WESTERN CANADA AGRICULTURAL SOLUTIONS GUIDE

2024

BASF
We create chemistry

Our top two priorities? Innovation and you.

Farming is a big job. With the challenges of unpredictable weather, pests, weeds and the changing climate, it's a tougher job than ever. There's also the added complexity of adopting new technology and innovations to match an industry that is constantly advancing.

At BASF, it's our priority to back up the multifaceted role farmers play in Canadian agriculture with a continued investment in research and the development of new innovations. We want you to have the tools you need to succeed.

With the 2024 Agricultural Solutions Guide, you have every product we sell at your fingertips—and trusted agronomic advice and knowledgeable support to go with it. Your job is tough enough already; you shouldn't have to manage all the challenges on your own.

Take advantage of the information in this guide to move forward into a successful 2024 growing season.

BASF
We create chemistry

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- Crop Solutions
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Be confident knowing your crop is backed by innovative solutions.

With the BASF portfolio, you can be confident that you're equipped to handle every aspect of the season, from seeding to harvest. Our innovative solutions can help you start the season with clean fields, manage pests throughout it, and end the season with a healthy, high-yielding crop.

A lineup full of potential and performance.

Good solutions are stronger together.

When it comes to performance, it's not worth compromising. With the BASF lineup of canola solutions, it's a seamless transition from seeding to harvest—and now more than ever with a new era in InVigor® Health for 2024. **InVigor Health L358HPC** offers close to a 10% yield improvement over InVigor Health L258HPC, first-generation clubroot resistance, great standability and patented Pod Shatter Reduction technology.

InVigor®

Protect your yield against major diseases.

New and innovative fungicide for pulses.

Designed for Western Canada with the unique activity of Revysol®, **RevyPro®** fungicide is a new and innovative pulse fungicide with proven efficacy on major key diseases, including resistant strains. (Click here.)

RevyPro®
Fungicide

Control chewing insects with a ground-breaking mode of action.

Insecticide protection against chewing insects in potatoes.

Cimegra® insecticide is an innovative solution for difficult-to-control, chewing insects in potatoes, powered by the ground-breaking active ingredient broflanilide. Along with in-furrow control of wireworms, Cimegra is now registered for foliar use on Colorado potato beetles for a fast knockdown and reliable control. (Click here.)

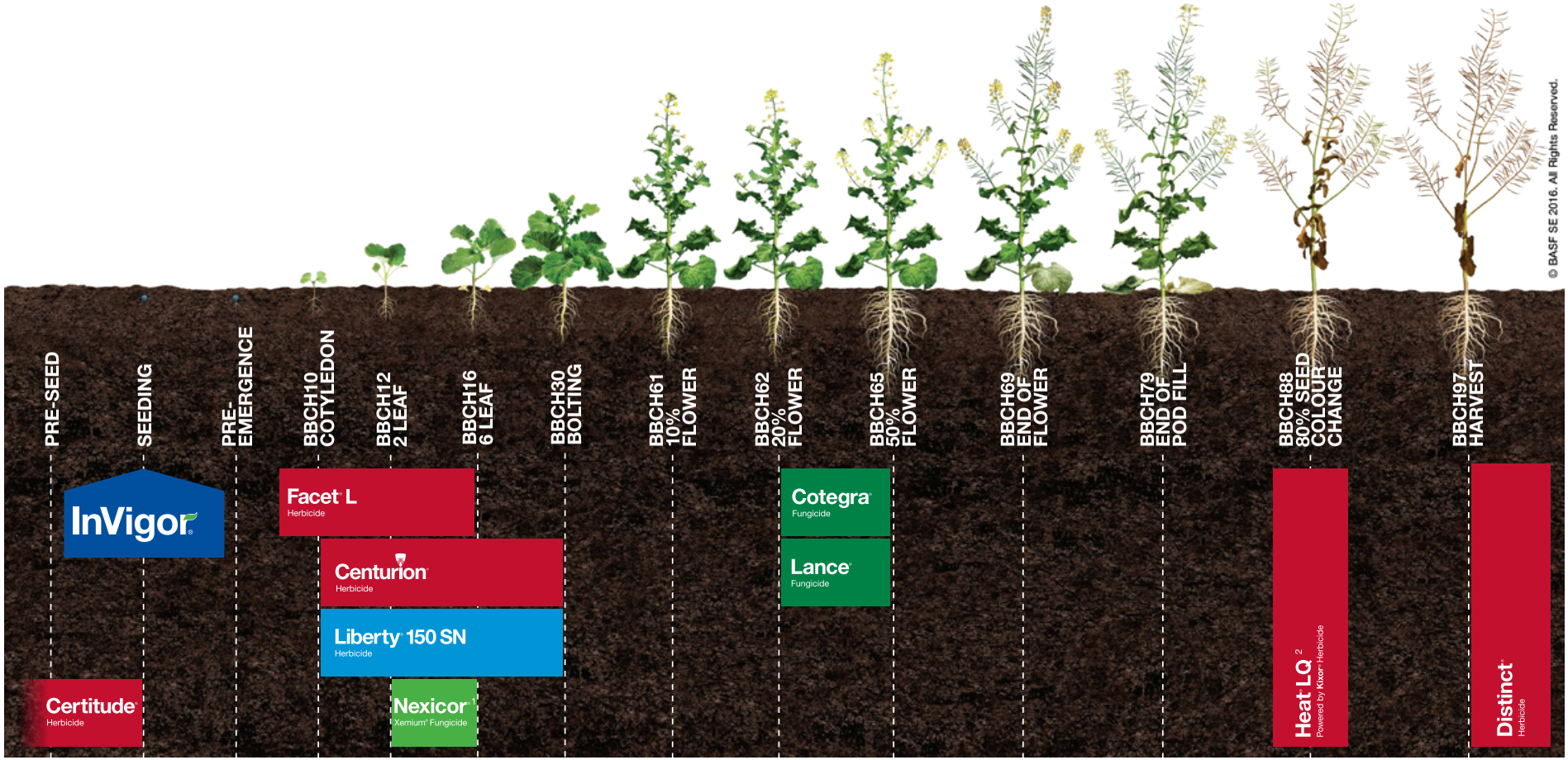
Cimegra®
Insecticide

Learn more about these solutions, as well the entire BASF product offering in this guide, conveniently available in print, and as an interactive, searchable version at **www.agsolutions.ca**.

BASF Crop Solutions

- Canola
- Lentils
- Peas
- Soybeans
- Wheat
- Barley
- Oats
- Corn
- Potatoes
- Crop protection storage guidelines

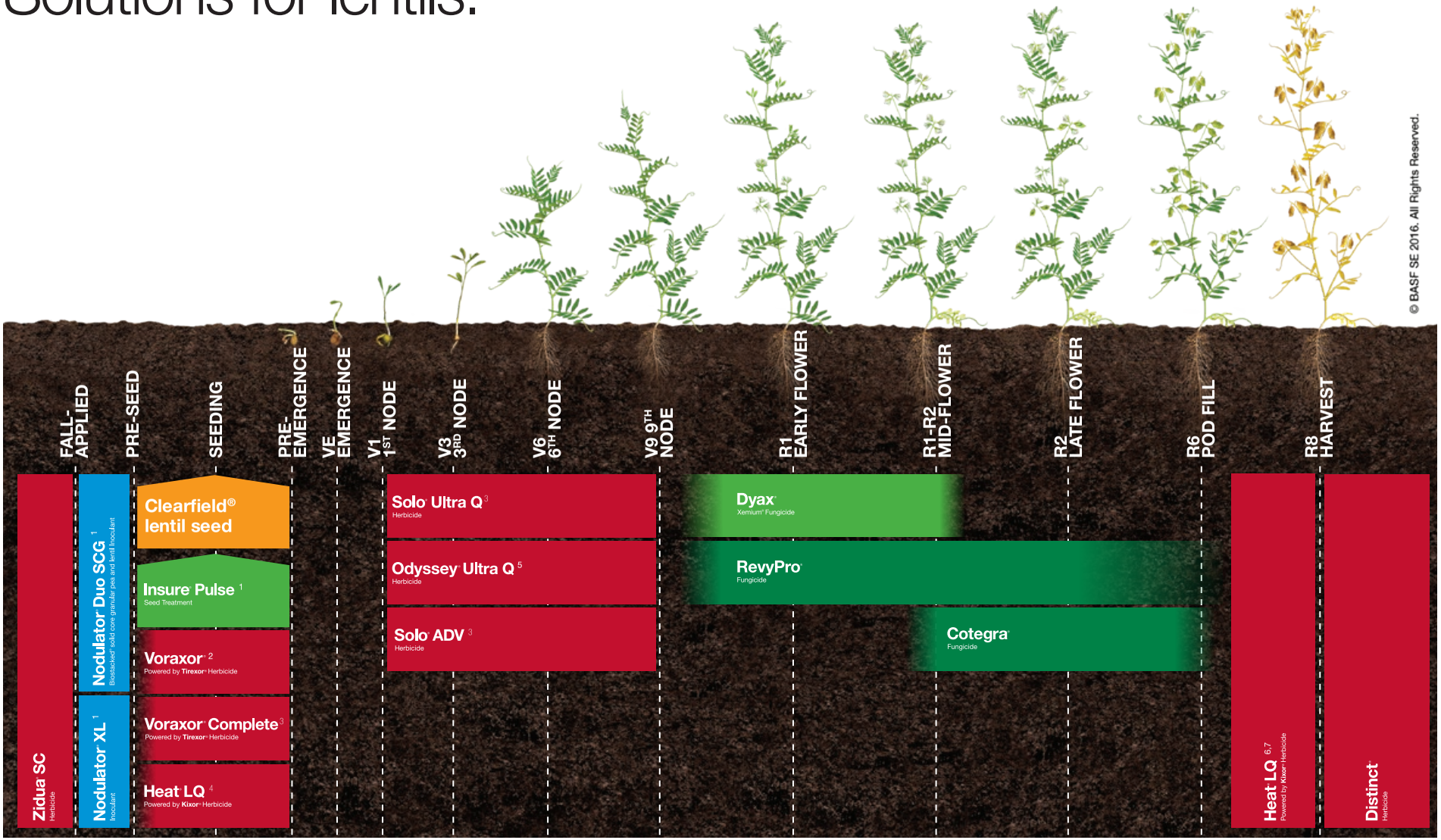
Solutions for canola.



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 blackleg control, Nexicor® fungicide may be tank mixed with herbicide application.
[2] Apply when the crop has reached 80% seed colour change.

Solutions for lentils.



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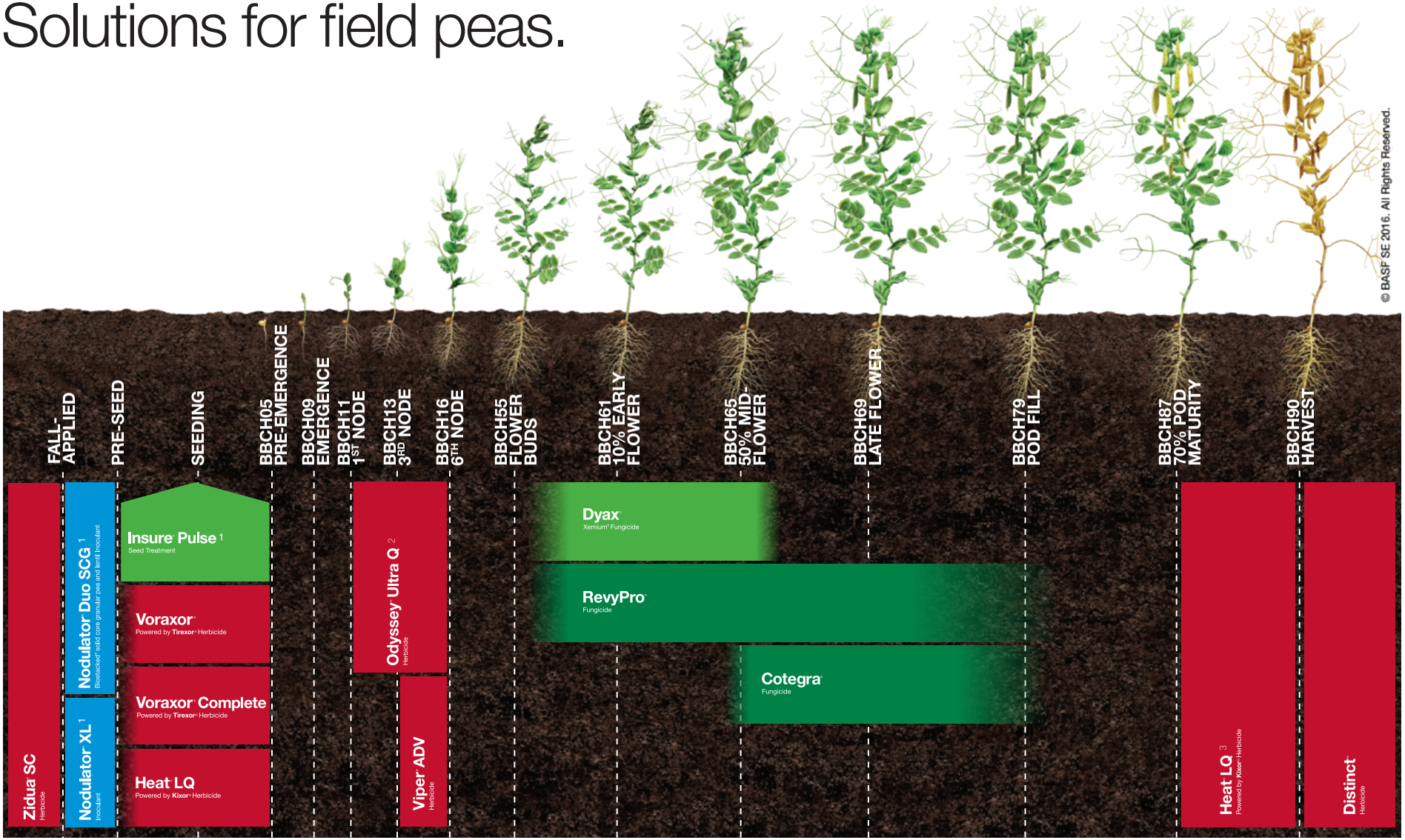
Refer to individual product pages and product labels on **agsolutions.ca** or call **AgSolutions®** Customer Care at 1-877-371-BASF (2273) for detailed staging information.

