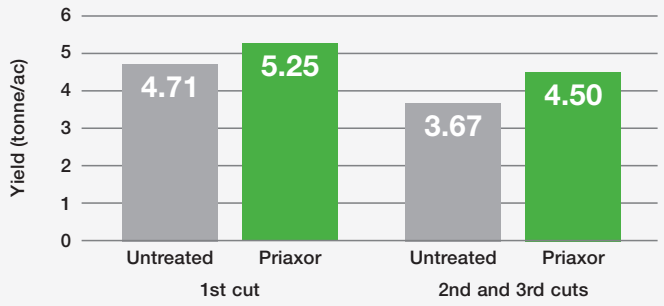
Xemium® Fungicide

ALFALFA

Provides proven disease control to increase yield and quality potential in alfalfa.

- First cut application resulted in improved disease control and an increase in yield due to increased leaf retention at the bottom of the plant[1]
- Second and third cut applications resulted in improved disease control and increased yield and protein levels for higher quality[1]

Increased alfalfa yield with Priaxor® fungicide



Source: **AgSolutions®** Performance Trials, ON & QC, 2017-2019, 1st, 2nd & 3rd cuts had 8 and 13 observations respectively

Active ingredients	Pyraclostrobin – Group 11 Fluxapyroxad – Group 7
Formulation	Liquid suspension
One case contains	2 x 9.6 L jugs

Crop staging
4 to 8 inches in height. For best results, harvest a minimum of 21 days after Priaxor application.[2]

Disease controlled
Common leaf spot
(Pseudopeziza medicaginis)

Disease suppressed
Blossom blight[3]
(Sclerotinia sclerotiorum)

Application rates
One case treats 160 acres.

Priaxor	120 ml/ac (300 ml/ha)[3]

Pre-harvest interval
14 days

TECH TIP

Target 4- to 8-inch tall alfalfa. Therefore, if targeting 2nd or 3rd cut, the alfalfa regrowth is at the ideal timing roughly 7 days after the previous cut. For best results, apply at least 21 days prior to harvest.

Better and faster regrowth 21 days after treatment

Source: **AgSolutions** Performance Trials, Quebec, 2017

Increased leaf retention

Source: **AgSolutions** Performance Trials, Ontario, 2018

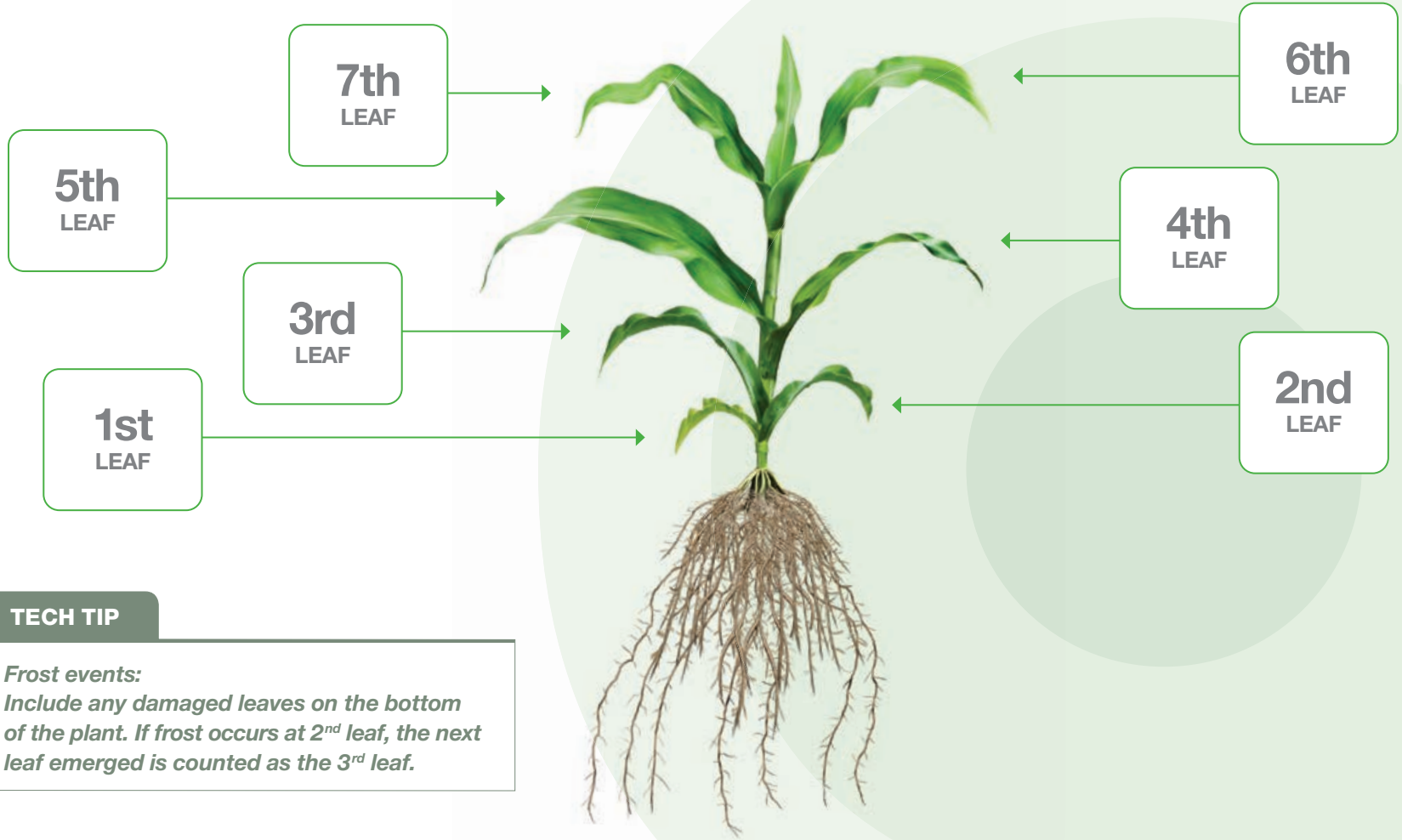
[1] All comparisons are to untreated, unless otherwise stated. [2] A maximum of two applications per season is allowed.
[3] Apply Priaxor at the increased rate of 180 ml/ac for suppression of blossom blight.

Identifying corn stages.

1. Leaf-over method
Count the number of leaves that hang over or become horizontal. Most herbicide labels in Canada use the leaf-over method to articulate staging. There are seven leaves hanging over in the image below, so it would be the 7-leaf stage.

2. Leaf-collar method
Count all visible leaf collars on the plant. The leaf-collar method is used primarily in the United States to identify the vegetative (V) stage of corn. There are six leaf collars in the image below, so it would be at the V6 stage.

3. Leaf-tip method
Count the number of leaf tips. In the plant below, there are eight leaf tips.



TECH TIP

Frost events:
Include any damaged leaves on the bottom of the plant. If frost occurs at 2nd leaf, the next leaf emerged is counted as the 3rd leaf.

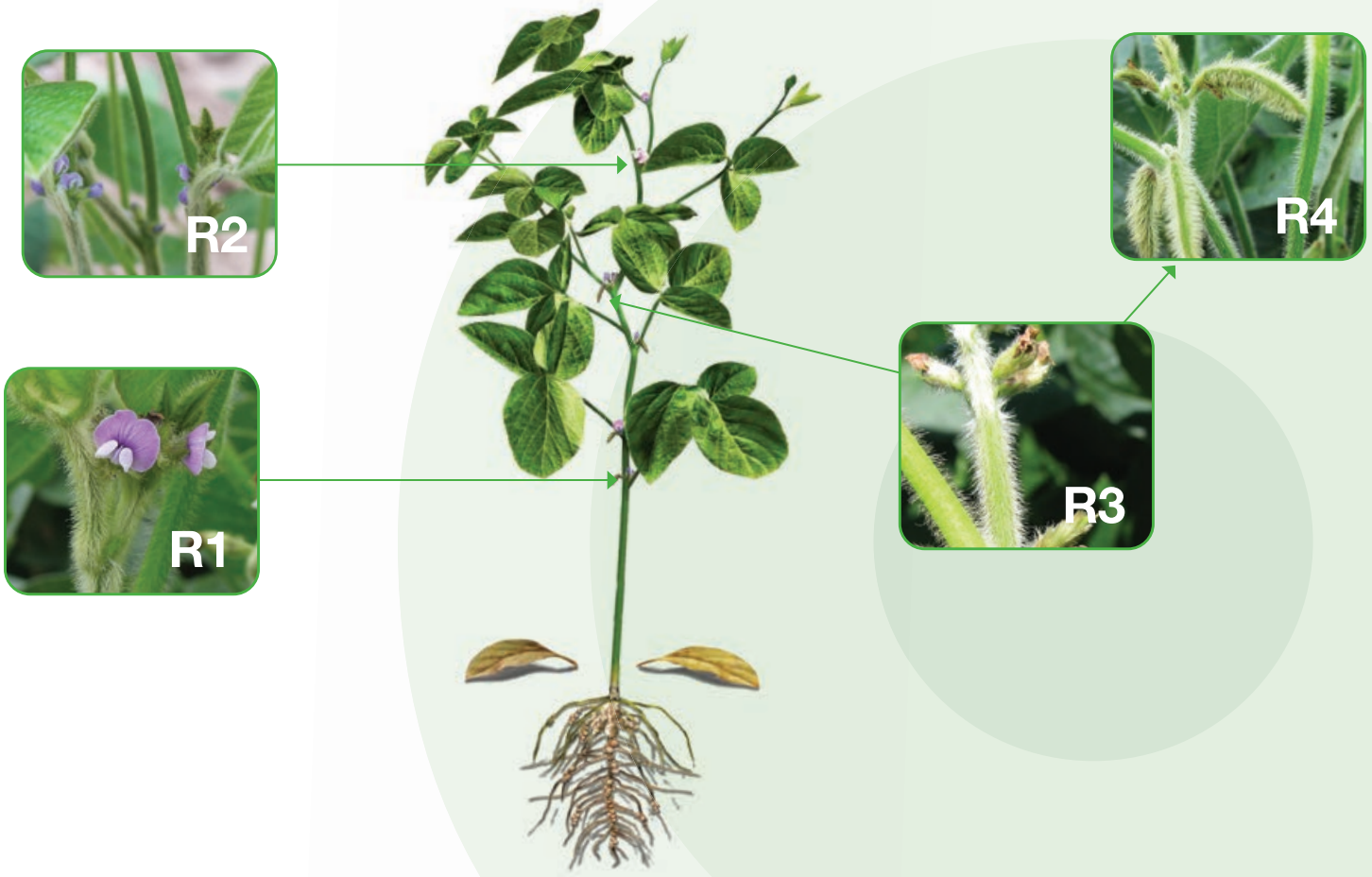
Identifying soybean stages.