[1] For details on compatibility between seed treatments and inoculants, see the Lentil Seed Applied Pesticide Compatibility Information document available on **agsolutions.ca**, call **AgSolutions** Customer Care at 1-877-371-BASF (2273) or contact your BASF **AgSolutions** Grower or Retail Representative. [2] Rate restrictions apply. Do not use rate higher than 19.5 ml/ac (48 ml/ha) or crop injury could result. [3] Registered for use on **Clearfield** lentils in the Prairie Provinces and Peace River Region and Interior of British Columbia. [4] Rate restrictions apply. DO not use rate higher than 21.5 ml/ac (53 ml/ha) or crop injury could result. [5] Registered for use on **Clearfield** lentils and only in the Prairie Provinces. [6] Apply when bottom 15% of pods are mature and brown with ripened seeds. [7] BASF supports the use of Heat® LQ herbicide for pre-harvest use on red lentil varieties only. DO NOT apply Heat LQ pre-harvest to green lentils. Please check with your grain buyer prior to the pre-harvest application of Heat LQ in red lentils.

Solutions for field peas.



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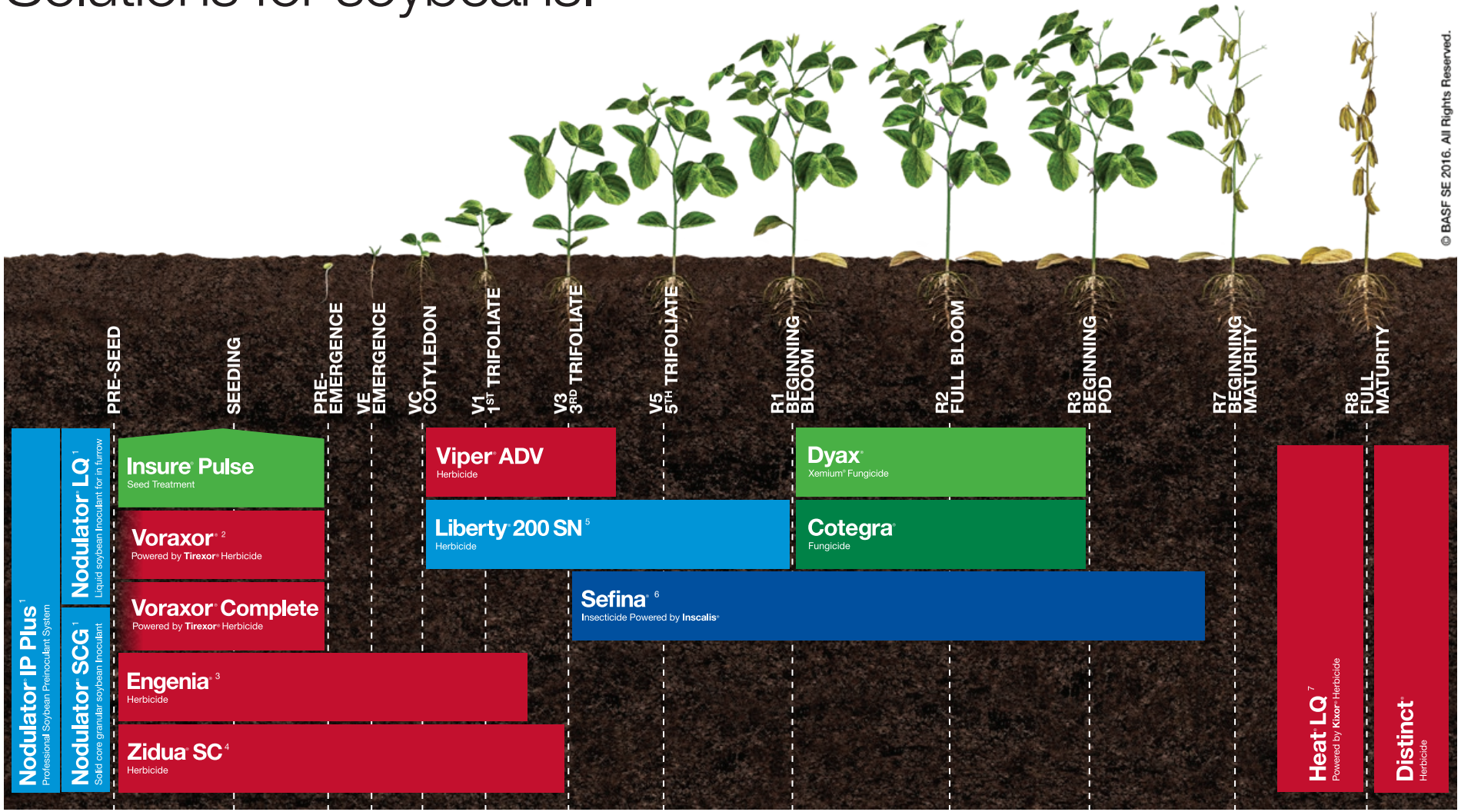
[1] For details on compatibility between seed treatments and inoculants, see the Pea Seed Applied Pesticide Compatibility Information document available on **agsolutions.ca**, call **AgSolutions** Customer Care at 1-877-371-BASF (2273) or contact your BASF **AgSolutions** Grower Representative.
[2] Registered for use only in the Prairie Provinces.
[3] Apply when majority of pods are brown (70 to 80%).

Solutions for soybeans.



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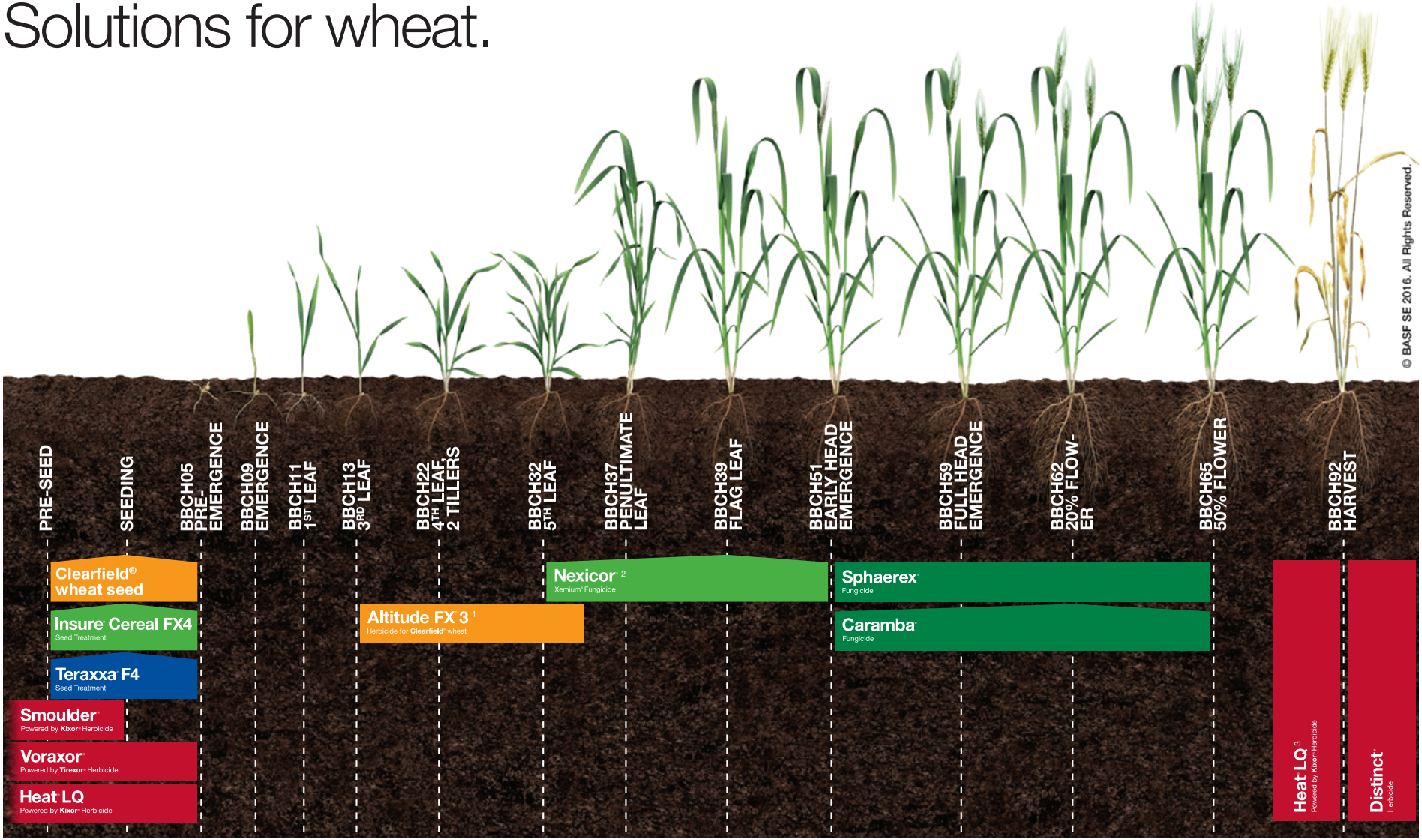
[1] For details on compatibility between seed treatments and inoculants, see the Soybean Seed Applied Pesticide Compatibility Information document available on **agsolutions.ca**, call **AgSolutions** Customer Care at 1-877-371-BASF (2273) or contact your BASF **AgSolutions** Grower Representative. [2] Rate restrictions apply. Do not use higher than 40.5 ml/ac (100 ml/ha) or crop injury could result. [3] Apply by ground ONLY to dicamba-tolerant soybeans. Soybean varieties that are not designated as dicamba-tolerant will be damaged or destroyed by this treatment. [4] Talk to your grain buyer before applying to conventional or IP soybeans. [5] Apply to glufosinate ammonium tolerant soybean only. [6] Application during the crop blooming period may be made only in the evening when most bees are not foraging. [7] Apply when stems are green to brown, pods are mature (yellow, brown) and 80 to 90% of leaves have dropped.

Solutions for wheat.



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[1] Registered for use on **Clearfield** wheat and **Clearfield** Plus wheat varieties only.
[2] **Plant Health Benefits** are obtained with Nexicor® fungicide application at flag-leaf. While Nexicor can be applied between stem elongation and early head emergence (GS 31-55), research suggests that applying at flag-leaf (GS 37-39) helps maximize yield potential in cereals.
[3] Apply at the hard dough stage with less than 30% moisture. A thumbnail impression should remain on seed.

Solutions for barley.

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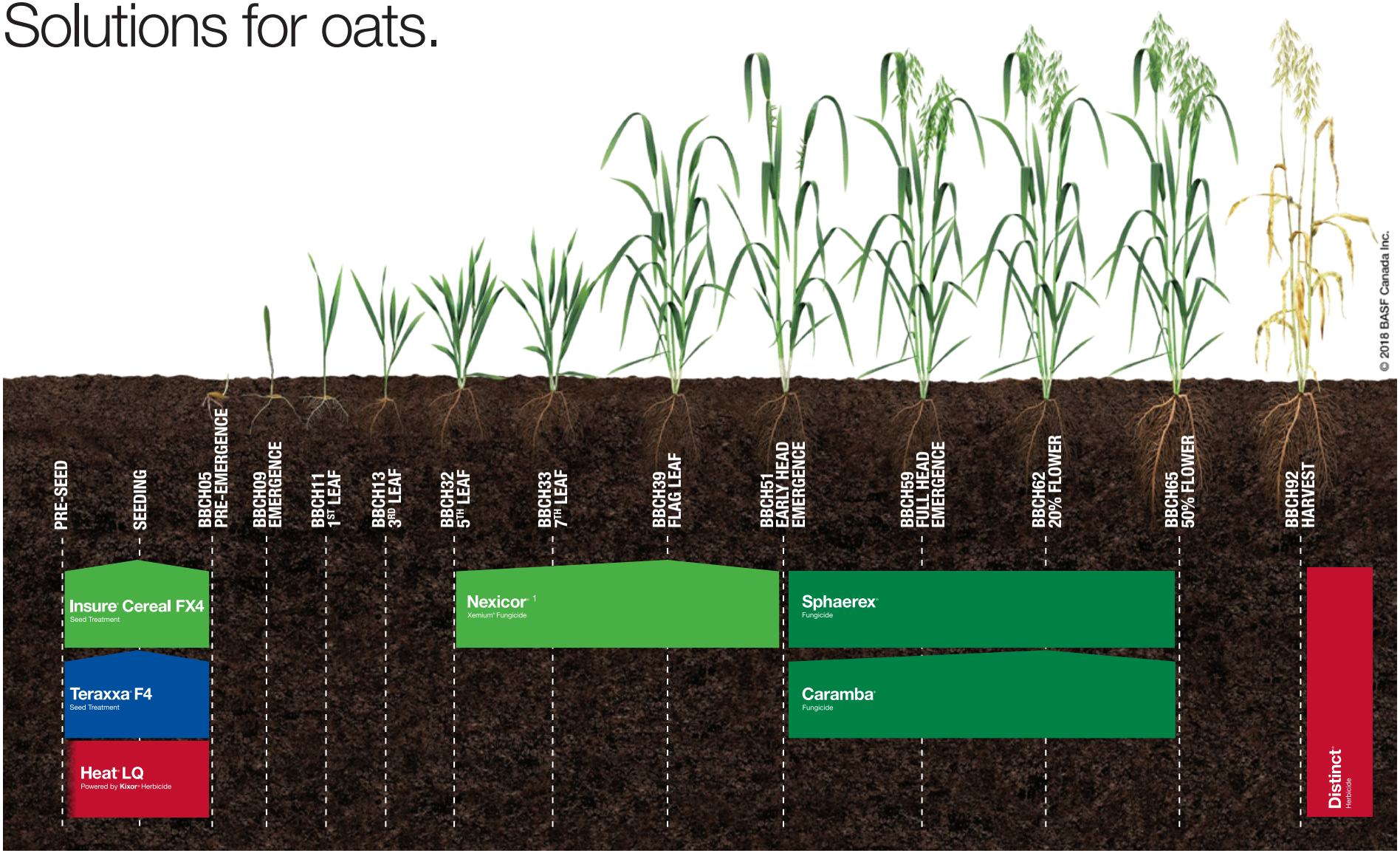
[1] **Plant Health Benefits** are obtained with Nexicor® fungicide application at flag-leaf. While Nexicor can be applied between stem elongation and early head emergence (GS 31-55), research suggests that applying at flag-leaf (GS 37-39) helps maximize yield potential in cereals.

[2] Apply at the hard dough stage with less than 30% moisture. A thumbnail impression should remain on seed.

[3] At this time, BASF supports the use of Heat® LQ herbicide for pre-harvest on feed barley only.

Solutions for oats.



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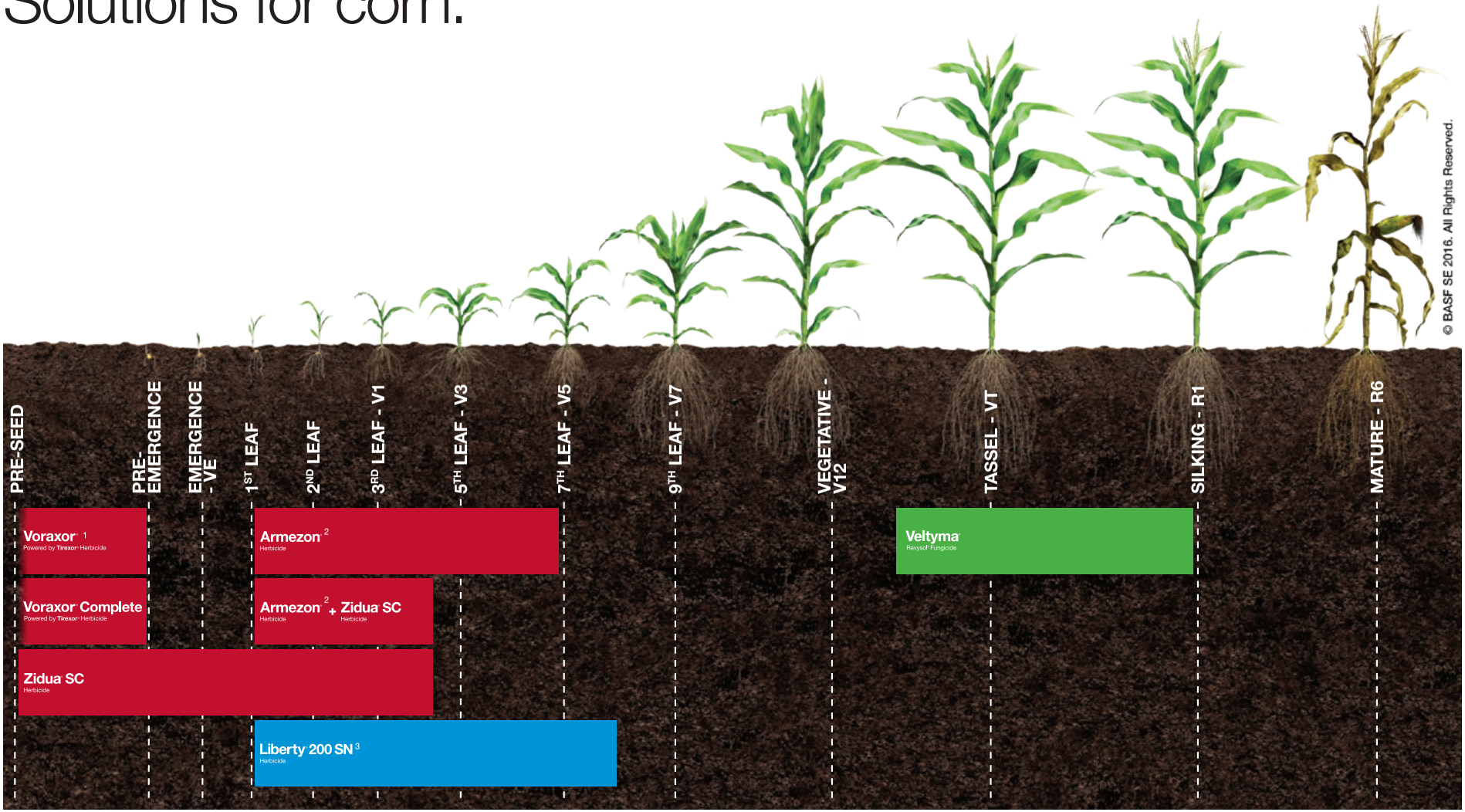
[1] **Plant Health Benefits** are obtained with Nexicor® fungicide application at flag-leaf. While Nexicor can be applied between stem elongation and early head emergence (GS 31-55), research suggests that applying at flag-leaf (GS 37-39) helps maximize yield potential in cereals.

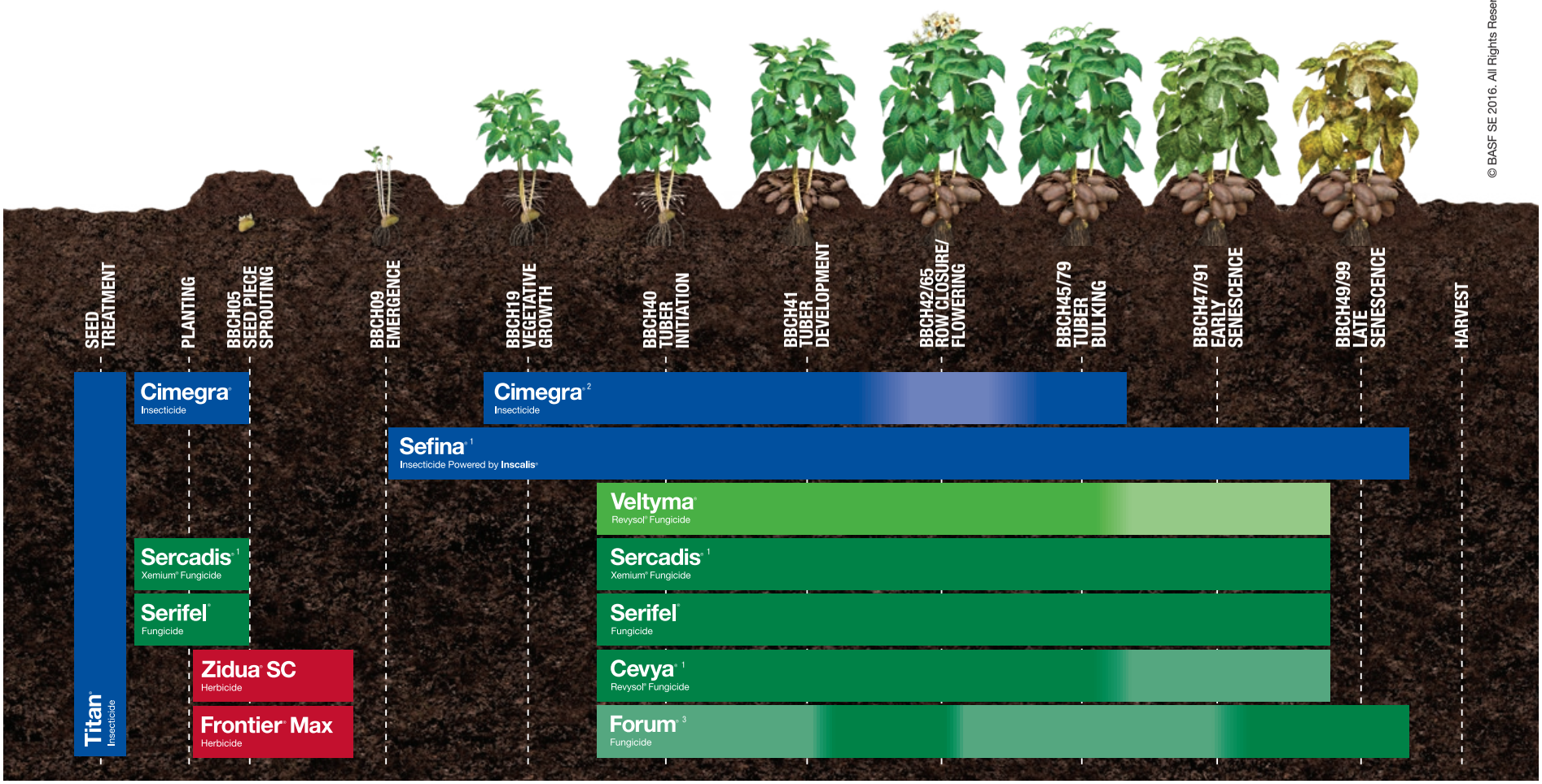
Solutions for corn.



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] Rate restrictions apply. Do not use higher than 40.5 ml/ac (100 ml/ha) or crop injury could result.
[2] In tank mix with glyphosate. See Armezon® herbicide label for other tank-mix partners and application timings.
[3] Apply to glufosinate ammonium tolerant corn only.

Solutions for potatoes.



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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 for Cimegra® insecticide .

Darker areas reflect recommended application periods for Veltyma® Revysol® fungicide.

Darker areas reflect recommended application period for Forum® fungicide.

[1] Do not exceed the total number of sequential applications or total number of applications per season as stated by specific product labels. Application during the crop blooming period may be made only in the evening when most bees are not foraging. [2] Toxic to bees. Avoid application during the crop blooming period. If applications must be made during the crop blooming period, restrict applications to evening when most bees are not foraging. When using managed bees for pollination services, DO NOT apply during the crop blooming period. [3] To reduce the risk of the development of fungicide resistance, tank mix Forum fungicide with other fungicides. Do not apply more than three (3) applications per season.

BASF crop protection product storage guidelines.

Requires Heated Storage

Herbicides
Altitude FX® 3
Altitude FX 2
Armezon®
Basagran® Forte
Certitude®
Heat® Complete
Heat LQ
Liberty®
Odyssey® NXT
Odyssey Ultra Q
Pursuit®
Smoulder®
Solo® ADV
Solo Ultra Q
Viper® ADV
Voraxor®
Voraxor Complete
Zidua® SC

Fungicides
Caramba®
Cevya®
Cotegra®
Dyax®
Forum®
Headline®
Nexicor®
Priaxor®
RevyPro®
Sercadis®
Sphaerex®
Twinline®
Veltyma®
Zampro®

Seed Treatments
Teraxxa® F4
Insure® Cereal FX4
Insure Pulse

Insecticides
Cimegra®
Nealta®
Titan®

Adjuvant
Merge®

Liquid Fertilizer
BASF 28% UAN

The products listed above need to be protected from freezing. Heated storage and handling requires storing the product in a cool, dry, ventilated area. They should be separated from feed or foodstuffs, and **temperature should be maintained generally between 5ºC to 20ºC**. For individual products, please call your BASF representative or **AgSolutions®** Customer Care for more specific storage requirements.

Does NOT Require Heated Storage

Herbicides
Basagran
Centurion®
Distinct®
Engenia®
Facet® L
Frontier® Max
Poast® Ultra

Insecticide
Sefina®

Fungicides
Cantus®
Lance®

Adjuvant
Assist®

Liquid products don't always work as intended if they freeze. For some liquid products, it will be required to thaw them out entirely and thoroughly mix or shake them. This does not, however, guarantee proper functionality, performance or efficacy of the product, even if they do not indicate heated storage on the MSDS or Product Label. If you have access to heated storage, it is best to avoid freezing all remaining inventory of liquid crop protection products when possible.

BASF Seed

- InVigor® hybrid canola
  - Overview
  - 2024 InVigor lineup
- Clubroot won't quit, neither will we
- Identifying blackleg
- Don't give blackleg a leg to stand on
- Setting up for success
- InVigor resources you can trust
- Liberty® & Trait Agreement

InVigor®

Canola without compromise.

From everyone here at BASF, we'd like to thank you for your continued support of InVigor® hybrid canola over the years. We wouldn't be where we are today without you and will continue to work hard to support you and your operation with solutions you can count on.

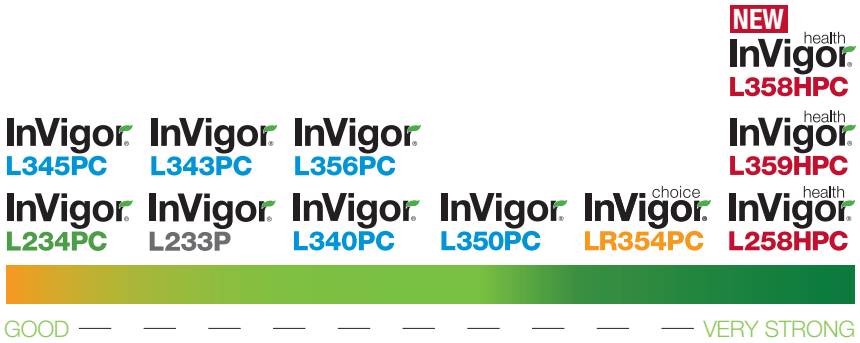
The 2024 InVigor hybrid canola lineup doesn't compromise when it comes to the potential performance it brings to your fields. With every hybrid in our lineup containing patented Pod Shatter Reduction technology, and most with clubroot-resistant genetics, you can rely on protection and flexibility in every field.

A lineup you can count on.

There's never been a lineup like this.
With multiple hybrids to suit your fields, the choice is yours.

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.

InVigor®

Clubroot won't quit, neither will we.

Clubroot is a serious soil-borne disease in canola. Infected roots develop galls that impede water and nutrient uptake. This can disrupt growth and development, leading 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 grayish-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 pre-maturely and lead to shriveled seeds.

Galls on infected roots

Source: Image provided by Dr. Sheau-Fang Hwang, Alberta Agriculture and Rural Development

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

Sustainability of the Canadian canola industry is as important to us as it is to you. Together, we can work together to minimize the impact of clubroot with an integrated pest management (IPM) strategy that includes the following tactics:

- Extend canola **rotation** to a minimum of once every three years when possible
- Use **sanitation** and **patch management** to limit the movement of infected soil
- Control volunteer canola and other **brassica weeds** that can act as hosts for the disease
- **Scout** to identify the presence of the disease
- Utilize clubroot-resistant **genetics** as part of an IPM strategy

For more information on clubroot, visit our frequently asked questions (FAQ) page at **agsolutions.ca/clubroot**.

First-generation clubroot-resistant hybrids.

NEW

InVigor health L358HPC	InVigor L356PC
InVigor L350PC	InVigor L345PC
InVigor health L359HPC	InVigor L340PC
InVigor choice LR354PC	InVigor health L258HPC

Second-generation clubroot-resistant hybrids.

InVigor L343PC	InVigor L234PC

Identifying blackleg.

Many canola diseases can be misdiagnosed as blackleg due to visual similarities. To be certain of a correct diagnosis, a sample should be submitted for analytical testing (plate/PCR). These tests can include a disease or pathogen panel, or a blackleg race ID screen, if needed.

Blackleg vs. verticillium stripe

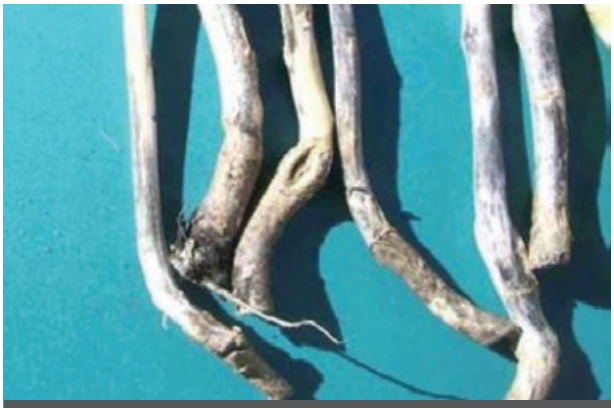
BLACKLEG

VERTICILLIUM STRIPE

Source: BASF internal trials

Blackleg vs. grey stem

BLACKLEG



GREY STEM

Source: Canola Council of Canada

Don’t give blackleg a leg to stand on.