R1: Beginning bloom.
The 1st open flower appears on any main stem node.

R2: Full bloom.
An open flower appears on one of the top two stem nodes.

R3: Beginning pod.
A 3/16-inch pod appears on one of the four upper main stem nodes.

R4: Full pod.
A 3/4-inch pod appears on one of the four upper main stem nodes.



Jump into the cycle of integrated pest management.

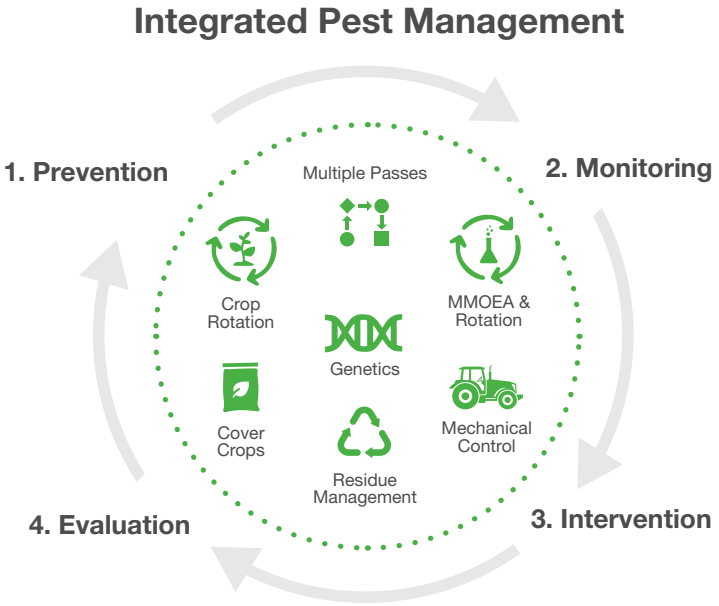
Integrated pest management (IPM) is a comprehensive approach to help reduce pest populations using a 4-step cycle.

1. Prevention – Identify the potentially harmful organisms or causes of infestations and implement some preventative measures.

2. Monitoring – Scout and take notes. Determine if the intervention or economical threshold has been reached. If yes, it might be time to move to the next step. If no, keep monitoring the pest until action is needed.

3. Intervention – Apply control measures simultaneously or sequentially.

4. Evaluation – Evaluate your progress. Determine whether the intervention measures were the right ones, if they were efficient and what could be done better next time.



Plan your tactics.

As part of the IPM strategy, crop rotation and a multiple-pass approach are just two tactics that can be used during the prevention and intervention steps. Here are more examples:

- **Plant cover crops** – Suppress weeds, reduce erosion
- **Select genetics** – Choose hybrids/varieties with disease resistance genes, increased vigour and plant establishment
- **Utilize mechanical control** – Uproot weeds or remove infected plant material
- **Use multiple modes of effective action (MMOEA) and chemistry rotation** – Ensure the chemistry used is effective on the target and rotate between modes of action to reduce selection pressure
- **Manage residue** – Reduce inoculum and pest buildup, and allow for better coverage during application

Spray your best with Liberty 200 SN herbicide.

Liberty® 200 SN herbicide provides an additional mode of action to your field with its Group 10 chemistry. It has contact activity on weeds and that's why it must reach the targeted weeds in order to be effective (no contact = no activity).

Optimize your mixing order.

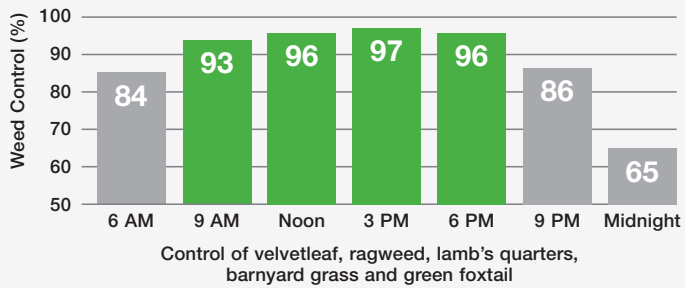
If you are adding AMS to your Liberty 200 SN tank mix, it's important to remember that AMS must always go in the tank first. The order should be as follows:

1. **Ammonium sulfate (AMS)**
2. **Liberty 200 SN**
3. **Tank-mix partner (if required)**

TECH TIP

If adding Select® herbicide to your tank mix, use the following mixing order:
1. AMS
2. Amigo® adjuvant
3. Liberty 200 SN
4. Select

Spray Liberty 200 SN between 9 AM and 6 PM for optimal activity



Control of velvetleaf, ragweed, lamb's quarters, barnyard grass and green foxtail

Source: Stopps, G.J., Nurse, R.E., Sikkema, P.H., "The effect of time of day on the activity of postemergence soybean herbicides," 2013, Weed Technology, [online] 27(4), 690-695

Spray Liberty 200 SN with a minimum 20 gallons per acre for good contact and optimal coverage.

Add AMS for enhanced activity on tough weeds.

Tank mix Liberty 200 SN with Select and Amigo in canola for control of difficult grassy weeds, such as wild oats and volunteer barley.

Apply Liberty 200 SN on relatively warm (10°C or more) and sunny days, and in the middle of the day for better performance.

Aim for medium to coarse droplets of 250 to 350 microns.

Apply Liberty 200 SN in the same tracks, but in the reverse direction if you are doing a second pass in canola. Plan a post-application of Liberty 200 SN in Enlist™ E3 or XtendFlex® soybeans as part of a two-pass program following a strong residual program.

Learn more about spraying Liberty 200 SN by visiting our online learning module at **agsolutions.ca/liberty200sn/east**.

Spray system hygiene.

Comprehensive cleaning is crucial.

Non-dicamba-tolerant soybeans are extremely sensitive to dicamba. Even with as **little as 3 ml of formulated product OR 355 ml of leftover spray solution** in a 1000-gallon spray tank sprayed at 10 gallons per acre.

BEFORE and **AFTER** using a herbicide, thoroughly clean the sprayer and spray system (including fill lines, nurse trucks, pumps, etc.) by performing a triple rinse procedure using a detergent-based commercial tank cleaner.

Common contamination points.

Pesticide residue left in or on any container or equipment used to store, transfer or apply products can be a source of contamination. Everything that a herbicide has touched during the process of handling and mixing must be cleaned. While every mixing and loading setup is different, there are some common contamination points that need to be cleaned with a triple rinse prior to and after using a herbicide.

Prior to the sprayer*	On the sprayer**
Mini bulk lines	Tank
Transfer pumps	Hoses/fill line
Mixing vats	Inductor
Transfer hoses	Screens
Manifolds	Line filters
Overhead fill lines	Recirculation lines
Nurse truck tanks	End caps/dead zones
Agitation pumps	Pump
In-line filters/screens	Outside surfaces of the sprayer

* Be sure to take extra care when re-filling water supply tanks. Using hoses that have not been rinsed to re-fill clean water tanks can hold enough dicamba to contaminate water supply tanks.

** Be sure to actuate all valves and solenoids during each rinse to ensure all of the plumbing is rinsed thoroughly. Don't forget the inductor as a point of contamination if used to mix the load.

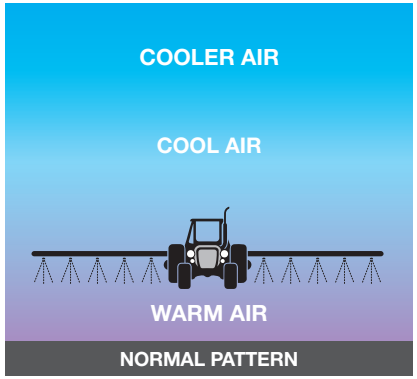
Group 4-herbicide injury on non-herbicide-tolerant soybeans

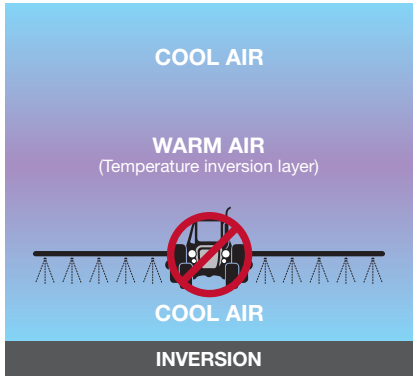
Basic procedure for spray system cleanout.

1. Drain tank of all remaining spray solution.
2. Begin first rinse using water.
   - Rinse all parts of spray system plumbing thoroughly
   - Ensure all surfaces are visually clean
   - Clean all screens, pumps, hoses, end caps, recirculation lines, etc.
   - Actuate all solenoids and valves to ensure clean water flows through all lines
   - Drain all rinsate[1]
3. Begin second rinse using water and **a detergent-based commercial tank cleaner.**
   - Fill all lines, screens, strainers, plumbing, etc. with detergent and water solution
   - Allow cleaning agent to sit in all plumbing for at least 15 minutes or as advised by the label of the cleaner
   - Flush the solution through the entire system and drain excess rinsate[1]
4. Begin third rinse process using water.
   - Rinse tank walls and fill all plumbing
   - Allow water to flow through the entire system thoroughly prior to draining rinsate[1]
5. Record spray cleanout procedure and date.

[1] Dispose of rinsate according to label requirements.

Recognizing temperature inversions.





How temperature inversions form.

During daytime hours, solar radiation warms the earth's surface and, during days with little cloud cover, convection creates winds and gusts that transport air vertically. As sunset nears, the earth's surface is no longer heated by the sun. As a result, heat from the warmer air is transferred back to the soil, creating a layer of cooler, denser air near the soil surface. This process creates a temperature inversion, where the cool air at ground level has warmer air above it through the very lowest levels of the atmosphere.

Spraying pesticides during an inversion can result in the off-target movement of small droplets as physical drift which never reach their intended target. This is not to be confused with volatility, which is when a liquid droplet converts to a gas after it has reached its intended target.

Impact of temperature inversions on pesticide applications.

Temperature inversions can negatively impact pesticide applications by trapping small droplets in the cool air of the inversion layer. These small droplets can then travel long distances, either downslope to low-lying areas or in an unpredictable manner with the light and variable winds. To avoid off-target movement of pesticides due to inversions, be mindful of inversions during the following spray timings.

Mornings: One of the worst times to spray is when overnight skies were clear and wind speeds are low. Inversions can persist for one to two hours after sunrise on a calm day.

Late afternoon/early evening: The lowest five feet closest to the ground can sometimes begin to form an inversion three to four hours before sunset. Evening inversions are riskier for off-target movement because they are very persistent and will intensify until after sunrise.

Nighttime: Inversions may have already been established and continue to intensify until after dawn.