With the rise in canola demand and shortened rotations, there is a risk of blackleg shifting towards increasingly virulent pathotypes. It can be most effectively managed with a coordinated and comprehensive integrated pest management (IPM) plan that includes the following strategies:

- Utilizing newest ‘R’ rated hybrids
- Scouting fields, properly identifying and monitoring the infection
- Managing susceptible weeds and volunteer canola to reduce inoculum sources
- Using a registered fungicide at the proper timing

BASF understands that farming is a balance of agronomy and business. That being said, BASF recommends following a minimum of a 1-in-3-year canola rotation.

All InVigor hybrids are rated “R” for resistant to blackleg.

Our breeders recognize the importance genetics can play in managing blackleg by ensuring InVigor® canola hybrids both minor and major gene resistance.

- **Minor gene resistance** not only helps to protect the longevity of major gene resistance but is also effective across multiple races, which is typical in most fields

  Major gene resistance is very effective against blackleg when matched against the corresponding race
- Visually differentiating blackleg from certain other diseases can be difficult; to be certain, submit samples for analytical testing

See the difference Nexicor can make.

Once infected, fungicides cannot completely eradicate disease. An early, preventative blackleg fungicide application has been shown to reduce the incidence and severity of infection.

Nexicor® fungicide combines three powerful modes of action to deliver an effective level of blackleg management. It builds on the proven **Plant Health Benefits**[1] to increase growth efficiency and to help better manage minor stress, leading to greater yield potential and improved profitability.[2] It’s the ideal addition to any integrated disease management plan when necessary.

Click here to learn more about Nexicor fungicide.

Nexicor®

Xemium® Fungicide

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

Setting up for success.

1 Manage volunteer canola

a. Volunteers make it more difficult to achieve the target plant population, lower the yield potential of the crop and increase the incidence of disease

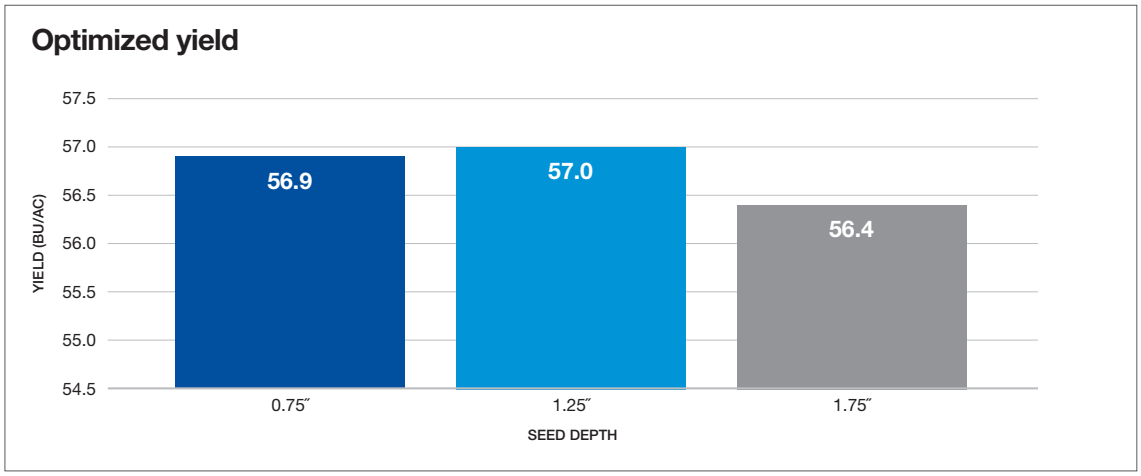
b. Target volunteer canola and other weeds prior to seeding with Certitude® herbicide

Certitude®
Herbicide

2 Target an optimal plant population of 5 to 7 plants/ft² using InVigor RATE

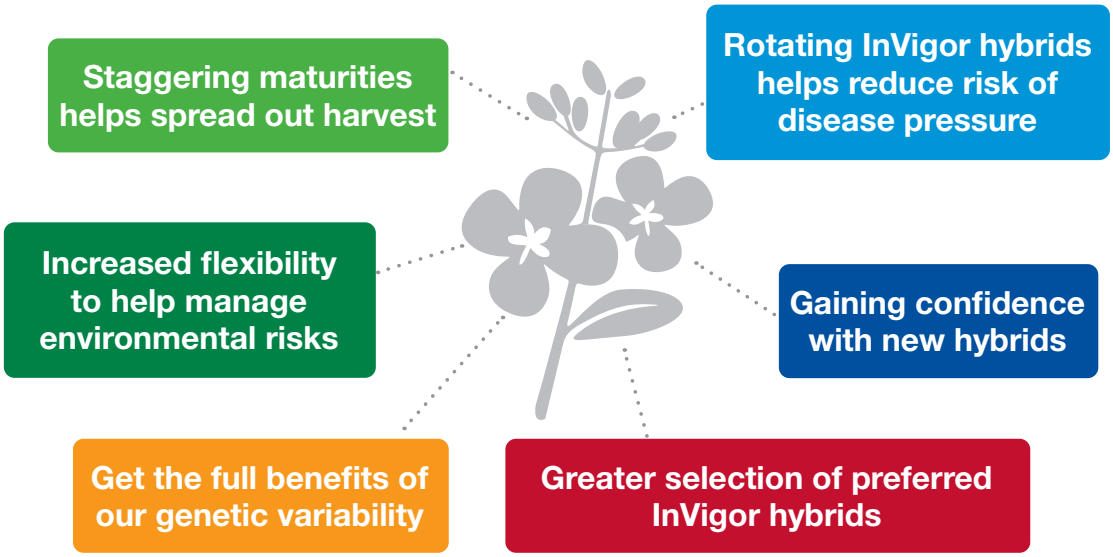
3 Target a seeding depth of 0.75" to 1.25"

a. Improved establishment consistency, plant density and yield



Source: Agronomic Excellence Trial data, 2015-2021, n=62
Results may vary on your farm due to environmental factors and preferred management practices.

4 The benefits of using multiple InVigor® canola hybrids



5 Protect your investment to maximize yield potential

a. Use disease-resistance genetics help where needed (i.e. 1st or 2nd generation clubroot-resistant hybrids)

b. Scout for high disease pressure

c. Manage sclerotinia to protect the potential of your InVigor with Cotegra® fungicide

> Farming is a balance of agronomy and business. BASF recommends following a minimum of a 1-in-3-year canola rotation, but if you are shortening your rotation, the steps above become even more important.

InVigor resources you can trust.

BASF has an extensive lineup of solutions and resources to help enhance, protect and support the performance of your InVigor® hybrid canola in the field. At **InVigorResults.ca**, you have access to the latest local trial results at your fingertips to help you make informed decisions on your hybrid selections. You can also visit **agsolutions.ca/InVigorResources** or scan the QR code below to get access to more of these useful tools that can help you be successful across the season.

InVigor Resources

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, LibertyLink certified soybean seed, Liberty® herbicide and InVigor® Choice canola hybrids.[1]

Stay on the leading edge.

The LTA is a cornerstone of BASF innovation that drives research and development forward by supporting our investment in breeding and trait research. In addition, it is the foundation for BASF to steward its seed and trait technology in the marketplace. This ultimately benefits both BASF and its growers through innovative, new, high-performing seed products, promoting the long-term durability of traits and ensuring continued market access.

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. Here are some examples:
  - Certified seed purchased from an authorized retailer can only be used to plant one commercial crop in Canada (planting or growing a crop from harvested grain, volunteer seeds, or plants is not permitted)
  - Seed, crop or grain cannot be used for breeding or research purposes; seed may only be used for variety comparison or research purposes with BASF written permission
  - Liberty can only be used on authorized crops
  - The harvested crop can only be sold into the commercial grain system
  - Growers allow BASF to collect their 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
  - Contact your local InVigor or Liberty retailer
  - Talk to your BASF **AgSolutions®** Grower Representative
  - Call **AgSolutions** Customer Care at 1-877-371-BASF (2273)
- Follow the LTA terms and conditions

[1] Growers who purchase InVigor Choice must have a valid LTA and a valid Technology Stewardship Agreement.

BASF Seed Treatments

Cereal seed treatments:

- Teraxxa® F4
- Teraxxa F4 Competitive Comparison
- Face wireworms with an IPM strategy
- Insure® Cereal FX4

Pulse seed treatment:

- Insure Pulse

- Common seed treatment watch-outs
- Troubleshooting seed treating problems

Teraxxa® F4

Seed Treatment

The proven solution for wireworm control in cereals.

In addition to providing exceptional protection against key diseases, Teraxxa® F4 is a trusted and proven cereal seed treatment that provides true wireworm control by breaking the lifecycle.

- Novel insecticide mode of action that is the proven standard for wireworm control in cereals
- Rapidly eliminates wireworms upon contact and reduces resident populations in season for true control
- Includes four fungicide active ingredients for effective broad-spectrum protection against key seed- and soil-borne diseases, including fusarium
- Optimized formulation for reduced viscosity and improved usability

Insecticide active ingredient

Broflanilide – Group 30

Fungicide active ingredients

Pyraclostrobin – Group 11
Fluxapyroxad – Group 7
Triticonazole – Group 3
Metalaxyl – Group 4

Formulation

Water-based suspension

One case contains

2 x 9.8 L jugs
Also available in 120 L drum or 450 L tote

Storage

Requires heated storage.

Grower trial results

Cruiser® Vibrance® Quattro seed treatment | Teraxxa F4

Source: Grower Applied Strip Trials, Granum, AB, 2020

Crops

Wheat (all types), barley, oats, triticale, rye, canary seed

Treatment

standard slurry, gravity flow or mist-type seed treatment

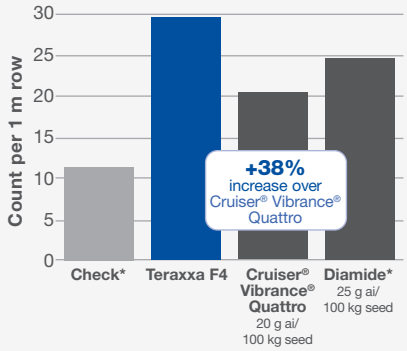
Pests and diseases controlled

Pest/Disease	
Wireworm	• Eliminates wireworms • Reduces populations • Powerful knockdown

		Wheat	Barley	Oats
***Fusarium* spp.**	Seed rot	C	C	C
	Damping-off (pre- and post-emergent)	C	C	C
	Seedling blight	C	C	C
	Root rot	C	C	C
	Crown rot	S	S	S
	Foot rot	S	S	S
Cochliobolus sativus	Seed rot	C	C	C
	Damping-off (pre-emergent)	C	C	C
	Seedling blight	S	S	S
	Root rot	S	S	S
Rhizoctonia solani	Seed rot	C	C	C
	Damping-off (pre- and post-emergent)	C	C	C
	Seedling blight	C	C	C
	Root rot	C	C	C
***Pythium* spp.**	Seed rot	C	C	C
	Damping-off (pre- and post-emergent)	C	C	C
	Seedling blight	C	C	C
	Root rot	C	C	C
Smuts/bunts	Loose smut (*U. avenae* and *U. tritici*)	C		C
	Common bunt	C		
	True loose smut		C	
	Covered smut (*U. hordei* and *U. kolleri*)		C	C
	False loose smut		C	

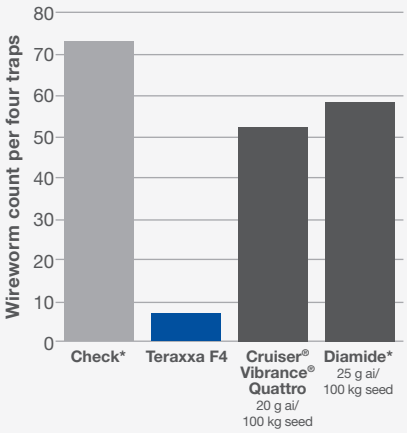
S - Suppression C - Control

Improvement in stand counts



Source: BASF Small Plot Trials, Lethbridge, AB, 2017, n=1
*Mixed with Insure® Cereal FX4 seed treatment at 300 ml/ 100 kg rate

Reduced wireworm populations



Source: Third-Party Research Trials, Agassiz, BC, 2019, n=1
*Mixed with Insure Cereal FX4 at 300 ml/100 kg rate

Application rates

The application rate for Teraxxa F4 seed treatment is 300 ml per 100 kg of seed.

Crop	Bushels (bu) per case	Bushels (bu) per 120 L drum	Bushels (bu) per 450 L tote
Barley	300 bu	1,837 bu	6,888 bu
Canary seed	288 bu	1,764 bu	6,614 bu
Oats	422 bu	2,584 bu	9,689 bu
Rye, triticale	256 bu	1,567 bu	5,878 bu
Wheat	240 bu	1,470 bu	5,510 bu

Directions for use and application tips

Apply using standard slurry, gravity flow or mist-type seed treatment application equipment. Consult **agsolutions.ca** for calibration information.

MIX/AGITATE
Mix/agitate the product well before applying.

BE CAUTIOUS
Be cautious of weather and temperature of seed and seed treatment while treating. Keep seed treatment in a warm storage area and avoid treating seed that is colder than 0°C.

FLOW RATE
Find the right flow rate to avoid plugging. Don't start treating with the seed treater running at 100% capacity.

BLOCKAGE
If seed is dry, it can cause issues such as cracked hulls building up and plugging the metering roller/auger.

DO NOT LEAVE UNATTENDED
Do not leave your seed treater alone when it's running, as many things can quickly affect seed treating quality.

BE ATTENTIVE
Be attentive to factors that can cause changes to nozzle pressure, including the power source to the pump, an object blocking the filter or the hose not reaching deep enough into the product.

FACTORS THAT AFFECT DRYING TIMES
Be cautious of drying times and factors that can lengthen them, such as weather (air temperature, wind speed, relative humidity), seed temperature, seed moisture levels, seed type and water being added during treating.

Dilution with water is not required unless recommended by the manufacturer of the seed treatment application equipment. If desired, increase the use rate proportionally to the dilution rate:

Ex: 100 ml water + 300 ml Teraxxa F4 = 400 ml/100 kg seed

BASF supports the addition of water to Teraxxa F4 to a maximum volume of 600 ml (300 ml additional water per 100 kg).