Conditions most likely to favour an inversion:

- Clear skies during late afternoon and during the night
- Dry soil surface
- Windspeeds < 4 mph (6 km/hr) that result in no air mixing
- Low areas, valleys or basins where cool air will sink and collect. Inversions will form in these areas sooner, persist longer and be more intense

How to identify if an inversion exists:

- Morning dew
- Morning fog (indicates that an inversion existed prior to fog formation)
- Smoke or dust hanging in the air or moving laterally
- Overnight cloud cover is 25% or less
- Inversions can begin forming three to four hours before sunset and can persist until one to two hours after sunrise
- Measure air temperature 6 to 12 inches above the soil and 8 to 10 feet above the soil. An inversion exists if measured air temperature at 8 to 10 feet above the soil is higher than the measured air temperature at 6 to 12 inches above the soil. Be sure the instrument is shaded and not influenced by solar heating

Content adapted from: Enz, J.W., Hofman, V., and Thostenson, A., Air Temperature Inversions: Causes, Characteristics, and Potential Effects on Pesticide Spray Drift, NDSU Extension Service, Publication AE1705, 2014, http://www.omafra.gov.on.ca/english/crops/hort/news/hortmatt/2014/13hrt14a2.htm.

Visit **agsolutions.ca/applicationstewardship** to learn more. Access the Engenia Spray Tool at **engeniasprayt ool.ca.**

Growing weed challenges. Here's how to stay ahead.

Canada fleabane resistant to Group 2 and 9 (glyphosate), and waterhemp resistant to Group 2, 5, 9 (glyphosate) and post-applied Group 14 and 27, are both found in Ontario and Quebec.[1,2,3] Canada fleabane can grow on various soils[4] and both weeds can emerge throughout the growing season, particularly during the spring and fall.[5] Canada fleabane can produce up to one million seeds per plant[6] which can travel up to 500 km through the air affecting fields each season.[7] Waterhemp is difficult to control once it passes four inches in height, requiring constant scouting. This weed can reach up to 12 feet in height while producing an average of almost 300,000 seeds per female plant.[8,9]

How to identify Canada fleabane.

1. Young leaves are hairy, round and oval with 2-3 notches in the margins and a round apex that later tapers.[10] The leaves are dull green, turning pale green at flowering.[11] The stem is erect and branched in the upper part.[10] The fall-emerged plants will grow in a rosette.

Source: BASF

2. Canada fleabane reproduces by seeds and, at the reproductive stage, has fuzzy, white-green flowers with a yellow centre. There are multiple flowers on each stem.[10]

Source: BASF

How to control Canada fleabane.

Information presented is for quick reference only. Always refer to product label.

	Glyphosate-tolerant corn	Roundup Ready 2 Xtend® soybeans	XtendFlex® soybeans	Enlist E3™ soybeans	Conventional/ IP soybeans
Pre-plant/ Pre-emergence	Integrity® herbicide + glyphosate	Eragon® LQ herbicide/ Integrity/Optill® herbicide + Engenia® herbicide	Eragon LQ/Integrity/Optill + Engenia	Eragon LQ/Integrity/Optill + metribuzin + glyphosate	Eragon LQ/Integrity + Conquest® LQ herbicide
Post-emergence	Marksman® herbicide + glyphosate	Engenia (up to 2nd trifoliate)	Engenia (up to 2nd trifoliate) or Liberty® 200 SN herbicide	Liberty 200 SN	–
Pre-harvest (if required)	–	Eragon LQ	Eragon LQ	Eragon LQ	Eragon LQ
Post-harvest	Distinct® herbicide	Distinct or Engenia	Distinct or Engenia	Distinct or Engenia	Distinct or Engenia

How to identify waterhemp.

1. Often confused for pigweed, waterhemp has smooth, hairless stems (left) while pigweed has thick hairs (redroot) or thin hairs (smooth or green) on the stem (right).

Source: BASF, ON, 2017

2. The first true leaves of waterhemp are long, narrow and glossy (left). The other *Amaranthus* weeds (except Palmer amaranth) have hairy, egg-shaped leaves (right).

Source: BASF, ON, 2017

How to control waterhemp.

Information presented is for quick reference only. Always refer to product label.

	Glyphosate-tolerant corn	Roundup Ready 2 Xtend® soybeans	XtendFlex® soybeans	Enlist E3™ soybeans	Conventional/IP soybeans
Pre-plant/ Pre-emergence	Integrity/Zidua® SC herbicide + Marksman[12,13] or	Zidua SC + Engenia + Eragon LQ/Integrity/Optill	Zidua SC + Engenia + Eragon LQ/Integrity/Optill	Zidua SC	Zidua SC (check with your grain buyer)[14]
Post-emergence	Marksman[12] + Armezon® PRO herbicide/Zidua SC	Engenia (up to 2nd trifoliate)	Engenia (up to 2nd trifoliate) or Liberty 200 SN	Liberty 200 SN or Zidua SC	Zidua SC (check with your grain buyer)[14]
Pre-harvest	–	Eragon LQ	Eragon LQ	Eragon LQ	Eragon LQ
Post-harvest	–	Distinct	Distinct	Distinct	Distinct

TECH TIP

Key management tips for both Canada fleabane and waterhemp:

- ***Use at least two effective modes of action for consistent control***
- ***Apply when they are small and actively growing***
- ***Use a higher water volume to ensure adequate coverage***
- ***Spray during the middle of the day***
- ***Control in each crop, each year (including fall applications)***

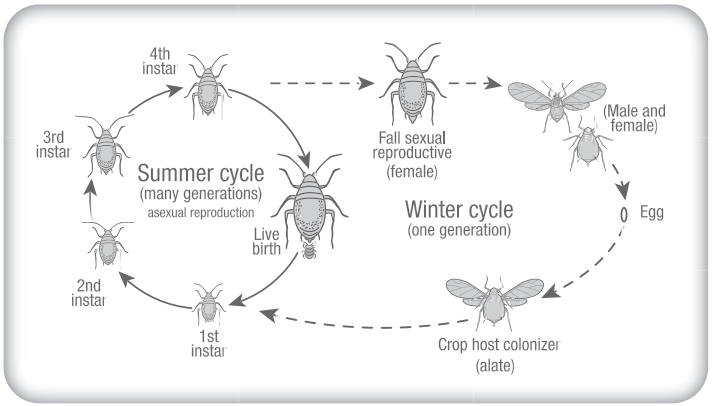
[1] Byker et al., 2013. [2] Schryver, 2017. [3] Bulletin d'information malherbologie No 8 du RAP, 2020. [4] Weaver, 2001. [5] Main et al., 2004 / Van Acker, 2014. [6] Tozzi and Van Acker, 2014. [7] Shields et al., 2006. [8] Biology and the management of waterhemp, 2017 [9] Sellers et al., 2017. [10] A Field Guide to Broadleaf Weeds. [11] Identification Guide to the Weeds of Quebec. [12] Can only be applied once per season. [13] Marksman can only be applied pre-emergence. [14] Talk to your grain buyer regarding maximum residue limits (MRLs) for markets around the world before applying to conventional or IP soybeans.

Know your enemies, including aphids.

Consider insect scouting your best defense.

Developing effective integrated pest management (IPM) strategies involves knowing what you're up against. Insects such as aphids have a very complex life cycle with several generations per year. They can migrate from nearby fields or from great distances via storm fronts. Aphid populations can grow to extremely high levels under favourable conditions.

Scouting is one of the most important management strategies for managing aphids and other insects because it allows for proper identification, evaluation of prevalence and severity and determination of thresholds for each pest.



Soybean aphid

Lady beetle

Got aphids? You also have choices.

There are numerous strategies to manage populations and ensure a healthy crop. You can rely on biological control, cultural practices and chemical options. In order to optimize these management strategies, it's also important to consider recent weather and scout your fields.

Seed treatments.

Some seed treatments contain an insecticide component that's registered for soybean aphids. However, their level of control may not be as long-lasting, providing only early-season protection from aphids. There are also products that can be applied as a seed-piece treatment or as a narrow band in-furrow for different kinds of aphids that affect potatoes.

Foliar insecticides.

It's preferable to use an insecticide that targets a pest specifically versus a broad-spectrum product. Targeted insecticides used in an integrated pest management strategy are the best way to reduce aphids and the chances of population rebound.

Economic thresholds.

When deciding whether or not to use an insecticide, it's important to follow economic thresholds. In soybeans, the threshold is 250 aphids/plant with increasing populations on 80% of plants. Damage is typically only of economic concern from R1 to R5. For potatoes, contact your local extension specialist or certified crop advisors for threshold recommendations specific to your area.

Natural enemies.

While scouting your crop for aphids, it's also a good idea to look out for natural enemies. They're beneficial because they help limit aphid populations from rapidly expanding. Some examples include lady beetles, lacewings and larva of hoverflies.

Get the mode of action that's right for your operation.

Knowing all of your mode-of-action options allows you to use multiple modes of effective action for resistance management in your operation.

Herbicides

Group	Mode of action	BASF products
1	Acetyl CoA Carboxylase (ACCase) Inhibitors	Poast® Ultra and Select®
2	ALS (Acetolactate Synthase) Inhibitors	Pursuit®, component in Clean Sweep®, Conquest® LQ and Optill®
3	Mitosis (Microtubule Assembly) Inhibitors	Prowl® H2O
4	Synthetic Auxins	Engenia®, component in Distinct® and Marksman®
5	Photosystem II Inhibitors (different binding site than 6 & 7)	Component in Conquest LQ and Marksman
6	Photosystem II Inhibitors (different binding site than 5 & 7)	Basagran® Forte, component in Clean Sweep
9	EPSP (5-enolpyruvylshikimate-3-phosphate) Synthase Inhibitor	Glyphosate[1]
10	Glutamine Synthetase Inhibitors	Liberty® 200 SN and Ignite®
14	Protoporphyrinogen Oxidase (PPO) Inhibitors	Eragon® LQ, component in Integrity® and Optill
15	Mitosis (Very Long Chain Fatty Acids Synthesis) Inhibitors	Frontier® Max, Zidua® SC, component in Armezon® PRO and Integrity
19	Inhibition of auxin transport	Component in Distinct
27	Carotenoid Biosynthesis (p-hydroxyphenyl pyruvate dioxygenase [HPPD]) Inhibitors	Armezon, component in Armezon PRO

Fungicides

Group	Mode of action	BASF products
3	Sterol Biosynthesis (Demethylation) Inhibitors	Caramba®, Cevya®, Sphaerex®, component in Cotegra®, Headline® AMP, Veltyma® and Veltyma DLX
7	Respiration (Complex II: Succinate-dehydrogenase) Inhibitors	Sercadis®, component in Cotegra and Priaxor®
11	Respiration (Complex III: Quinone Outside) Inhibitors	Headline, component in Headline AMP, Priaxor, Veltyma and Veltyma DLX
40	Cell Wall Biosynthesis (Cellulose Synthase)	Forum® and component in Zampro®
45	Respiration (Complex III: Quinone outside, stagmatellin binding type) Inhibitors	Component in Zampro
BM02	Biological (Microbial)	Serifel®

Insecticides

Group	Mode of action	BASF products
4	Nicotinic Acetylcholine Receptor Competitive Modulator	Titan®
9D	Chordotonal Organ TRPV Channel Modulator	Sefina®
30	GABA-Gated Chloride Channel Allosteric Modulator	Cimegra®

[1] Not a product of BASF.