Do not use treated seed for food, feed or oil production.

In adherence with the "*Seeds Act*", Teraxxa F4 contains sufficient pigment to conspicuously colour and coat treated seed.

Teraxxa® F4

Seed Treatment

Eliminate vs intoxicate:

In addition to the range of diseases cereal growers face, one of the biggest potential threats today is wireworms. Causing losses of up to 50%[1], they can live in the soil for many years. And while some products may claim to provide wireworm control, it's only a temporary fix as they merely intoxicate the pest to prevent early-season damage without controlling resident populations. Teraxxa® F4 is a proven cereal seed treatment that eliminates wireworms by breaking the lifecycle. It also provides broad-spectrum management of key seed- and soil-borne diseases, such as fusarium, in cereal crops, including wheat (all types), barley, oats, canary seed and rye.

Pest	Teraxxa F4 seed treatment	Raxil® PRO SHIELD seed treatment	Cruiser® Vibrance® Quattro seed treatment	Lumivia™ CPL insecticide seed treatment
Product Info				
Insecticide active ingredient	Broflanilide (Group 30)	Imidacloprid (Group 4)	Thiamethoxam (Group 4)	Chlorantraniliprole (Group 28)
Fungicide active ingredient(s)	• Triticonazole (Group 3) • Fluxapyroxad (Group 7) • Pyraclostrobin (Group 11) • Metalaxyl (Group 4)	• Prothioconazole (Group 3) • Tebuconazole (Group 3) • Metalaxyl (Group 4)	• Difenoconazole (Group 3) • Sedaxane (Group 7) • Fludioxonil (Group 12) • Metalaxyl-M (Group 4)	No fungicide partners
Packaging	Co-formulated	Co-pack	Co-formulated	No fungicide package
Pest				
Wireworm	• Eliminates wireworms • Reduces populations • Powerful knockdown	• Early stand protection through wireworm intoxication • Lack of population control	• Early stand protection through wireworm intoxication • Lack of population control	• Early stand protection through wireworm intoxication • Lack of population control
***Fusarium* spp.**				
Seed rot	C	C	C	N/A
Damping off (pre- and post-emergent)	C	C	C	N/A
Seedling blight	C	C	C	N/A
Root rot	C	S	C	N/A
Crown rot	S	S	S	N/A
Foot rot	S		S	N/A
Cochliobolus sativus				
Seed rot	C	C		N/A
Damping off (pre- and post-emergent)	C[2]	C		N/A
Seedling blight	S	C		N/A
Root rot	S	S	S	N/A
Rhizoctonia solani				
Seed rot	C	S	C	N/A
Damping off (pre- and post-emergent)	C	S[2]	C	N/A
Seedling blight	C		C	N/A
Root rot	C	S	C	N/A
***Pythium* spp.**				
Seed rot	C	C	C	N/A
Damping off (pre-and post-emergent)	C	C[2]	C	N/A
Seedling blight	C	C	C	N/A
Root rot	C		C	N/A

C = Control, S = Suppression

[1] Agri-Facts, Alberta Government, 2014.
[2] Pre-emergence only.

Face wireworms with an IPM strategy.

It takes more than one strategy to manage wireworm infestations and reduce crop damage. It takes an integrated pest management (IPM) approach:

Scouting – Keep field maps and be aware of areas in your field that yield less than others. Perform root digs early in the season to assess root masses for wireworm larvae feeding or look for yellowing leaves above ground that can indicate wireworm damage below. If you see patches across your field, that's also a good indication of wireworm feeding.

Trapping – Use trapping methods such as bait balls to determine the presence of wireworms.

Seeding rates – Increase your seeding rate to make up for lost plant stand from wireworm feeding and avoid seeding too deep.

Rotation – Rotate to non-host crops such as canola or peas and lentils.

Weed control – Manage grassy weeds in your field since wireworms also feed on them.

Chemical solutions – Use insecticidal seed treatments for wireworm control.

Wireworm
Larva of click beetle

Click beetle
Selatosomus cruciatus

To learn more about managing wireworms, visit agsolutions.ca/WirewormIPM.

Root clipping/root mass destruction

Yellowing leaves from feeding on or around seed/roots

Patches and plant height reduction from wireworm feeding

Source: Grower Applied Strip Trials, 2019

Insure® Cereal FX4

Seed Treatment

Strong broad-spectrum protection with Plant Health Benefits.[1]

- Four modes of action to deliver broad-spectrum defense against key seed- and soil-borne diseases to protect your return on investment
- **Plant Health Benefits**[1] provide more uniform emergence, enhanced seedling vigour and better management of minor stress[2] to help you achieve your target plant population
- Formulated for reduced viscosity and optimized usability for enhanced ease-of-use during treating

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 or 450 L tote

Storage

Requires heated storage.

Increased seedling vigour with Insure Cereal FX4

Raxil® PRO seed treatment | Insure Cereal FX4

Source: Grower Applied Strip Trials, Cut Knife, SK, 2021

Crops

Wheat (all types), barley, oats, triticale, rye, canary seed[3]

Treatment

standard slurry, gravity flow or mist-type seed treatment

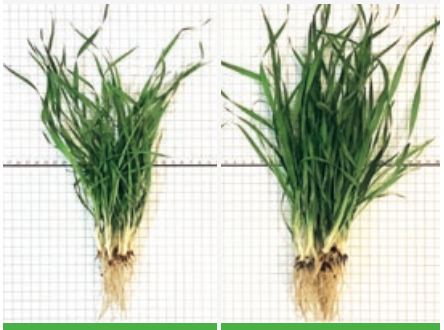
Diseases controlled and suppressed by Insure® Cereal FX4 seed treatment

		Wheat	Barley	Oats
***Fusarium* spp.**	Seed rot	C	C	C
	Damping-off (pre- and post-emergent)	C	C	C
	Seedling blight	C	C	C
	Root rot	C	C	C
	Crown rot	S	S	S
	Foot rot	S	S	S
Cochliobolus sativus	Seed rot	C	C	C
	Damping-off (pre-emergent)	C	C	C
	Seedling blight	S	S	S
	Root rot	S	S	S
Rhizoctonia solani	Seed rot	C	C	C
	Damping-off (pre- and post-emergent)	C	C	C
	Seedling blight	C	C	C
	Root rot	C	C	C
***Pythium* spp.**	Seed rot	C	C	C
	Damping-off (pre- and post-emergent)	C	C	C
	Seedling blight	C	C	C
	Root rot	C	C	C
Smuts/bunts	Loose smut (*U. avenae* and *U. tritici*)	C		C
	Common bunt	C		
	True loose smut		C	
	Covered smut (*U. hordei* and *U. kolleri*)		C	C
	False loose smut		C	

S - Suppression C - Control

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

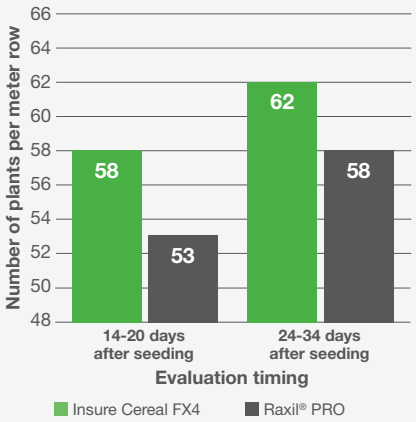
Increased seedling vigour in wheat, 34 days after seeding



Raxil® PRO | Insure Cereal FX4

Source: Grower Applied Strip Trials, Dauphin, MB, 2018

Average plant stand count



Source: Grower Applied Strip Trials, Western Canada, 2018-2021, n=21

Application rates

The application rate for Insure Cereal FX4 seed treatment is 300 ml per 100 kg of seed.

Crop	Bushels (bu) per case	Bushels (bu) per 120 L drum	Bushels (bu) per 450 L tote
Barley	300 bu	1,837 bu	6,888 bu
Canary seed	288 bu	1,764 bu	6,614 bu
Oats	422 bu	2,584 bu	9,689 bu
Rye, triticale	256 bu	1,567 bu	5,878 bu
Wheat	240 bu	1,470 bu	5,510 bu

Directions for use and application tips

Apply using standard slurry, gravity flow or mist-type seed treatment application equipment. Consult **agsolutions.ca** for calibration information.

MIX/AGITATE
Mix/agitate the product well before applying.

BE CAUTIOUS
Be cautious of weather and temperature of seed and seed treatment while treating. Keep seed treatment in a warm storage area and avoid treating seed that is colder than 0°C.

FLOW RATE
Find the right flow rate to avoid plugging. Don't start treating with the seed treater running at 100% capacity.

BLOCKAGE
If seed is dry, it can cause issues such as cracked hulls building up and plugging the metering roller/auger.

DO NOT LEAVE UNATTENDED
Do not leave your seed treater alone when it's running, as many things can quickly affect seed treating quality.

BE ATTENTIVE
Be attentive to factors that can cause changes to nozzle pressure, including the power source to the pump, an object blocking the filter or the hose not reaching deep enough into the product.

FACTORS THAT AFFECT DRYING TIMES
Be cautious of drying times and factors that can lengthen them, such as weather (air temperature, wind speed, relative humidity), seed temperature, seed moisture levels, seed type and water being added during treating.

Dilution with water is not required unless recommended by the manufacturer of the seed treatment application equipment. If desired, increase the use rate proportionally to the dilution rate:

Ex: 100 ml water + 300 ml Insure Cereal FX4 = 400 ml/100 kg seed

BASF supports the addition of water to Insure Cereal FX4 to a maximum volume of 600 ml (300 ml additional water per 100 kg).

Do not use treated seed for food, feed or oil production.

In adherence with the "*Seeds Act*", Insure Cereal FX4 contains sufficient pigment to conspicuously colour and coat treated seed.

Insure® Pulse

Seed Treatment

Effective broad-spectrum protection to help maximize pea and lentil production.

- Three modes of effective action deliver broad-spectrum protection against key seed- and soil-borne diseases, including ascochyta
- **Plant Health Benefits**[1] provide more uniform emergence, enhanced seedling vigour and better management of minor stress[2] to help you achieve your target plant population

Active ingredients

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

Storage

Requires heated storage.

Increased seedling vigour with Insure Pulse vs competitor on lentils

Competitor | Insure Pulse

Plants infected with anthracnose at second-node stage.
Source: BASF Greenhouse Trials, 2017

Crops

Field peas, lentils (all classes), soybeans, chickpeas, dry beans, faba beans, flax (*Linum usitatissimum*), mustard (*Brassica hirta*)

Treatment

standard slurry or mist-type application equipment

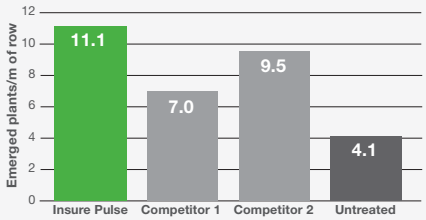
Diseases controlled and suppressed by Insure® Pulse seed treatment

		Lentils	Field peas
All *Fusarium* spp.	Seed rot	C	C
	Seedling blight	C	C
	Root rot	S	S
Rhizoctonia solani	Seed rot	C	C
	Root rot	C	C
	Seedling blight	C	C
All *Pythium* spp.	Seed rot	C	C
	Seedling blight	C	C
Botrytis cinerea	Seed rot	S	S
	Seedling blight	S	S
All *Ascochyta* spp.	Seedling blight	C	C
Anthracnose (*Colletotrichum lindemuthianum*)	Seedling blight	S	S

S - Suppression C - Control

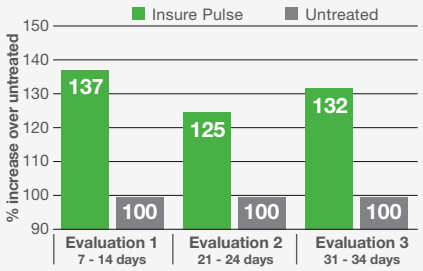
[1] **Plant Health Benefits** refer to products that contain the active ingredient pyraclostrobin.
[2] All comparisons are to untreated, unless otherwise stated.

Lentils – More plants emerged under fusarium disease pressure



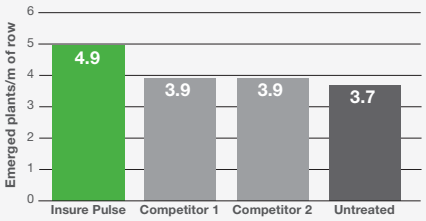
Source: Third-Party Research Trials, 2013

Flax – Increased emergence[5]



Source: Grower Applied Strip Trials, 2015

Field peas – Number of plants emerged under botrytis disease pressure



Source: Third-Party Research Trials, 2013

[3] For flax (*Linum usitatissimum*), use a higher rate of 600 ml/100 kg seed if: a) there is a history of high disease pressures in the field or b) where field conditions favour seed- and soil-borne pathogens. If using the 600 ml/100 kg rate, it is highly recommended that the seed be treated into a bin or truck box to allow the treated seed to dry prior to placing into the seeder hopper. This will prevent clumping and bridging in the seeder.

[4] Includes field peas, lentils (all classes), chickpeas, dry beans and faba beans.

[5] Each evaluation was completed on the same row at 3 different dates for each treatment.

Application rates

The application rate for Insure Pulse seed treatment is 300 ml per 100 kg of seed for pulses and soybeans, 300 to 600 ml per 100 kg of seed for flax[3] and 600 ml per 100 kg of seed for mustard.

Crop	Bushels (bu) treated per jug	Bushels (bu) treated per 120 L drum	Bushels (bu) treated per 450 L tote
Pulses[4]	120	1,469	5,510
Soybeans	120	1,469	5,510
Flax[3]	64 to 128	784 to 1,567	2,939 to 5,878
Mustard	72	882	3,306

Directions for use and application tips

Apply using standard slurry, gravity flow or mist-type seed treatment application equipment. Consult **agsolutions.ca** for calibration information.

MIX/AGITATE
Mix/agitate the product well before applying.

BE CAUTIOUS
Be cautious of weather and temperature of seed and seed treatment while treating. Keep seed treatment in a warm storage area and avoid treating seed that is colder than 0°C.

FLOW RATE
Find the right flow rate to avoid plugging. Don't start treating with the seed treater running at 100% capacity.

BLOCKAGE
If seed is dry, it can cause issues such as cracked hulls building up and plugging the metering roller/auger.

DO NOT LEAVE UNATTENDED
Do not leave your seed treater alone when it's running, as many things can quickly affect seed treating quality.

BE ATTENTIVE
Be attentive to factors that can cause changes to nozzle pressure, including the power source to the pump, an object blocking the filter or the hose not reaching deep enough into the product.