Need product details? We've got them right here.

Key information to keep you moving.

ST = Seed treatment H = Herbicide F = Fungicide I = Insecticide

Information presented is for quick reference only. Always refer to product label.

Product	Armezon®	Armezon PRO	Basagran® Forte	Caramba®	Cevya®
Active ingredient(s)	Topramezone	Dimethenamid-P, Topramezone	Bentazon	Metconazole	Mefentrifluconazole
Concentration	336 g/L	630 g/L, 12.5 g/L	480 g/L	90 g/L	400 g/L
Type	H	H	H	F	F
Group	27	15, 27	6	3	3
Formulation	Liquid suspension	Emulsifiable concentrate	Liquid	Liquid	Suspension concentrate
WAMLEGS	L	E	L	L	L
Ground water volume L/ac, gal/ac[a]	40-80, 10-20	40, 10	Minimum 40, 10	Minimum 80, 20	Minimum 40, 10
Aerial application	No	No	No	Yes	Yes
Rainfast (hours)	Dependent on the glyphosate used	Dependent on the glyphosate used	6	1	Avoid application if heavy rain is forecast
REI (hours)	12	24	12	12[b]	12
Pre-harvest interval (days)	45 for corn harvest (silage, fodder or grain).	80 for corn; 45 for grazing or feeding treated corn forage, silage, fodder or grain to livestock.	Do not graze treated alfalfa or cut for hay within 20 days of application. See label for other crops.	30 for barley, oats, rye, wheat, and soybeans; 20 for field corn and popcorn; 18 for hand harvesting sweet corn; 7 for mechanical harvesting sweet corn.	7 for potatoes.
Storage	Protect from freezing.	Protect from freezing.	Protect from freezing.	Protect from freezing.	Protect from freezing.
Bulk density (g/cm^3)	1.12	1.12	1.19	1.05	1.15

[a] Use higher water volumes to ensure adequate coverage. [b] Except for hand harvesting corn (18 days) and hand-set irrigation in corn (3 days).

ST = Seed treatment H = Herbicide F = Fungicide I = Insecticide

Information presented is for quick reference only. Always refer to product label.

Product	Cimegra®	Clean Sweep®	Conquest® LQ	Cotegra®	Distinct®
Active ingredient(s)	Broflanilide	Imazethapyr, Bentazon	Imazethapyr, Metribuzin	Prothioconazole, Boscalid	Dicamba, Diflufenzopyr
Concentration	100 g/L	240 g/L, 480 g/L	240 g/L, 480 g/L	150 g/L , 250 g/L	50% a.e., 20% a.e.
Type	I	H	H	F	H
Group	30	2, 6	2, 5	3, 7	4, 19
Formulation	Suspension concentrate	Solution, Liquid	Solution, Suspension concentrate	Suspension concentrate	Wettable granule
WAMLEGS	L	L	L	L	W
Ground water volume L/ac, gal/ac[a]	Minimum 20, 5	80-120, 20-30	40-80, 10-20	Minimum 80, 20	40-80, 10-20
Aerial application	No	No	No	Yes	No
Rainfast (hours)	Avoid application if heavy rain is forecast	6	Avoid application if heavy rain is forecast	3	4
REI (hours)	N/A	12	12	24	12
Pre-harvest interval (days)	N/A	100 for soybeans.	100 for dry beans and soybeans. See label for other crops.	21 for dry beans and soybeans; 36 for canola.	See label.
Storage	Protect from freezing.	Protect from freezing.	Protect from freezing.	Protect from freezing.	Store in a cool, dry area.
Bulk density (g/cm^3)	1.06	1.11, 1.19	1.11, 1.16	1.15	0.61

[a] Use higher water volumes to ensure adequate coverage.

ST = Seed treatment H = Herbicide F = Fungicide I = Insecticide

Information presented is for quick reference only. Always refer to product label.

Product	Engenia®	Eragon® LQ – pre-plant	Eragon LQ – pre-harvest	Forum®	Frontier® Max
Active ingredient(s)	Dicamba	Saflufenacil	Saflufenacil	Dimethomorph	Dimethenamid-P
Concentration	600 g/L	342 g/L	342 g/L	500 g/L	720 g/L
Type	H	H	H	F	H
Group	4	14	14	40	15
Formulation	Solution	Water-based suspension concentrate	Water-based suspension concentrate	Suspension concentrate	Emulsifiable concentrate
WAMLEGS	L	L	L	L	E
Ground water volume L/ac, gal/ac[a]	Minimum 40, 10	40-80, 10-20	80, 20	20-40, 5-10 for concentrate, 90-650, 24-172 for dilute	40-80, 10-20
Aerial application	No	No	No	Yes	No
Rainfast (hours)	4	Dependent on the glyphosate used	Dependent on the glyphosate used	2	N/A
REI (hours)	12	12	12	12	24
Pre-harvest interval (days)	See label.	60 for barley, corn (field, sweet), soybeans, oats and wheat (spring, winter, durum).	2 for dry beans; 3 for soybeans. Do not graze or feed treated dry bean or soybean hay or straw to livestock. 3 for barley, canola, triticale and wheat. For barley, triticale and wheat, straw can be used as feed or grazed 3 days or more after a pre-harvest weed management application.	4 for potatoes.	40 for potatoes. See label for other crops.
Storage	Keep dry.	Protect from freezing.	Protect from freezing.	Protect from freezing.	Store in a cool, dry area.
Bulk density (g/cm^3)	1.24	1.15	1.15	1.15	1.13

[a] Use higher water volumes to ensure adequate coverage.

ST = Seed treatment H = Herbicide F = Fungicide I = Insecticide

Information presented is for quick reference only. Always refer to product label.

Product	Headline®	Headline AMP	Ignite®	ILEVO®	Integrity®
Active ingredient(s)	Pyraclostrobin	Metconazole, Pyraclostrobin	Glufosinate ammonium	Fluopyram	Saflufenacil, Dimethenamid-P
Concentration	250 g/L	55 g/L, 146 g/L	150 g/L	600 g/L	68 g/L, 600 g/L
Type	F	F	H	ST	H
Group	11	3, 11	10	7	14, 15
Formulation	Emulsifiable concentrate	Liquid	Solution	Suspension	Emulsifiable concentrate
WAMLEGS	E	L	L	N/A	E
Ground water volume L/ac, gal/ac[a]	Minimum 40, 10 (For potatoes: minimum 80, 20)	40-80, 10-20	Minimum 45, 12	Uniform distribution on the seed	40-80, 10-20
Aerial application	Yes	Yes	No	No	No
Rainfast (hours)	Avoid application if heavy rain is forecast	1	4	N/A	1
REI (hours)	12	12[c]	12	N/A	12
Pre-harvest interval (days)	3 for potatoes. See label for other crops.	Barley, oats, rye, triticale and wheat; do not apply later than end of flowering. 20 for field corn, popcorn and seed corn; 13 for hand harvesting sweet corn, 7 for mechanical harvesting sweet corn.	9 for dry beans.	N/A	100 for field corn; 60 for sweet corn and soybeans.
Storage	Protect from freezing.	Protect from freezing.	Protect from freezing.	Store in a cool, dry area.	Store in an unheated, dry area.
Bulk density (g/cm^3)	1.06	1.06	1.11	1.24	1.09

[a] Use higher water volumes to ensure adequate coverage. [c] Except for hand harvesting or hand detasseling corn (13 days) and hand-set irrigation in corn (1 day).

ST = Seed treatment H = Herbicide F = Fungicide I = Insecticide

Information presented is for quick reference only. Always refer to product label.

Product	Insure® Cereal FX4 + Relenya®		Liberty® 200 SN	Marksman®	Optill®
	Insure Cereal FX4	Relenya			
Active ingredient(s)	Triticonazole, Metalaxyl, Fluxapyroxad, Pyraclostrobin	Mefentrifluconazole	Glufosinate ammonium	Dicamba, Atrazine	Imazethapyr, Saflufenacil
Concentration	16.7 g/L, 10 g/L, 8.35 g/L, 16.7 g/L	400 g/L	200 g/L	132 g/L, 261 g/L	50.2%, 17.8%
Type	ST	ST	H	H	H
Group	3, 4, 7, 11	3	10	4, 5	2, 14
Formulation	Water-based suspension	Water-based suspension	Solution	Suspension	Water dispersible granule
WAMLEGS	N/A	N/A	L	L	W
Ground water volume L/ac, gal/ac[a]	See label	See label	Minimum 80, 20	40-80, 10-20	40-80, 10-20
Aerial application	No	No	No	No	No
Rainfast (hours)	Avoid application if heavy rain is forecast	N/A	4	Avoid application if heavy rain is forecast	3
REI (hours)	N/A	N/A	24	12	12
Pre-harvest interval (days)	N/A	N/A	86 for corn; 70 for soybeans; 60 for canola. 20 for grazing treated corn or soybean fields.	60 for corn. Do not graze or cut for fodder before crop maturity (ear emergence).	100
Storage	Store in a cool, dry area. Avoid freezing and temperatures above 30°C.	Protect from freezing.	Protect from freezing.	Store in a cool, dry area.	Store in a cool, dry area.
Bulk density (g/cm^3)	1.07	1.15	1.10	1.17	0.51

[a] Use higher water volumes to ensure adequate coverage.

ST = Seed treatment H = Herbicide F = Fungicide I = Insecticide

Information presented is for quick reference only. Always refer to product label.

Product	Poast® Ultra	Priaxor®	Prowl® H20	Pursuit®	Sefina®
Active ingredient(s)	Sethoxydim	Fluxapyroxad, Pyraclostrobin	Pendimethalin	Imazethapyr	Afidopyropen
Concentration	450 g/L	167 g/L, 333 g/L	455 g/L	240 g/L	50 g/L
Type	H	F	H	H	I
Group	1	7, 11	3	2	9D
Formulation	Emulsifiable concentrate	Liquid suspension	Microcapsule suspension	Solution	Emulsifiable concentrate
WAMLEGS	E	L	M	L	E
Ground water volume L/ac, gal/ac[a]	20-80, 5-20	40-80, 10-20	40-80, 10-20	40-160, 10-40	Minimum 40-80, 10-20
Aerial application	Yes	Yes	No	No	Yes
Rainfast (hours)	1	1	N/A	Avoid application if heavy rain is forecast	Avoid application if heavy rain is forecast
REI (hours)	12	12	24[d]	12	12
Pre-harvest interval (days)	70 for alfalfa and canola; 80 for dry beans, potatoes and soybeans.	21 for canola, corn and soybeans; 7 for sweet corn; 14 for alfalfa. See label for other crops.	100 for soybeans. See label for other crops.	100 for dry beans, imazethapyr-tolerant corn and soybeans. Do not graze treated crops or cut for hay.	0 for Crop Group 17 & 18 (alfalfa), 7 for potatoes and soybeans.
Storage	Store in a cool, dry area.	Protect from freezing.	Protect from freezing.	Protect from freezing.	Store in a cool, dry area.
Bulk density (g/cm^3)	1.00	1.16	1.18	1.11	1.03

[a] Use higher water volumes to ensure adequate coverage. [d] Except for application to soybeans, fruit trees and direct-seeded green onions in muck. For direct-seeded green onions in muck soils and transplanted leeks in muck soils, do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 5 days for scouting, 7 days for hand-set irrigation and 16 days for hand weeding.

ST = Seed treatment H = Herbicide F = Fungicide I = Insecticide

Information presented is for quick reference only. Always refer to product label.

Product	Select®	Sercadis®	Serifel®	Sphaerex®	Teraxxa® F4
Active ingredient(s)	Clethodim	Fluxapyroxad	*Bacillus amyloliquefaciens* strain MBI 600	Metconazole, Prothioconazole	Broflanilide, Triticonazole, Metalaxyl, Fluxapyroxad, Pyraclostrobin
Concentration	240 g/L	300 g/L	Not less than 5.5 x 10^{10} viable spores/g	112.5 g/L, 187.5 g/L	16.7 g/L, 16.7 g/L, 10 g/L, 8.35 g/L, 16.7 g/L
Type	H	F	F	F	I, F
Group	1	7	BM02	3	I: 30, F: 3, 4, 7, 11
Formulation	Emulsifiable concentrate	Suspension	Wettable powder	Emulsifiable concentrate	Water-based suspension
WAMLEGS	E	L	W	E	N/A
Ground water volume L/ac, gal/ac[a]	Minimum 60, 15	Minimum 40, 10	Minimum 20, 5	80, 20	See label
Aerial application	Yes	Yes	No	Yes	No
Rainfast (hours)	1	1	Avoid application if heavy rain is forecast	Avoid application if heavy rain is forecast	N/A
REI (hours)	12	12	4	24	N/A
Pre-harvest interval (days)	60 for canola. See label for other crops.	7 for potatoes.	0 for all crops.	30 for barley, oats, rye, triticale and wheat	N/A
Storage	Store in a cool, dry area.	Protect from freezing.	Store between 5°C and 25°C.	Store in a cool, dry area.	Protect from freezing.
Bulk density (g/cm^3)	0.96	N/A	0.2-1.2	1.03	1.08

[a] Use higher water volumes to ensure adequate coverage.

ST = Seed treatment H = Herbicide F = Fungicide I = Insecticide

Information presented is for quick reference only. Always refer to product label.

Product	Titan®	Veltyma®	Veltyma DLX	Zampro®	Zidua® SC
Active ingredient(s)	Clothianidin	Mefentrifluconazole, Pyraclostrobin	Metconazole, Mefentrifluconazole, Pyraclostrobin	Dimethomorph, Ametoctradin	Pyroxasulfone
Concentration	600 g/L	200 g/L, 200 g/L	90 g/L, 200 g/L, 200 g/L	225 g/L, 300 g/L	500 g/L
Type	I	F	F	F	H
Group	4	3, 11	3, 11	40, 45	15
Formulation	Suspension	Suspension concentrate	Liquid, Suspension concentrate	Suspension	Suspension concentrate
WAMLEGS	L	L	L	L	L
Ground water volume L/ac, gal/ac[a]	See label	40-80, 10-20	Minimum 80, 20	Minimum 80, 20	Minimum 40, 10
Aerial application	No	Yes	Yes	Yes	No
Rainfast (hours)	Avoid application if heavy rain is forecast	Avoid application if heavy rain is forecast	Avoid application if heavy rain is forecast	2	N/A
REI (hours)	12	12	12[b]	12	12
Pre-harvest interval (days)	N/A	7 for potatoes, 21 for canola, corn, soybeans, sugar beets and wheat. See label for other crops.	21 for corn.	4 for potatoes.	Not specified. Follow the application timing for the crop on the label. Harvest can occur at crop maturity.
Storage	Protect from freezing.	Protect from freezing.	Protect from freezing.	Protect from freezing.	Protect from freezing.
Bulk density (g/cm^3)	1.25	1.14	1.05, 1.14	1.11	1.21

[a] Use higher water volumes to ensure adequate coverage. [b] Except for hand harvesting corn (18 days) and hand-set irrigation in corn (3 days).

Quick reference guide for crop rotation.

Scan over your crop rotation options all in one place, so that you can be confident when planting next season.

Information presented is for quick reference only. Always refer to product label.

Herbicide	Armezon®	Armezon Pro	Basagran® Forte[2]	Clean Sweep®	Conquest® LQ	Distinct®	Engenia®[10]	Eragon® LQ (fall application)	Eragon LQ (spring application)	Frontier® Max
Alfalfa	FS[1]	FS	0 D	B	B	30 D				
Barley	B	B	<1 M	FS[4]	FS[4]	30 D		FS	CF[13]/FS	100 D[15]
Beans (kidney)	B	B		CF[5]/FS	CF[5]/FS	30 D			FS	0 D
Beans (white)	FS[1]	FS	0 D	CF[5]/FS	CF[5]/FS	30 D			FS	0 D
Canola	FS	FS	< 1 M	CF[5,6]/FS[6]	[8]	30 D		FS	FS	
Corn (field)	CF/FS	CF/FS	0 D	CF[5,7]/FS	CF[5,7]/FS	30 D		FS	CF[13]/FS	0 D
Corn (seed)	B	B	0 D	B	B	30 D				0 D[16]
Corn (sweet)	B	B	< 1 M	B	B	30 D		FS	CF[13]/FS	0 D
Oats	B	B	< 1 M	B	[9]	30 D		FS	CF[13]/FS	100 D[15]
Potatoes	FS[1]	FS	< 1 M	B	B	30 D				FS
Rye	B	B	<1 M[3]	B	[9]	30 D				100 D[15]
Soybeans	FS[1]	FS	0 D	CF[5]/FS	CF[5]/FS	30 D	0 D[11]	FS	CF[13,14]/FS	0 D
Sugar beets	B	B	< 1 M	B	[8]	30 D				
Wheat (spring)	FS	FS	< 1 M	FS	FS[9]	30 D		FS	CF[13]/FS	100 D[15]
Wheat (winter)	4 M	4 M	< 1 M	100 D[5]/FS	100 D[5,9]/FS	30 D		FS	CF[13]/FS	100 D[15]
Other Crops	B	B		B	B	30 D	120 D	[12]		11 M[15]

FS = Can be planted the following season. CF = Can be planted in case of crop failure. D = Days M = Months
B = Conduct a field bioassay (a test strip grown to maturity) to confirm crop safety prior to seeding any rotational crops.

Information presented is for quick reference only. Always refer to product label.

Herbicide	Ignite®	Integrity®	Liberty® 200 SN	Marksman®[2]	Optill®	Poast® Ultra	Prowl® H20	Pursuit®	Select®	Zidua® SC (fall application)	Zidua SC (spring application)
Alfalfa	0 D			10 M	B	0 D	B	B	0 D[20]	B	B
Barley	70 D	100 D	70 D	10 M	FS[4]		B	FS[4]		B	11 M[21]
Beans (kidney)	0 D[17]				FS		CF[13,19]/FS[19]	CF[5]/FS	0 D	B	B
Beans (white)	0 D[17]			10 M	FS		CF[13,19]/FS[19]	CF[5]/FS	0 D	B	B
Canola	0 D		0 D	22 M	B	0 D	B	B	0 D	B	12 M[21]
Corn (field)	0 D	0 D	0 D	B	FS		CF[13,19]/FS	CF[5,7]/FS		FS	CF[13]/FS
Corn (seed)				4 M	B		B	B		B	B
Corn (sweet)		0 D			B		B	B		B	B
Oats	70 D	100 D	70 D	10 M	B		B	B		B	11 M[21]
Potatoes	0 D			22 M	B	0 D	B	B	0 D	FS	FS
Rye	70 D	100 D	70 D	10 M[3]	B		B	B		B	B
Soybeans	0 D		0 D	10 M	CF[13]/FS	0 D	CF[13,19]/FS	CF[5]/FS		FS	CF[13]/FS
Sugar beets		22 M[18]		22 M	B	0 D	B	B		B	B
Wheat (spring)	70 D	100 D	70 D	10 M	FS		B	FS		B	FS[21]
Wheat (winter)	70 D	100 D	70 D	10 M	100 D[5,13]/FS		B	100 D[5]/FS		B	4 M
Other Crops	120 D	11 M	120 D		B	30 D	B	B	30 D	B	B

[1] If the maximum seasonal application rate was 37 ml/ha. [2] None listed on label. Information based on OMAFRA's 2018 Publication 75A, Guide to Weed Control: Field Crops. [3] Applies to fall rye only. [4] Spring barley only. [5] Soil preparation for re-planting should be no deeper than 10 cm. [6] Imazethapyr-tolerant canola only. [7] Only imazethapyr-tolerant corn can be used in case of crop failure. [8] Can be sensitive to a component of Conquest LQ (Sencor® herbicide) and may be injured if planted in soil treated with Conquest LQ during the year of application or the following crop year. [9] Fall seeded or seeded as a cover crop can be injured when seeded within the same season as the application of a component of Conquest LQ (Sencor herbicide). [10] If using for perennial rosette control in summerfallow or perennial weed control in summerfallow and stubble, refer to the label for recropping restrictions. [11] Roundup Ready 2 Xtend® soybeans and XtendFlex® soybeans only. [12] All crops can be planted the second spring after application. [13] A second application of the product cannot be made in the rescue crop. [14] Rate restrictions apply. Soybeans can only be grown as plant back crops provided that a maximum use rate of 73 ml/ha was used in the previous crop. [15] In mineral soil, if applied to muck soils, a field bioassay must be done. [16] Inbred lines grown in Southern Ontario only. [17] Not grown for seed. [18] 22 months at the 1.1 L/ha rate, 11 months for lower rates. [19] See label for crop dependent restrictions. [20] Seedling alfalfa. [21] At the total seasonal rate of 120-240 ml/ha.

Mixing order for tank mixes.

Ensure tank-mix compatibility by using the proper mixing order:

Wettable powders, flowable

Distinct® herbicide, Optill® herbicide, Serifel® fungicide

Agitate[1], **A**nti-foaming compounds, buffers

[1] Do not over-agitate at any point in the process.