FACTORS THAT AFFECT DRYING TIMES
Be cautious of drying times and factors that can lengthen them, such as weather (air temperature, wind speed, relative humidity), seed temperature, seed moisture levels, seed type and water being added during treating.

Dilution with water is not required unless recommended by the manufacturer of the seed treatment application equipment. If desired, increase the use rate proportionally to the dilution rate:

Ex: 100 ml water + 300 ml Insure Pulse = 400 ml/100 kg seed

BASF supports the addition of water to Insure Pulse to a maximum volume of 600 ml (300 ml additional water per 100 kg).

Do not use treated seed for food, feed or oil production.

In adherence with the "*Seeds Act*", Insure Pulse contains sufficient pigment to conspicuously colour and coat treated seed.

Treat it right:
Common seed treatment watch-outs.

MIX/AGITATE
Mix/agitate the product well before applying.

BE CAUTIOUS
Be cautious of weather and temperature of seed and seed treatment while treating. Keep seed treatment in a warm storage area and avoid treating seed that is colder than 0°C.

FLOW RATE
Find the right flow rate to avoid plugging. Don't start treating with the seed treater running at 100% capacity.

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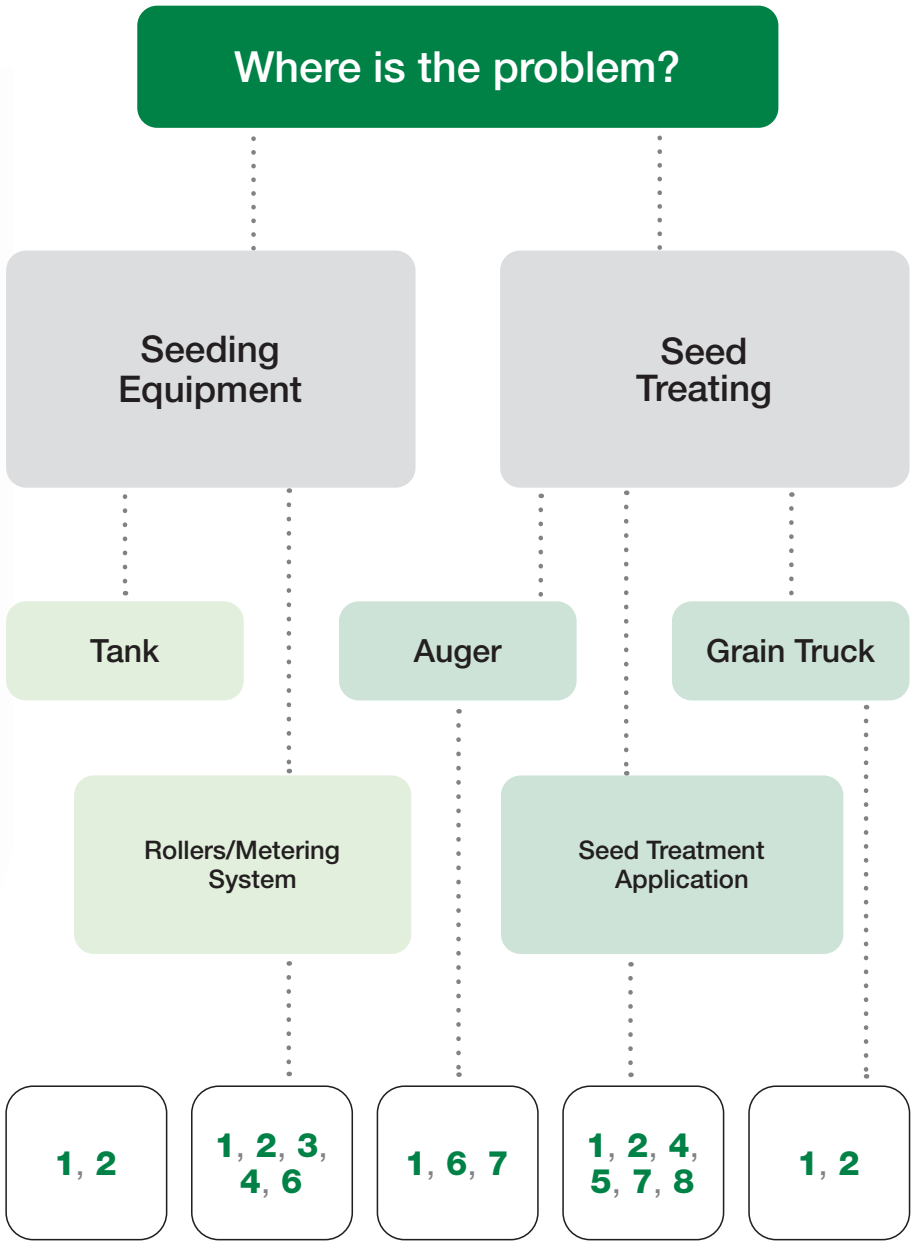
FACTORS THAT AFFECT DRYING TIMES
Be cautious of drying times and factors that can lengthen them, such as weather (air temperature, wind speed, relative humidity), seed temperature, seed moisture levels, seed type and water being added during treating.

Troubleshooting seed treating problems.

No matter how good your seed, seed treatment and treater are, there can be problems that arise during that early-season rush. When it comes to seed treating, a major part of dealing with a problem is first finding where the problem lies.



Click here to learn more on solutions to each of these problems.

Identify which numbers correspond to the problem you're having and review the possible solutions in the following list.

1

Overtreating.
Overtreating can have a negative impact from both an economic and application standpoint. If grain is not flowing properly before the operator turns on the seed treatment applicator, it can result in "wet grain". "Wet grain" can increase the risk of plugging, lead to buildup of product and debris in equipment and other issues that can cause problems with the seed treater or drill metering system.

Solution: Grain should be flowing properly before treating.

2

Cold temperatures.
When temperatures warm up considerably between the morning and afternoon or when there's significant change in humidity, it can affect the seed treating process. Treating cold seed can also cause issues with the seed treatment "freeze drying" on the seed. As the seed warms up, condensation can form on the outside of the seed causing the treated seed to remain tacky and not dry properly.

Solution: Recalibrate during large temperature fluctuations and store your seed treatments in a warm area with temperatures above freezing and below 30ºC.

3

Dirty/cracked seed.
When treating dirty and cracked seed, a buildup of seed treatment with dust, dirt and/or hull combinations can occur.

Solution: Clean your grain prior to treating and be aware of mechanical damage caused by factors such as combining, auguring and long drops into a bin. In years where dry seed may be an issue, add a bit of water to the seed treatment.

4

Improper agitation of product prior to treating.
Proper agitation can lead to a more uniform product and more accurate application.

Solution: Mix the product well prior to use to reach any product that has potentially settled.

5

Improper calibration/re-calibration of seed treating equipment.

Proper calibration will help ensure an accurate rate of seed treatment and proper coverage of seed while reducing the problems that can evolve from over- or under-treated grain.

Solution: Calibrate intermittently throughout the seed treating process.

6

Varying physical characteristics of seed.

Seeds come in many different shapes, sizes and properties. Crops such as soybean can be more difficult to treat due to their mucilaginous seed coat which can prevent certain seed treatments from adhering as readily as others or can take longer to dry in cool, damp conditions. Seed coats with divots and cracks can also affect the ease of treating, as higher water volumes may be required to obtain optimal coverage.

Solution: Be aware of the type of seed you're treating so that there is proper coverage.

7

Running the seed treater at 100% capacity.

Because treated grain does not flow as easily through an auger as untreated grain, running the treater at full capacity can cause plugging issues.

Solution: Take the time to adjust and find the best flow rate to optimize seed coverage, knowing that it will vary between old and new equipment due to the flighting in new equipment not being as worn as older augers.

8

Inability to get product flowing properly.

Solution: Always check that there's consistent power to the pump. Avoid extension cords that are longer than 50 feet, have been run over by vehicles or that have breaks and tears. Also make sure the hose is deep enough in the product when running low and that the pumping system is airtight as you do not want to suck air into the lines. One way to improve a seal is to wrap Teflon tape around all the pump's joints.

BASF Inoculants

Pulse crop inoculants:

- Inoculant formulation options
- Nodulator® Duo SCG
- Nodulator XL Peat and Nodulator XL LQ
- Nodulator CP SCG

Soybean crop inoculants:

- Soybean formulation options
- Effective nodulation with double inoculation
- Nodulator IP Plus
- Nodulator SCG
- Nodulator LQ

Best management practices:

- Handling, storing and application
- Granular application success

Inoculant options for peas, lentils, soybeans and chickpeas. Understand the different formulations.

Nodulator® inoculant comes in a variety of formulations, including solid core granular, self-adhering peat and liquid. Understanding the different characterics of each can help you choose the one that is best suited to your program.

	Peas & Lentils			Chickpeas	Soybeans		
	Granular Nodulator Duo SCG	Wettable Powder Nodulator XL Peat	Liquid Nodulator XL LQ	Granular Nodulator CP SCG	Liquid Nodulator IP Plus	Granular Nodulator SCG	Liquid Nodulator LQ
Robust structure for improved survivability & in-furrow application	●			●		●	
Biostacked® with multiple biologicals to improve stress tolerance, root architecture, early-season vigour & yield potential	●				●		
Crop-specific Canadian rhizobia for increased nodulation	●	●	●	●	●	●	●
Breathable bladder					●		
Bulk SKU packaging	●				●	●	
On Seed Survivability	Excellent	24 hours	6 hours	Excellent	100 days	Excellent	10 days
BASF Grower Programming	Ag Rewards Pulse Pack	Ag Rewards	Ag Rewards	Ag Rewards	Ag Rewards	Ag Rewards	Ag Rewards

Nodulator® Duo SCG

Biostacked® solid core granular pea and lentil Inoculant

Solid core granular inoculant featuring root-strengthening biofilm to help maximize yield potential.

- Top-performing strain of rhizobium (strain 1435) specifically selected for peas and lentils
- Root-strengthening biofilm bacterium (strain BU1814) helps protect the roots from the stresses encountered in the soil to reserve more energy for growth
- Technologically advanced multi-layered granular carrier for rhizobia

Bioactive ingredient

Rhizobium leguminosarum biovar *viceae* (strain 1435)
Bacillus subtilis (strain BU1814)

Formulation

Solid core granules

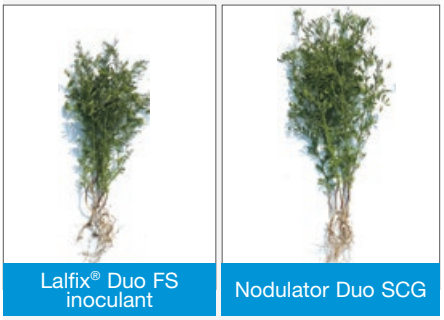
One case contains

1 x 22.68 kg bag
1 x 364 kg mini-bulk Q-Pak

Storage

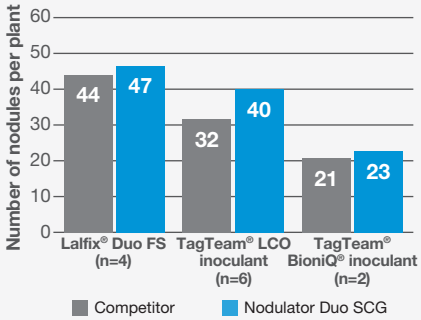
Store in a cool (10°C to 15°C), dry place, away from pesticides and bulk fertilizers.

Increased biomass in lentils with Nodulator Duo SCG inoculant



Source: Grower Applied Strip Trials, Gull Lake, SK, 2021

Increased nodule production with Nodulator Duo SCG inoculant



Source: Grower Applied Strip Trials, 2021, 42-56 Days After Planting

Crops

Peas or lentils

Treatment

applied directly in furrow

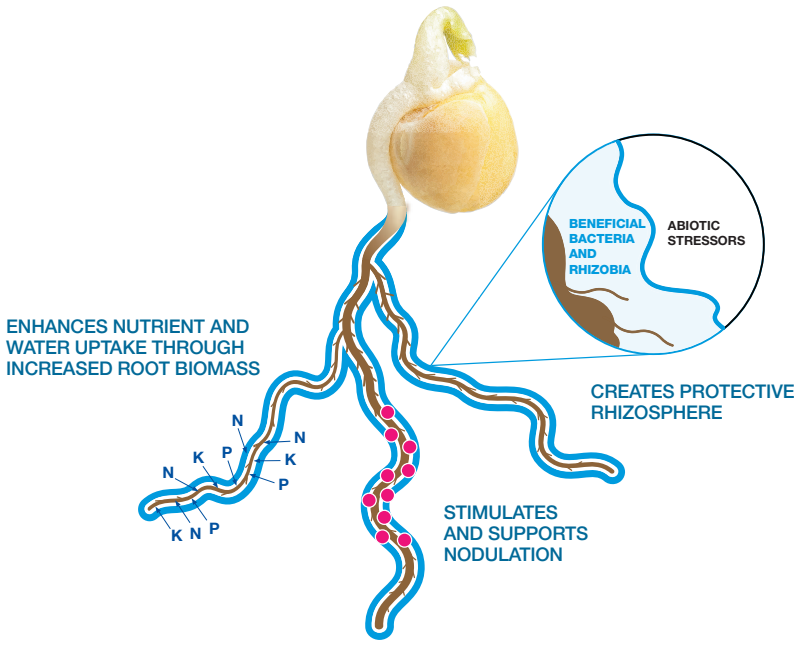
Inoculant activity

The product provides a reliable inoculant with the following benefits:

- Guaranteed minimum of 8 x 10^7 viable cells of *Rhizobium leguminosarum* biovar *viceae* per gram
- Guaranteed minimum of 2 x 10^8 viable cells of *Bacillus subtilis* per gram
- Biofilm-forming bacterium in Biostacked® Nodulator® Duo SCG inoculant provides these benefits:
  - Increased efficiency and activity in nodulation due to crop specificity
  - Increased nitrogen fixation with maximized yield potential
  - Higher yield potential[1]

[1] Source: Grower Applied Strip Trials, 2017-2021; N value varied depending on competitor.

Build better biofilm with BU1814



Application rates

One bag will treat 10.6 acres (7” rows) to 18.5 acres (12” rows).
One Q-Pak will treat 170 acres (7” rows) to 296 acres (12” rows).

Apply granular inoculant at a rate of 28.5 g/1,000 linear row feet.