Microcapsule suspension

Prowl® H2O herbicide

Liquid and soluble

Armezon® herbicide, Basagran® Forte herbicide, Caramba® fungicide, Cevya® fungicide, Cimegra® insecticide, Clean Sweep® herbicide, Conquest® LQ herbicide, Cotegra® fungicide, Engenia® herbicide, Eragon® LQ herbicide, Forum® fungicide, Headline® AMP fungicide, Ignite® herbicide, Liberty® 200 SN herbicide, Marksman® herbicide, Priaxor® fungicide, Pursuit® herbicide, Sercadis® fungicide, Titan® insecticide, Veltyma® fungicide, Veltyma DLX, Zampro® fungicide, Zidua® SC herbicide

Emulsifiable concentrates

Armezon PRO, Frontier® Max herbicide, Headline, Integrity® herbicide, Poast® Ultra herbicide, Sefina® insecticide, Select® herbicide, Sphaerex® fungicide

Glyphosate

(high load, containing adjuvant)

Surfactants

Merge® adjuvant

Always remember:

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

Always consult the label prior to mixing.

TECH TIP

WAMLEGS does not apply when tank mixing Select herbicide with Liberty 200 SN herbicide in LibertyLink® canola. The following order should be used:

1. *Ammonium sulphate*
2. *Amigo® adjuvant*
3. *Liberty 200 SN*
4. *Select*

***Click here** for more details.*

Big operation? Get it in bulk.

Explore our bulk packaging options for select products this season. Designed for mobility and ease of storage, our totes, shuttles and drums are convenient solutions for high-volume users.

Totes:

Available products	Volume	Acres/tote
Integrity® Powered by **Kixor**® Herbicide	450 L	1,000 to 1,500 (corn rate) 3,000 (soybean rate)
Liberty® **200 SN** Herbicide	400 L	400
Marksman® Herbicide	450 L	250 to 450
Merge® Surfactant	400 L	Rate will vary depending on tank mix
Prowl® **H2O** Herbicide	450 L	506

Shuttles:

Available products	Volume	Acres/shuttle
Armezon® **PRO** Herbicide	121.5 L	300
Basagran® **Forte** Herbicide	130 L	145 to 185
Engenia® Herbicide	121.2 L	300 to 600

[1] Image shown is not representative of the totes for Liberty® 200 SN herbicide and Merge® surfactant.

450 L Tote[1]

128 L Shuttle

Drums:

Available products	Volume	Acres/drum
Ignite® Herbicide	100 L	50 to 100
Teraxxa® **F4** Seed Treatment	120 L	300 ml per 100 kg seed

TECH TIP

When using a pump with any bulk containers, ensure the pump is calibrated and properly agitate prior to use. Refer to product label or speak to your BASF AgSolutions® Retail Representative for more information.

Submit all bulk orders to BASF retailers by December 1, 2022.

For more information about products available in totes, shuttles and drums, or if you have full/partial totes left over at the end of the season, contact your BASF **AgSolutions** Retail Representative or call **AgSolutions** Customer Care at 1-877-371-BASF (2273).

BASF Ag Rewards

2023 Eastern Canada Grower Program

For a quick way to calculate your possible rewards, visit our online rewards calculator at **agsolutions.ca/eastrewardscalculator**.

Offer Period:
October 1, 2022 – September 30, 2023

To be eligible for the Baseline, Bonus and Elite Rewards, growers must purchase at least $5,000 in BASF Crop Protection Products.[1] Purchases must include products from at least two segments, with a minimum of 40 acres from each segment.

		Segment 1			Segment 2				Segment 3			Segment 4	Segment 5
		Cimegra® and Titan® insecticides	Integrity® herbicide	Eragon® LQ and Optill® herbicides	Marksman® herbicide	Engenia® herbicide	Liberty® 200 SN herbicide	Basagran® Forte, Conquest® LQ, and Pursuit® herbicides, and Sefina® insecticide	Armezon® PRO herbicide	Zidua® SC herbicide	Frontier® Max and Prowl® H20 herbicides, and Forum® fungicide	Cevya®, Headline® AMP, Priaxor®, Veltyma® and Veltyma DLX fungicides	Caramba®, Cotegra®, Sercadis®, Serifel® and Sphaerex® fungicides
Baseline Rewards	Purchase from all five segments	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%
	Purchase from four segments	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%
	Purchase from three segments	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
	Purchase from two segments	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Bonus Rewards	Corn Herbicide Bonus[2] Purchase a minimum of 40 acres each of Engenia and/or Marksman and Armezon PRO.				Add 2%	Add 2%			Add 2%				
	Soybean Herbicide Bonus[2] Purchase a minimum of 40 acres from a minimum of 2 of the three segments (Segment 1, 2 & 3)		Add 2%	Add 2%		Add 2%	Add 2%			Add 2%			
	Fungicide Bonus[2] Purchase a minimum of 200 acres from any product (or combination of products) in Segments 4 and/or 5.											Add 3%	Add 3%
	Integrity Bonus[2] Purchase a minimum of 160 acres of Integrity.		Add 7%										
MAXIMUM TOTAL SAVINGS		12%	21%	14%	14%	16%	14%	12%	14%	14%	12%	15%	15%

Elite Bonus

Purchase $100,000 or more of BASF Products (including InVigor® hybrid canola) and receive a 1% reward on all BASF Products (excluding InVigor).

[1] Qualifying BASF Crop Protection Products includes InVigor hybrid canola. In order for InVigor and Liberty 200 SN herbicide to qualify as a BASF Product, growers are required to sign, or have already signed, a Liberty and Trait Agreement (LTA), and operate in full compliance as per the requirements outlined within the signed LTA (see Section 5 of the Official Terms and Conditions for more details).

[2] See Section 5 of the Official Terms and Conditions on the pages to follow for additional details on the Bonus Rewards.

BASF Ag Rewards - 2023 Eastern Canada Grower Program

Official Terms and Conditions

1. **Offer Period:** The 2023 Grower Rewards Program [(Eastern Canada)] (the "**Offer**") is administered by BASF Canada Inc. o/a BASF Canada ("**BASF**") and begins on October 1, 2022 at 7:00 a.m. Eastern Time ("**ET**") and ends on September 30, 2023 at 11:59 p.m. ET (the "**Offer Period**").

2. **Eligibility:** The Offer is open to Canadian growers who: (i) reside in Ontario, New Brunswick, Nova Scotia, Newfoundland and Labrador, Prince Edward Island, British Columbia (excluding the Peace River Region of British Columbia) and Quebec (each, an "**Eligible Territory**"); (ii) are the owner, operator or designated representative of a farm located in an Eligible Territory (the "**Farm**"); and (iii) have reached the legal age of majority in their province of residence (each, an "**Eligible Participant**"). These Official Terms and Conditions (the "**Terms**") govern this Offer and must be followed by all Eligible Participants at all times. By agreeing to participate in the Offer, each Eligible Participant is signifying his/her agreement to unconditionally comply with, and be legally bound by, these Terms. This Offer is not available to buying groups, relationship groups (including but not limited to any BASF reward group) or any individual or entity other than an Eligible Participant as defined above.

   Note: BASF will grandfather in any buying group that existed prior to October 1, 2020. BASF will consider family relationships going forward if the family relationship is a direct family relationship: immediate family member (spouse, mother, stepmother, foster mother, father, step father, foster father, grandparent, step grandparent, foster grandparent, sister, half-sister, step sister, brother, half-brother, step brother or children, step children, foster children, grandchildren, step grandchildren, foster grandchildren).

3. **How to Qualify for the Offer:** To qualify for the Offer, an Eligible Participant must fully comply with these Terms (as determined by BASF in its sole and absolute discretion) and must, during the Offer Period, make purchases from an authorized retailer located in an Eligible Territory that consists of $5,000 CAD or more (exclusive of fees and taxes, calculated using the Suggested Retail Price ("**SRP**"), of the following BASF Products (the "**BASF Product(s)**"):
   - **Herbicides:** ARMEZON®, ARMEZON PRO, ASSIGNMENT®, BASAGRAN®, BASAGRAN FORTE, CLEAN SWEEP®, CONQUEST® LQ, DISTINCT®, ENGENIA®, ERAGON® LQ, FRONTIER® MAX, INTEGRITY®, LIBERTY® 200 SN, MARKSMAN®, OPTILL®, OUTLOOK®, POAST® ULTRA, PROWL® H2O, PURSUIT®, SELECT® and ZIDUA® SC
   - **Fungicides:** ACROBAT®, CARAMBA®, CEVYA®, COTEGRA®, FORUM®, HEADLINE®, HEADLINE AMP, LANCE®, PRIAXOR®, SERCADIS®, SERIFEL®, SPHAEREX®, TWINLINE®, VELTYMA®, VELTYMA DLX and ZAMPRO®
   - **Seed:** INVIGOR® HYBRID CANOLA
   - **Insecticides:** CIMEGRA®, SEFINA® and TITAN®

   For information on the SRP of the BASF Products listed in these Terms, please contact your authorized retailer located in an Eligible Territory. To confirm whether a retailer is an authorized retailer of BASF products, please call us toll-free at 1-877-371-BASF (2273).

   All decisions regarding whether or not an Eligible Participant has qualified for the Offer will be made by BASF in its sole and absolute discretion and shall be considered to be final and binding without right of appeal.
   Additionally, Eligible Participants must earn a minimum Total Reward (as defined by Section 8 below) of $50 CAD to qualify for the Offer.

4. **How to Qualify for a Baseline Reward:** To be eligible to earn a Baseline Reward (a "**Baseline Reward**"), an Eligible Participant must: (i) qualify for the Offer in accordance with Section 3; and (ii) purchase (from an authorized retailer located in an Eligible Territory) a minimum of forty (40) acres of qualifying reward products (each a "**Qualifying Reward Product**") in any two (2) or more of the five (5) BASF segments (each, a "**Segment**") as set-out below. For the avoidance of any doubt: (i) there is a minimum purchase threshold of Qualifying Reward Products per Segment; and (ii) an Eligible Participant must purchase Qualifying Reward Products from at least two (2) Segments. The percentage of the Baseline Reward that an Eligible Participant is eligible to receive off the SRP, exclusive of taxes, will be determined as follows:

	Segment 1			Segment 2				Segment 3			Segment 4	Segment 5
(See details for minimum purchase threshold)	Cimegra and Titan insecticides	Integrity herbicide	Eragon LQ and Optill herbicides	Marksman herbicide	Engenia herbicide	Liberty 200 SN herbicide	Basagran Forte, Conquest LQ, and Pursuit herbicides, and Sefina insecticide	Armezon PRO herbicide	Zidua SC herbicide	Frontier Max and Prowl H20 herbicides, and Forum fungicide	Cevya, Headline AMP, Priaxor and Veltyma and Veltyma DLX fungicides	Caramba, Cotegra, Sercadis Serifel and Sphaerex fungicides
Purchase from all five Segments	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%
Purchase from four Segments	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%
Purchase from three Segments	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Purchase from two Segments	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%

Note: The qualifying acres for Pursuit herbicide in segment 2 will be 39.

The following table shows the BASF brand to which each Qualifying Reward Product belongs. Each Qualifying Reward Product shown in this table will each count as one (1) Qualifying Reward Product for the purposes of this Offer:

BASF Brands	Qualifying Reward Product
ACROBAT, FORUM	FORUM
LANCE, COTEGRA	COTEGRA

BASF Brands	Qualifying Reward Product
ERAGON LQ, ERAGON	ERAGON LQ
FRONTIER MAX, OUTLOOK	FRONTIER MAX

BASF Brands	Qualifying Reward Product
HEADLINE, HEADLINE AMP	HEADLINE AMP

5. **How to Qualify for a Bonus Reward:** An Eligible Participant who qualifies for the Offer in accordance with Section 3 and for a Baseline Reward in accordance with Section 4 is eligible to earn one (1) or more bonus rewards (each, a "**Bonus Reward**"), as follows:

Bonus Reward	Requirements to Qualify: NOTE: All orders/purchases outlined herein must be made through an authorized retailer located in an Eligible Territory. All Bonus Rewards are calculated using the SRP.
Corn Herbicide Bonus	To qualify, during the Offer Period an Eligible Participant must: • Purchase a minimum of forty (40) acres of Engenia herbicide and/or Marksman herbicide. • Purchase a minimum of forty (40) acres of Armezon PRO herbicide
Fungicide Bonus	To qualify, during the Offer Period an Eligible Participant must: • Purchase a minimum of two hundred (200) acres of a combination of any products within segments 4 & 5 of Section 4

Bonus Reward	Requirements to Qualify: NOTE: All orders/purchases outlined herein must be made through an authorized retailer located in an Eligible Territory. All Bonus Rewards are calculated using the SRP.
Integrity Bonus	To qualify, during the Offer Period an Eligible Participant must: • Purchase a minimum of one hundred and sixty (160) acres of Integrity herbicide
Soybean Herbicide Bonus	To qualify, during the Offer Period an Eligible Participant must: • Purchase a minimum of forty (40) acres from a minimum of 2 of the 3 segments (Segment 1, 2 & 3)

IMPORTANT NOTE REGARDING INVIGOR

In order for InVigor® hybrid canola to qualify as a BASF Product, the Eligible Participant must sign, have in full force and effect and continuously comply with the Liberty® and Trait Agreement (the "**LTA**") respecting the purchase and use of LibertyLink® Seed (as those terms are defined in the LTA). This Offer is void on all products if any products are used on seed, or plants grown from seed, derived from certified InVigor hybrid canola seed or if InVigor or Liberty 200 SN herbicide is used contrary to the LTA.

To obtain information about the LTA, and/or to complete an LTA, Eligible Participants should call **AgSolutions®** Customer Care at 1-877-371-BASF (2273) or email **basf@basf-agsolutions.ca**. Signed LTA Forms must be promptly submitted by the Eligible Participant's authorized retailer located in an Eligible Territory either by mail, fax or online via BASF's Secure Retail Website.

The percentage of the Bonus Reward(s), if any, that will be added to an Eligible Participant's Baseline Reward will be determined as follows:

		Segment 1			Segment 2				Segment 3			Segment 4	Segment 5
	(See details for minimum purchase threshold)	Cimegra and Titan insecticides	Integrity herbicide	Eragon LQ and Optill herbicides	Marksman herbicide	Engenia herbicide	Liberty 200 SN herbicide	Basagran Forte, Conquest LQ, and Pursuit herbicides, and Sefina insecticide	Armezon PRO herbicide	Zidua SC herbicide	Frontier Max and Prowl H20 herbicides, and Forum fungicide	Cevya, Headline AMP, Priaxor and Veltyma and Veltyma DLX fungicides	Caramba, Cotegra, Sercadis, Serifel and Sphaerex fungicides
Baseline Rewards	Purchase from all five Segments	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%
Baseline Rewards	Purchase from four Segments	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%
Baseline Rewards	Purchase from three Segments	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Baseline Rewards	Purchase from two Segments	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Bonus Rewards	Corn Herbicide Bonus				Add 2%	Add 2%			Add 2%				
Bonus Rewards	Soybean Bonus		Add 2%	Add 2%		Add 2%	Add 2%			Add 2%			
Bonus Rewards	Fungicide Bonus											Add 3%	Add 3%
Bonus Rewards	Integrity Bonus		Add 7%										
	Max Total Savings	**12%**	**21%**	**14%**	**14%**	**16%**	**14%**	**12%**	**14%**	**14%**	**12%**	**15%**	**15%**

By way of example only: If an Eligible Participant qualifies for the Offer in accordance with Section 3 and purchased 160 acres of Integrity + 200 acres of Caramba +100 acres of Engenia, the Eligible Participant would be eligible for:
- 5% Baseline Reward on Integrity, Engenia and Caramba.
- 2% Soybean Bonus on Integrity and Engenia.
- 7% Integrity Bonus on Integrity.
- 3% Fungicide Bonus on Caramba

By way of example only: If an Eligible Participant qualifies for the Offer in accordance with Section 3 and purchased 100 acres of Eragon LQ + 100 acres of Engenia, the Eligible Participant would be eligible for:
- 3% Baseline Reward on Eragon LQ and Engenia.
- 2% Soybean Herbicide Bonus on Eragon LQ and Engenia.

By way of example only: If an Eligible Participant qualifies for the Offer in accordance with Section 3 and purchased 200 acres of Integrity, the Eligible Participant would not be eligible for a Baseline Reward, nor any Bonus Reward(s).

By way of example only: If an Eligible Participant qualifies for the Offer in accordance with Section 3 and purchased 200 acres of Headline AMP + 200 acres of Caramba, the Eligible Participant would be eligible for a Baseline Reward of 3% on Headline AMP and a Baseline Reward of 3% on Caramba. In addition, the Eligible Participant would be eligible for the Fungicide Bonus and would receive a Bonus Reward of 3% on Headline AMP and Caramba purchases.

6. **How to Qualify for an Elite Reward:** An Eligible Participant who (i) qualifies for the Offer in accordance with Section 3; (ii) qualifies for a Baseline Reward in accordance with Section 4; and (iii) makes purchases during the Offer Period from an authorized retailer located in an Eligible Territory that consist of $100,000 CAD or more (exclusive of fees and taxes) of BASF Products is eligible to earn an additional reward related to all Elite Qualifying Products (as defined below) purchased by the Eligible Participant from an authorized retailer located in an Eligible Territory during the Offer Period (the "**Elite Reward**"). The value of the Elite Reward is calculated as 1% of the SRP (exclusive of fees and taxes) of the Elite Qualifying Products purchases which qualify for the Elite Reward (the "**Elite Reward Percentage Value**"). The following are each an Elite Qualifying Product (the "**Elite Qualifying Products**"):
   a. **Herbicides:** ARMEZON, ARMEZON PRO, ASSIGNMENT, BASAGRAN, BASAGRAN FORTE, CLEAN SWEEP, CONQUEST LQ, DISTINCT, ENGENIA, ERAGON LQ, FRONTIER MAX, INTEGRITY, LIBERTY 200 SN, MARKSMAN, OPTILL, OUTLOOK, POAST ULTRA, PROWL H2O, PURSUIT, SELECT and ZIDUA SC
   b. **Fungicides:** ACROBAT, CANTUS®, CARAMBA, CEVYA, COTEGRA, FORUM, HEADLINE, HEADLINE AMP, LANCE, PRIAXOR, SERCADIS, SERIFEL, SPHAEREX, TWINLINE, VELTYMA, VELTYMA DLX and ZAMPRO
   c. **Insecticides:** CIMEGRA, SEFINA and TITAN

7. **Reward Percentage Value and Bonus Reward Calculation:** BASF will determine the reward percentage value (the "**Reward Percentage Value**") that an Eligible Participant is eligible to receive pursuant to these Terms. The Reward Percentage Values outlined in Sections 4, 5 and 6 represent the percentage that BASF will use to calculate the amount of the Baseline Reward (and, as applicable, Bonus Reward(s)) (collectively, the "**Total Reward on Qualifying Reward Products**") that an Eligible Participant is eligible to receive as a reward, exclusive of taxes, on each case of the applicable Qualifying Reward Product(s) purchased in accordance with these Terms. The Elite Bonus Reward outlined in Section 6 represents the percentage that BASF will use to calculate the amount that an Eligible Participant is eligible to receive as a reward, exclusive of taxes, on each case of the applicable Elite Qualifying Products purchased in accordance with these Terms (the "**Total Reward on Elite Qualifying Products**").

8. The calculation of Total Reward on Qualifying Reward Products and the Total Reward on Elite Qualifying Products (collectively, the "**Total Reward**") will be based on SRP in the Eligible Territories multiplied by the corresponding Reward Percentage Values and Elite Reward Percentage Value for the applicable Qualifying Reward Products and Elite Qualifying Products, respectively. Retailers have complete autonomy to determine the resale pricing for the products described herein and may choose to sell such products at prices which are different from those suggested by BASF. Total Rewards will be calculated on a per acre basis, using all Qualifying Reward Products and Elite Qualifying Products purchased, including partial cases.

   Prior to qualifying for the Offer, the Eligible Participant will be required to accept and agree to be legally bound by these Terms. In addition, the Eligible Participant will have the opportunity to agree to the terms and conditions contained within the BASF Grower Privacy Consent and the BASF Commercial Electronic Messages Consent (collectively, the "**Consent Forms**"). Copies of the Consent Forms can be obtained by contacting **AgSolutions** Customer Care at 1-877-371-BASF (2273). An Eligible Participant may subsequently withdraw his/her consent to receive electronic communications at anytime without affecting their eligibility for this Offer.

   If an Eligible Participant completes all of the foregoing steps in accordance with these Terms (as determined by BASF in its sole and absolute discretion), then the Eligible Participant will be eligible to qualify for the Offer and to receive a Total Reward. **There is a limit of one (1) Total Reward per Farm**.