Row spacing		Application rate		Area treated per bag	
cm	in	kg/ha	lb/ac	ha	ac
15.2	6	6.2	5.6	3.7	8.9
17.8	7	5.3	4.7	4.3	10.6
20.3	8	4.6	4.1	4.9	12.2
22.9	9	4.0	3.6	5.7	13.9
25.4	10	3.7	3.3	6.1	15.2
27.9	11	3.4	3.0	6.7	16.7
30.5	12	3.0	2.7	7.6	18.5

Directions for use

Prior to filling tank

Check tank seals on each compartment along with all metering components for signs of cracks and wear. Replace cracked or worn parts.

Ensure that inoculant bags and tank walls are dry prior to filling.

Run fans at the beginning of each day as a precaution to dry any condensation that may have accumulated overnight. Granular inoculants require a dedicated tank to ensure proper rate application.

Before filling, ensure that the screen at the top of the tank is in place.

Filling the tank

Use loading auger to fill tank and screens provided by equipment manufacturers.

To optimize flow (especially under humid conditions), it is suggested to only fill large compartments to no more than 50% capacity.

Apply granular inoculant directly in furrow at the specified rate. The product must not be applied at a depth that is less than the planting depth of the seed.

Do not mix granular inoculant with granular pesticides or fertilizers during planting.

Application tips

Remove any unused granules from the hopper box at the end of each day’s planting.

Do not allow granules to sit in hopper overnight.

Environmental conditions may affect flowability of the product. Feeding mechanism should be cleaned often to ensure good flow.

Follow crops

No follow-crop restrictions.

Seed treatment compatibility

Nodulator Duo SCG is compatible with all seed-placed products, as it is applied directly to the furrow and does not come in contact with the seed. Call **AgSolutions®** Customer Care at 1-877-371-BASF (2273) or visit **agsolutions.ca**.

Nodulator® XL Peat

Peat pea and lentil Inoculant

Nodulator® XL LQ

Liquid pea and lentil Inoculant

High-performance inoculant for value and yield potential boosts of 3% to 8% in peas and lentils.[1]

- Highly efficient and more active strain of rhizobia
- Selected specifically for proven performance in pea and lentil crops
- Self-adhering peat (SAP) formulation that has eliminated the need for commercial sticking agents
- Easy-to-use liquid (LQ) formulation that can be applied up to 6 hours before seeding or applied in furrow during seeding

Bioactive ingredient

Rhizobium leguminosarum biovar *viceae,* strain 1435

Formulations

Self-adhering sterile peat
Liquid (on seed or in furrow)

One case contains

Peat: 5 x 1.2 kg packages
Liquid: 3 x 7.5 L bladders

Storage

Do not freeze.
Peat: Store below 20°C.
Liquid: Store between 4-9°C.

Uninoculated peas | Nodulator XL peas

Source: Grower Applied Strip Trials, Southern AB, 2012

Uninoculated lentils | Nodulator XL lentils

Source: BASF Small Plot Trials, Lethbridge, AB, 2013

Crops[2]	Treatment
Peas	dry, slurry or damp
Lentils	inoculation on seed

Inoculant activity

The self-adhering peat (SAP) formulation provides a reliable inoculant with the following benefits:

- Nodulator® XL inoculant contains a pea and lentil specific rhizobium (*Rhizobium leguminosarum* biovar *viceae*)
- The rhizobia provide these benefits:
  - Increased efficiency and activity in nodulation due to crop specificity
  - Increased nitrogen fixation with maximized yield potential
- SAP: Guaranteed minimum of 1 x 10^9 rhizobia per gram
- LQ: Guaranteed minimum of 7.5 x 10^8 rhizobia per gram
- Nodulator XL outyielded competitive products more than 80% of the time with yield increases of 3%-8% across Western Canada (n=72)[1]

[1] Refer to "Increased yield potential: Nodulator XL vs competitor vs uninoculated control" chart.
[2] Approved and supported for organic production.

Application rates

Nodulator XL Peat: One case will treat 110 bushels of seed. The standard rate of application is 1.2 kg per 600 kg of seed.

Nodulator XL LQ: One case will treat 300 bushels of seed.

Flow valve setting	Inoculant flow rate		Seed/auger flow rate	
	ml/min	fl. oz/min	kg/min	lbs (bu)/min
1	360	12	131	289 (5)
2	860	29	313	690 (11)
3	1,340	45	487	1,074 (18)
4	1,660	56	604	1,332 (22)
5	1,780	60	647	1,426 (24)
6	2,030	68	738	1,627 (30)

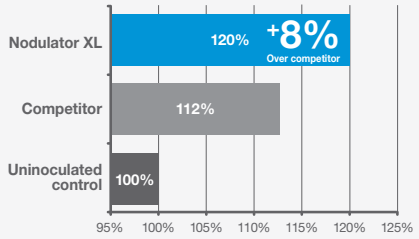
Maintaining diversity

The organism formulated into this product is classified as *Rhizobium leguminosarum* biovar *viceae*. All of the organisms used by BASF inoculants are common to Canadian soils. No BASF inoculant products sold in Canada contain genetically modified organisms.

Performance

Research shows that Nodulator XL formulations, in peas and lentils, boost yields up to 8% over the competitor.

Increased yield potential: Nodulator XL vs competitor vs uninoculated control



Source: Third-Party Research Trials, 87 station years (peas) and 84 station years (lentils) - n sites x n years

Directions for use

Nodulator XL Peat	Nodulator XL LQ
After opening the pack, work gently between fingers to disperse contents. Addition of water at the time of application will optimize the activity of the integral sticker, resulting in even seed coverage with the inoculant. **Application methods:** **Slurry application** – Add complete pack contents to approximately 2 L of clean, dechlorinated water and stir well in a clean container to form a lump-free slurry. Do not allow slurry to settle out. Pour onto the seed and mix thoroughly to ensure the seeds are evenly coated. Allow seed to dry before further handling. **Damp inoculation** – Apply just enough water to slightly dampen seed (2 ml/kg). Mix the damp seed thoroughly with the inoculant so that they are evenly coated. **Dry inoculation** – Pour the correct amount of inoculant onto thin layers of seed in the drill hopper and mix thoroughly to evenly coat seed. For bulk seed handling systems, the inoculant can be metered directly onto augured seed.	**For on-seed use** 1. Shake 7.5 L bladder for a minimum of 30 seconds before using. 2. Replace bladder lid with hose kit. 3. Invert bladder above treatment area so the end of the hose is just above the seed (for accurate application rates, ensure hose is straight when dispensing inoculant). 4. Adjust flow valve to regulate the recommended application rate (see table here). 5. To ensure adequate mixing of seed and inoculant, do not run auger at greater than HALF capacity. 6. Assess the application rate several times during inoculation to ensure correct target flow rate. Note: Product formulated to be applied directly to seed. See label for in-furrow use directions.

Application tips

Nodulator XL Peat: When applied as directed, the product has a 24-hour on-seed survivability. It is recommended to sow seeds within 4 to 6 hours of inoculation. If not sown within 24 hours, seed must be re-inoculated. If seed is of low moisture content, use either slurry or damp application methods.

Nodulator XL LQ: Inoculated seed should be planted within 6 hours after application. Increased volume of inoculant per bushel of seed may be advantageous. Under adverse or stressful planting conditions (hot, dry field conditions), an increased application rate is suggested.

Follow crops

No follow-crop restrictions.

Seed treatment compatibility

For details on seed treatment compatibility, see the Pea Seed Applied Pesticide Compatibility Information and Lentil Seed Applied Pesticide Compatibility Information documents available on **agsolutions.ca**, contact your local BASF **AgSolutions®** Grower or Retail Representative or call **AgSolutions** Customer Care at 1-877-371-BASF (2273).

Nodulator® XL Peat
Peat pea and lentil Inoculant

Nodulator® XL LQ
Liquid pea and lentil Inoculant

Nodulator® CP SCG

Solid core granular chickpea Inoculant

Granular formulation for improved flowability in a high-performance inoculant that delivers increased yield potential in chickpeas.

- An easy-flowing granular inoculant formulation for convenient application in the furrow at seeding
- Effective performance under stressful planting conditions
- Technologically advanced granular carrier for rhizobia in a low dust formulation that is resistant to crumbling

Bioactive ingredient

Mesorhizobium ciceri

Formulation

Solid core granules

One case contains

1 x 22.68 kg bag

Storage

Store in a cool (10°C to 15°C), dry place, away from pesticides and bulk fertilizers.

Crops

Chickpeas

Treatment

applied directly in furrow

Inoculant activity

Nodulator® CP SCG inoculant is a chickpea specific rhizobium common to Canadian soils (*Mesorhizobium ciceri*) with these benefits:

- Increased efficiency and activity in nodulation due to crop specificity
- Increased nitrogen fixation with maximized yield potential
- Guaranteed minimum of 8 x 10^7 rhizobia per gram

Application rates

One bag will treat up to 10 acres.

Apply granular inoculant at a rate of 5.0 lb/ac (5.6 kg/ha).

Row spacing		Application g per 100 m	Application g per 100 yards
cm	in		
18	7	9.9	9.0
20	8	11.2	10.2
23	9	12.9	11.8
25	10	14.0	12.8
28	11	15.6	14.3
30	12	16.8	15.4
36	14	20.1	18.4
41	16	22.9	20.9

Directions for use

Prior to filling tank

Check tank seals on each compartment along with all metering components for signs of cracks and wear. Replace cracked or worn parts.

Ensure that inoculant bags and tank walls are dry prior to starting filling.

Run fans at the beginning of each day as a precaution to dry any condensation that may have accumulated overnight. Granular inoculants require a dedicated tank to ensure proper rate application.

Before filling, ensure that the screen at the top of the tank is in place.

Wear respiratory protection if ventilation is inadequate or if dust generation is anticipated.

Filling the tank

Use loading auger to fill tank and screens provided by equipment manufacturer.

To optimize flow (especially under humid conditions), it is suggested to only fill large compartments to no more than 50% capacity.

Apply granular inoculant directly in furrow at the specified rate. The product must not be applied at a depth that is less than the planting depth of the seed.

Do not mix granular inoculant with granular pesticides or fertilizers during planting.

Application tips

Remove any unused granules from the hopper box at the end of each day's planting.

Do not allow granules to sit in hopper overnight.

Environmental conditions may affect flowability of the product. Regularly check metering system to ensure proper flow.

Follow crops

No follow-crop restrictions.

Seed treatment compatibility

Nodulator CP SCG inoculant is compatible with all seed-placed products, as it is applied directly to the furrow and does not come in contact with the seed. Contact your local BASF **AgSolutions®** Grower or Retail Representative, call **AgSolutions** Customer Care at 1-877-371-BASF (2273) or visit **agsolutions.ca**.

Inoculant options for soybeans. The choice is yours.

Maximize nitrogen fixation and nodulation in your soybean fields by selecting an inoculant that best suits your operation. Research shows that inoculants promote these benefits:

- Greater plant vigour
- Greater root biomass
- More nitrogen-fixing nodules
- Higher yield potential

	Product	One case contains	Application rates[1]
On-seed	**Nodulator® IP Plus** Professional Soybean Preinoculant System	**200 seed unit case:** 1 x 3 L IP Plus inoculant 1 x 3 L IP Plus conditioner 1 x 0.2 L Velondis® Plus biofungicide (packaged separately) **400 seed unit case:** 1 x 6 L IP Plus inoculant 1 x 6 L IP Plus conditioner 1 x 0.4 L Velondis Plus biofungicide (packaged separately)	200 seed unit case: 4,536 kg of seed 400 seed unit case: 9,072 kg of seed Rate: 130 ml (inoculant + conditioner) + 4.4 ml Velondis Plus per 100 kg soybean seed
In-furrow	**Nodulator® SCG** Solid core granular soybean Inoculant	1 x 22.68 kg bag or 1 x 364 kg mini-bulk Q-Pak	1 bag: 10 ac (7" rows) 1 Q-Pak: 160 ac (7" rows) Rate: 2.3 kg/ac (7" rows)
In-furrow	**Nodulator® LQ[2]** Liquid soybean Inoculant for in furrow	1 x 12.4 L bladder	1 case: 4.8 to 11.3 ha (12 to 28 ac) Rate: 29 ml non-diluted product per 304 linear row m (1 fl oz/1,000 linear row ft)

Note: 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] For specific application rates, refer to the label.
[2] Approved and supported for organic production.

Click here for more information on inoculant storage and handling best practices.

Effective nodulation with double inoculation.

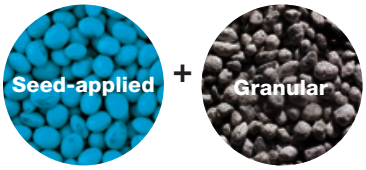
Double inoculation and its benefits.

- Use of an on-seed pre-inoculant paired with an in-furrow inoculant at seeding time
- Robust granular formulation that provides an effective backup to on-seed applications during stressful environmental conditions
- Delivers viable rhizobia populations—not native to Western Canada—to the soil for more effective nodulation of the plant

Improvement in nodulation and root biomass with Nodulator® IP Plus inoculant

No inoculant | Nodulator IP Plus

Source: Grower Applied Strip Trials, 2018



	No inoculation *No inoculant applied to seed or in-furrow*	Single inoculation *Pre-inoculant or in-furrow*	Double inoculation *Seed-applied pre-inoculant followed by in-furrow*
Risk	**High**	**Moderate**	**Low**
Fields of best fit	Growers rely solely on the rhizobia population present **Not a recommended practice**	• Strong history of soybeans • Short rotation (1-3 years) • Soils with neutral pH (5.8-7) • Well-drained, low flood risk • Stable soils conducive to rhizobia survivability & nodulation	• Virgin soil (little soybean history) • Longer rotation (4-8 years) • Soils within extreme pH ranges • Poorly drained, flood prone • Sandier soils with <3% OM, which can cause poor rhizobia survivability
Impact of practice	Poor nodulation and ultimately limiting crop yield potential and performance	Provides one source of viable rhizobia to impact nitrogen fixation Risk exists if there are adverse weather conditions or crop stresses that impact viability and survivability of the rhizobia population	Provides the most ample and consistent population of viable rhizobia through the critical crop establishment period Provides highest potential of optimizing yield due to increased nodulation

Nodulator® IP Plus

Professional Soybean Preinoculant System

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 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]

Storage

Protect cased product from temperatures below 2°C and above 10°C. Do not allow this product to freeze.