9. **Products and Related Conditions:** For the purposes of the Offer, the BASF Products will have the following label rates:

Qualifying Product	Application Rate†	Unit Size	Acres/Unit
ACROBAT		Case	80
ARMEZON		Case	160
ARMEZON PRO		Case	40
BASAGRAN		Jug	13
BASAGRAN FORTE		Case	29
BANVEL II		Case	40
CANTUS		Case	160
CARAMBA		Case	40
CEVYA		Case	80
CIMEGRA		Case	60
CLEAN SWEEP		Case	20
CONQUEST LQ		Case	40
COTEGRA		Case	70
DISTINCT		Case	80

Qualifying Product	Application Rate†	Unit Size	Acres/Unit
ENGENIA		Case	40
ERAGON		Case	120
ERAGON LQ		Case	160
FORUM		Case	50
FRONTIER MAX		Case	60
HEADLINE AMP		Case	40
INTEGRITY		Case	60
INVIGOR HYBRID CANOLA	10 acres	Bag	-
LANCE		Case	25
LIBERTY 200 SN		Case	20
MARKSMAN		Case	20
OPTILL		Case	120
OUTLOOK		Case	52
POAST ULTRA		Case	80

Qualifying Product	Application Rate†	Unit Size	Acres/Unit
PRIAXOR		Case	160
PROWL H20		Case	20
PURSUIT		Case	39
SEFINA		Case	80
SELECT		Case	60
SERCADIS		Case	20
SERIFEL		Case	60
SPHAEREX		Case	80
TITAN		Case	44
VELTYMA		Case	80
VELTYMA DLX		Case	20
ZAMPRO		Case	51
ZIDUA SC		Case	80

† Seeding rate varies depending on variety and are subject to change, please visit **agsolutions.ca** for updates.

10. **Verification:** BASF reserves the right, in its sole and absolute discretion, to require proof of identity and/or eligibility (in a form acceptable to BASF): (i) for the purposes of verifying an Eligible Participant's eligibility to participate in this Offer; (ii) for the purposes of verifying the legitimacy of any Data (as defined below in Section 12b), BASF Products/Qualifying Reward Products/Elite Qualifying Products and/or other information; and/or (iii) for any other reason BASF deems necessary, in its sole and absolute discretion, for the purposes of administering this Offer in accordance with BASF's interpretation of the letter and spirit of these Terms. Failure of an Eligible Participant to provide such proof of compliance with these Terms in writing to the complete satisfaction of BASF may result in disqualification in the sole and absolute discretion of BASF. All determinations regarding whether or not an Eligible Participant is eligible to earn a Total Reward in accordance with these Terms (and, if so, the amount of such Total Reward) will be made by BASF in its sole and absolute discretion. If it is discovered by BASF that any Eligible Participant (or any person or entity purporting to be an Eligible Participant) has attempted to use multiple names, multiple identities and/or any other means not expressly sanctioned by these Terms to participate in or disrupt this Offer, then he/she may be disqualified from the Offer in the sole and absolute discretion of BASF.

11. **Notification and Confirmation:** If an Eligible Participant has been deemed by BASF, in its sole and absolute discretion, to be eligible to qualify for the Offer and to receive a Total Reward, then the Eligible Participant may be notified by a representative of BASF. If an Eligible Participant: (i) cannot accept (or is unwilling to accept) the Total Reward for any reason; and/or (ii) is determined to be in violation of BASF's interpretation of the letter and/or spirit of these Terms (all as determined by BASF in its sole and absolute discretion); then the Total Reward shall, in the sole and absolute discretion of BASF, be forfeited in its entirety and the Eligible Participant will be disqualified from participating in the Offer.

12. **Additional Conditions:**
   a. This Offer does not apply to any Elite Qualifying Products and/or Qualifying Reward Products and/or BASF Products that are returned for any reason whatsoever or for any Elite Qualifying Products and/or Qualifying Reward Products and/or BASF Products purchased for resale.
   b. Retailers are required to submit customer transactional data relating to orders and purchase transactions (the "**Data**") on behalf of Eligible Participants to BASF. Offer eligibility will be determined by BASF, in its sole and absolute discretion, using this Data. All Data must be submitted by the retailer to BASF by no later than **October 9, 2023** in order for such Data to be eligible for the purposes of this Offer.
   c. If an Eligible Participant who has earned a Total Reward pursuant to this Offer returns any BASF Products/Qualifying Reward Products/Elite Qualifying Products to a retailer after September 30, 2023, then the Eligible Participant shall be required to promptly return or repay the value of the Total Reward (or the applicable portion of the Total Reward) by contacting **AgSolutions** Customer Care at 1-877-371-BASF (2273). Failure to do so will result in a deduction from the Eligible Participant's future year's program reward(s). BASF also reserves the right to seek remedies and damages to the fullest extent permitted by law.

13. **General Conditions:** Please allow a minimum of eight (8) weeks for the Total Reward to be received from the time the Data is sent to BASF by a retailer. All Data is subject to verification and will be considered void if it cannot be verified to the complete satisfaction of BASF. The Total Reward must be accepted as awarded and is not transferable or assignable. BASF reserves the right, in its sole and absolute discretion, to substitute the Total Reward or a component thereof with a reward of equal or greater retail value.

14. This Offer is subject to all applicable federal, provincial and municipal laws. This Offer is void where prohibited or restricted by law. The decisions of BASF with respect to all aspects of this Offer are final and binding on all Eligible Participants without right of appeal.

15. BASF, its parent companies, associated and affiliated companies, agent suppliers, advertising/promotion agencies and any other entity involved in the development, production, administration or fulfillment of the Offer, and each of their respective officers, directors, employees, agents, representatives, successors and assigns (collectively, the "**Released Parties**") will not be liable for: (i) any late, lost, misdirected, delayed, incomplete, incompatible or misdirected Data and/or other information (all of which is void); (ii) any failure(s), malfunction(s) or other problem(s) of any nature whatsoever; (iii) the failure of any order, purchase transaction, Data and/or other element(s) of this Offer to be received, captured or recorded for any reason whatsoever; (iv) anyone being incorrectly and/or mistakenly identified as an Eligible Participant, a Total Reward recipient or eligible Total Reward recipient; and/or (v) any combination of the above.

16. BASF reserves the right, in its sole and absolute discretion, to withdraw, suspend or amend this Offer in any way, or to amend these Terms in any way, without prior notice or obligation, in the event of: (i) any cause beyond the reasonable control of BASF that interferes with the proper conduct of this Offer as contemplated by these Terms, including, without limitation, any error, problem, tampering, unauthorized intervention, fraud or failure of any kind whatsoever; (ii) any accident, printing, administrative, or other error of any kind; and/or (iii) for any other reason that BASF deems necessary, in its sole and absolute discretion, to ensure that this Offer is conducted in accordance with BASF's interpretation of the letter and spirit of these Terms. Any attempt to undermine the legitimate operation of this Offer in any way (as determined by BASF in its sole and absolute discretion) may be a violation of criminal and civil laws and should such an attempt be made, BASF reserves the right to seek remedies and damages to the fullest extent permitted by law.

17. BASF reserves the right to require that an Eligible Participant sign BASF's form of declaration and release form prior to being confirmed as the recipient of the Total Reward.

18. By participating in this Offer and accepting the Total Reward, each Eligible Participant (i) confirms compliance with these Terms; (ii) acknowledges acceptance of the Reward (as awarded); and (iii) releases the Released Parties from any and all liability in connection with this Offer, the Eligible Participant's participation herein and/or the awarding and use/misuse of the Total Reward or any portion thereof.

19. If an Eligible Participant who is eligible to receive a Total Reward is deemed to be in violation of these Terms (as determined by BASF in its sole and absolute discretion), then the Eligible Participant may, in the sole and absolute discretion of BASF, be disqualified (and, if disqualified, will forfeit all rights to the Total Reward).

20. BASF reserves the right, in its sole and absolute discretion, to adjust any of the dates, timeframes and/or other Offer mechanics stipulated in these Terms, to the extent deemed necessary by BASF, for purposes of verifying compliance by any Eligible Participant or other information with these Terms, or as a result of any problems, or in light of any other circumstances which, in the opinion of BASF, in its sole and absolute discretion, affect the proper administration of the Offer as contemplated in these Terms, or for any other reason.

21. In the event of any discrepancy or inconsistency between the terms and conditions of these Terms and disclosures or other statements contained in any Offer-related materials and/or any instructions or interpretations of these Terms given by any representative of BASF, the terms and conditions of these Terms shall prevail, govern and control to the fullest extent permitted by law.

22. By participating in this Offer, each Eligible Participant expressly consents to BASF, its agents and/or representatives, storing, collecting, sharing and using any personal information submitted for the purpose of administering the Offer, managing, fulfilling and improving the offer and in accordance with BASF's privacy policy (**https://www.basf.com/en/tools/legal/data-protection.html**). This section does not limit any other consent(s) that an individual may provide to BASF or others in relation to the collection, use and/or disclosure of their personal information.

23. BASF reserves the right, in its sole and absolute discretion, to take whatever measures or actions it deems necessary to help ensure that the Offer is administered in accordance with BASF's interpretation of the letter and spirit of these Terms. **ANY INDIVIDUAL OR ENTITY DEEMED BY BASF AT ANY TIME TO BE IN VIOLATION OF BASF'S INTERPRETATION OF THE LETTER AND/OR SPIRIT OF THESE TERMS FOR ANY REASON WHATSOEVER IS SUBJECT TO DISQUALIFICATION IN THE SOLE DISCRETION OF BASF**.

24. The invalidity or unenforceability of any provision of these Terms shall not affect the validity or enforceability of any other provision. In the event that any provision is determined to be invalid or otherwise unenforceable or illegal, these Terms shall otherwise remain in effect and shall be construed in accordance with the terms as if the invalid or illegal provision were not contained herein.

25. To the fullest extent permitted by applicable law, all issues and questions concerning the construction, validity, interpretation and enforceability of these Terms or the rights and obligations of Eligible Participants, BASF or any of the other Released Parties in connection with the Offer will be governed by and construed in accordance with the domestic laws of the Province of Ontario and the federal laws of Canada applicable therein, without giving effect to any choice of law or conflict of law rules or provisions that would cause the application of any other jurisdiction's laws. The parties hereby consent to the exclusive jurisdiction and venue of the courts located in Ontario in any action to enforce (or otherwise relating to) these Terms or relating to this Offer.

Always read and follow label directions.

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ALWAYS READ AND FOLLOW PESTICIDE LABEL DIRECTIONS. It is a violation of violation of federal law to use any pesticide product other than in accordance with its labeling. NOT ALL formulations of dicamba, glyphosate or glufosinate are approved for in-crop use with products with XtendFlex® Technology. ONLY USE FORMULATIONS THAT ARE SPECIFICALLY LABELED AND APPROVED FOR SUCH USES. Contact the Pest Management Regulatory Agency with any questions about the approval status of dicamba herbicide products for in-crop use with Roundup Ready 2 Xtend® soybeans or products with XtendFlex® Technology.

Products with XtendFlex® Technology contains genes that confer tolerance to glyphosate, glufosinate and dicamba. Glyphosate will kill crops that are not tolerant to glyphosate. **Dicamba** will kill crops that are not tolerant to dicamba. **Glufosinate** will kill crops that are not tolerant to glufosinate. Contact your Bayer retailer, refer to the Bayer Technology Use Guide, or call the technical support line at 1-888-283-6847 for recommended Roundup Ready® Xtend Crop System weed control programs.

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Roundup Ready 2 YIELD® TECHNOLOGY

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