Improved nitrogen fixation

Untreated	Nodulator PRO 100	Nodulator IP Plus

Source: BASF Greenhouse Trials, 2022

Crops

Soybeans

Treatment

applied on-seed exclusively by bulk seed treaters

Benefits

Nodulator® IP Plus preinoculant provides these benefits:

- Guaranteed minimum of 1 x 10^{10} viable cells of rhizobium CFU per gram
- Velondis® Plus biofungicide for suppression of seedling diseases caused by *Fusarium* spp., *Rhizoctonia solani* and *Pythium ultimum*[2]
- Applying Nodulator IP Plus[3] can result in 16% more nodule production compared to base treatment alone[4]

Application rates

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

	Nodulator IP Plus (inoculant + conditioner)	Velondis Plus
Rate per 100 kg seed	130 ml[5]	4.4 ml

[1] Packaged separately.
[2] The biological fungicide activity of Velondis Plus is a PMRA registered label claim in Canada.
[3] Nodulator IP Plus is an on-seed application of Nodulator IP Plus professional preinoculant system and Velondis Plus biofungicide seed treatment.
[4] Grower Applied Strip Trials, 2018.
[5] 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).

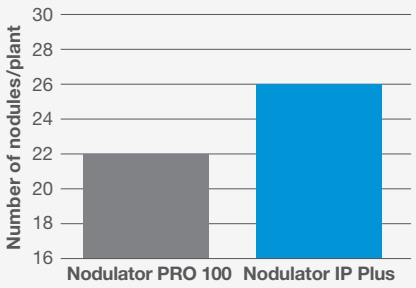
Maintaining diversity

The beneficial bioactive organisms, *Bradyrhizobium japonicum*, *Bacillus amyloliquefaciens* and *Bacillus subtilis* are common to Canadian soils. No BASF inoculant products sold in Canada contain genetically modified material.

Biostacked advantage

Achieves confident performance in nodulation, nitrogen fixation and root strength in the vital crop establishment stage through variable spring seeding conditions experienced in Canada.

Improved nodule formation



Source: Grower Applied Strip Trials, MB, 2018, n=6

Directions for use

When applying as a stand-alone treatment (no seed treatment)

With slurry tank agitator (or re-circulation pump) turned on, thoroughly mix the appropriate volumes of Nodulator IP Plus liquid inoculant with the Nodulator IP Plus conditioner, then add the separately packaged Velondis Plus biofungicide and non-chlorinated[6] water. Continuous and gentle agitation throughout the mixing and application process will enhance application and survival characteristics.

Calibrate pumps and metering system to apply a total of 326 ml/100 kg to seed.

[6] Municipal water sources do contain chlorine; however, it can be used in combination with biologicals if allowed to sit exposed to the environment (e.g. in open tank) for a minimum of 24 hours to allow for chlorine to gas off.

When applied with additional seed treatment(s)

Nodulator IP Plus preinoculant and Velondis Plus for soybean must be applied at a rate of 134.4 ml/100 kg (2.0 fl oz per 100 lbs) of seed with no additional water as long as the total liquid volume being applied (Nodulator IP Plus, plus all other seed treatment actives/polymers/colourants) is at least 326 ml/100 kg (5.0 fl oz per 100 lbs) of seed.

Both a wet sequential (also known as simultaneous), using a separate application tank for the active chemicals/polymers/colourants (preferred), or a tank mix can be used as application methods for this product.

If a tank-mix application method is used, do not slurry the mixture for greater than 4 hours prior to application to the seed.

For extended days on seed, **we only recommend** a wet sequential (also known as simultaneous) application and keeping the inoculant in a separate application tank. In this tank, the inoculant must be applied within 24 hours.

Application tips

The non-pesticide containing slurry should ideally be used during the same day of mixing, within a maximum of 24 hours. The temperature of the slurry should not exceed 20°C.

Clean seed is essential to reduce bridging.

For maximum survival of biological components, store treated seed in a cool (can be below freezing), dry, covered and unheated storage area close to floor level.

On-seed compatibility of Nodulator IP Plus preinoculant plus Velondis Plus biofungicide is dependent on application method and temperature at which seed is packaged and stored.

Follow crops

No follow-crop restrictions.

Seed treatment compatibility

Some seed treatments are harmful to liquid inoculants and the application method can affect the days-on-seed compatibility.

Please visit **agsolutions.ca**, see respective product labels or call **AgSolutions®** Customer Care for further information.

Nodulator® SCG

Solid core granular soybean Inoculant

Granular formulation for soybeans, designed to maximize yield potential.

- Formulation designed with multi-layered protection technologies for greater rhizobia survivability and provides effective backup to on-seed applications
- Engineered to deliver more viable rhizobia directly where needed most
- Durable, uniformly sized, dust-free formulation for ease of use

Bioactive ingredient

Bradyrhizobium japonicum

Formulation

Solid core granules

Package options

1 x 22.68 kg bag
1 x 364 kg mini-bulk Q-Pak

Storage

Store in a cool (10°C to 15°C), dry place, away from pesticides and bulk fertilizers.

Crops

Soybeans

Treatment

applied directly in furrow

Inoculant activity

Nodulator® SCG inoculant provides a soybean specific rhizobium (*Bradyrhizobium japonicum*) for these results:

- Increased efficiency and activity in nodulation due to crop specificity
- Increased nitrogen fixation with maximized yield potential
- Guaranteed minimum of 8 x 10^7 rhizobium per gram

Typical peat granules

Nodulator solid core granules

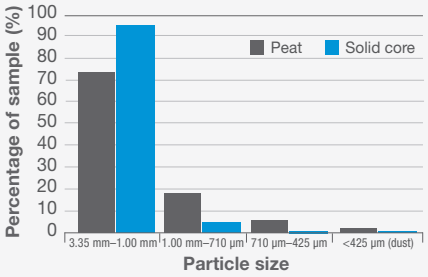
Maintaining diversity

The organism formulated into this product is classified as *Bradyrhizobium japonicum*. All of the organisms used by BASF inoculants are common to Canadian soils. No BASF inoculant products sold in Canada contain genetically modified organisms.

Performance

The uniform size of Nodulator solid core granules allows them to flow better through equipment. In a sieve analysis compared to peat granules, solid core granules were 95% uniform with no dust particles.

Particle size comparison: Peat granules vs Nodulator solid core granules



Source: BASF sieve analysis, 2020

Application rates

One bag will treat 10 acres (7” rows).
One Q-Pak will treat 160 acres (7” rows).

Apply granular inoculant at a rate of 5.0 lb/ac (5.6 kg/ha).

Directions for use

Apply granular inoculant directly in the furrow at a specified rate.

Do not mix granular inoculant with granular pesticides or fertilizers during planting.

Product must not be applied at a depth that is less than the planting depth of the seed.

For calibration purposes, this product has a bulk density of 0.90 grams per cubic centimeter (56 pounds per cubic foot).

Application tips

Recommended for air seeders with application directly in furrow at time of seeding.

Do not mix inoculant with granular pesticides or fertilizers during planting.

Remove any unused granules from the hopper box at the end of each day’s planting.

Do not allow granules to sit in a hopper overnight.

Environmental conditions may affect flowability of the product. Regularly check metering system to ensure proper flow.

Seed treatment compatibility

This inoculant is compatible with most seed treatments when dry and can also be applied to specific treated seed when wet. Please see respective product labels or call **AgSolutions**® Customer Care for further information.

Nodulator® SCG
Solid core granular soybean Inoculant

Nodulator® LQ

Liquid soybean Inoculant for in furrow

An effective bioactive inoculant for increased yield potential in soybeans.

- Liquid formulation containing nitrogen-fixing *Bradyrhizobium japonicum*
- Increased root biomass with more nitrogen-fixing nodules on every plant
- Convenient, easy-to-use product can be applied on seed or in furrow

Bioactive ingredient

Bradyrhizobium japonicum

Formulation

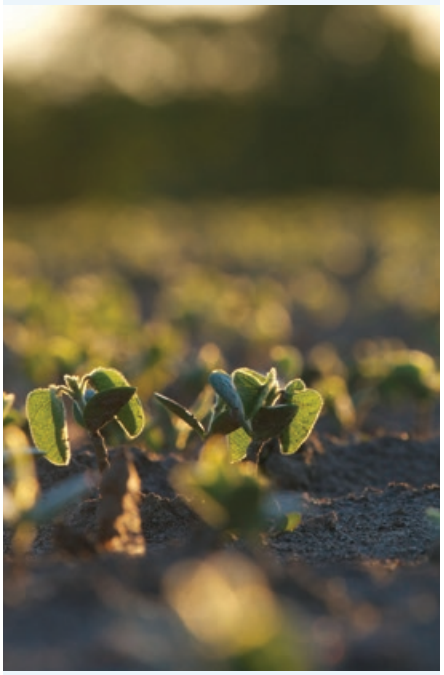
Liquid

One case contains

1 x 12.4 L bladder

Storage

Store below 20°C. Do not allow product to freeze. Ensure inoculant is stored correctly in the field prior to use.



Crops

Soybeans[1]

Treatment

apply on seed within 10 days of seeding or apply in furrow at time of seeding

[1] Approved and supported for organic production.

Inoculant activity

Nodulator® LQ inoculant provides a soybean-specific rhizobium (*Bradyrhizobium japonicum*) for these results:

- Increased efficiency and activity in nodulation due to crop specificity
- Increased nitrogen fixation with maximized yield potential
- Guaranteed minimum of 3 x 10^9 viable cells of rhizobium per gram

Storage and application tips

Store product below 20ºC. Do not freeze.
Only use product that has been stored correctly.
Once opened, use inoculant within 24 hours.
Use before expiration date and only on soybeans.
Protect inoculated seed from high temperatures, sunlight or drying winds.
Avoid contact with caustic fertilizers.

If seed is not planted within 10 days from inoculation, the seed must be re-inoculated.

Application rates

Liquid formulation: One case will treat 165.2 bushels, 4,500 kg (9,840 lb) of seed, using 75 ml of inoculant per 27.2 kg (1 bushel) of seed.

Grain auger output depends on the speed and diameter of auger used. Estimate your auger flow then use this chart to determine the flow valve setting that matches your auger output:

Auger output (kg seed/min)	Auger output (bu seed/min)	Flow valve setting
0	0	0
131	5	1
313	11	2
487	18	3
604	22	4
647	24	5
738	27	6

In-furrow application: The liquid inoculant should be applied at the rate of 29 ml non-diluted product per 304 linear row meters (1 fl oz/1,000 linear row feet).

Refer to table below for application details:

Row width	Recommended rate	One case treats
30 cm (12 in)	3130 ml/ha (1266 ml/ac)	4.0 ha (9.8 ac)
38 cm (15 in)	2500 ml/ha (1011 ml/ac)	5.0 ha (12.3 ac)
51 cm (20 in)	1870 ml/ha (757 ml/ac)	6.6 ha (16.4 ac)
76 cm (30 in)	1250 ml/ha (506 ml/ac)	9.9 ha (27.2 ac)
91 cm (36 in)	1040 ml/ha (421 ml/ac)	11.9 ha (29.5 ac)

Directions for use

See product label for detailed information regarding in-furrow and on-seed directions for use.

Seed treatment compatibility

This inoculant is compatible with most seed treatments. Please see respective product labels or call **AgSolutions**® Customer Care for further information.

Handling, storing and applying inoculants.

Inoculants are alive. How to handle, store and apply.

STORAGE

Inoculants are living organisms. Handle and store with care.

DO

- Store inoculants in cool, stable temperatures above freezing[1]
- Ensure airflow during storage to reduce moisture accumulation
- Pre-inoculated seed must be stored as cool as possible

DON'T

- Double stack granular inoculants
- Store in direct sunlight
- Store next to pesticides or bulk fertilizers

EQUIPMENT

Equipment maintenance? Check.

- Consult equipment manufacturer for drill-specific metering system recommended to apply low-rate granular products
- Regularly inspect hoses, fittings and rollers for wear and broken parts

Monitor during seeding.

- Calibrate regularly to monitor for accurate placement
- Inspect and clean meter rollers often, preventively reducing any build up

APPLICATION

- Consult product label of liquid and peat formulations for on-seed survivability and seed treatment compatibility
- Run tank fans to dry tank prior to each fill of granular inoculant
- Fill granular tank no more than ½ full to avoid compaction
- Do not leave granular inoculant in the tank overnight to avoid condensation

Get the best results.

Unlike other products, inoculants are alive and require special care and handling. For best results, follow these guidelines.

[1] Consult product-specific label for temperature storage range by product. Find individual product labels at **agsolutions.ca**.

It's all in the delivery.

Each drill manufacturer has their own metering system, unique in design and precision for application of both seed and granular products in furrow. Ensuring your equipment is set up with the recommended requirements by the drill manufacturer for in-furrow application of low flow, clay-based granulars is the first key step to setting your spring application up for success.

	Bourgault®	John Deere®	Väderstad®
Metering system requirements for small granular/seed products (e.g. inoculant or canola seed)	Low output auger Options: UHMW (plastic), steel Recommendation: UHMW	Yellow roller/cartridge Recommendation: use roller spacers	18 CC low displacement roller
Necessary component	1 auger/tank	1 cartridge/tank	1 roller/10 ft of drill
	Seed Master®	**Morris**	**Case New Holland[1]**
Metering system requirements for small granular/seed products (e.g. inoculant or canola seed)	UltraPro™ canola roller (1/4 inch)	Fine seed plates and spiral fluted metering wheel	Orange cartridge/roller for inoculant White cartridge/roller for canola seed
Necessary component	1 roller/10 ft of drill	1 seed plate/metering wheel	1 roller/10 ft of drill

Setting up for application success.

- Perform regular equipment maintenance and monitoring for wear and tear on critical metering and application components
- Check if you're using the appropriate recommended metering system requirements for your drill type; consult your drill manufacturer to discuss any new innovations for application

[1] CNH does not currently recommend the use of clay-based granular products in their seeding systems.

*If you have any questions specific to the application of Nodulator® inoculants, speak to your BASF **AgSolutions**® Crop Establishment Specialist, Grower or Retail Representative or call **AgSolutions** Customer Care at 1-877-371-BASF (2273).*

BASF Insecticides

- Cimegra® foliar
- Cimegra
- Sefina®
- Titan®

NEW

Cimegra®
Insecticide

Now registered for foliar Colorado potato beetle control.

Powered by the groundbreaking active ingredient broflanilide, Cimegra® insecticide is an innovative solution in potatoes that provides control of prevalent and difficult-to-control chewing insects. In addition to in-furrow control of wireworms, Cimegra is now registered for foliar control of Colorado potato beetles.

- Unique mode of action that delivers fast knockdown and control you can count on
- Effective resistance management tool when used in rotation with other insecticide groups
- Convenience of simplified handling for difficult-to-control chewing insects[1]

For more information, contact your local BASF **AgSolutions®** Grower or Retail Representative or visit **agsolutions.ca/Cimegra**.

[1] Consult the product label for safety 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]
- 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

Storage

Requires heated storage.

Crops

Potatoes	in-furrow at planting
Corn (field, pop, seed and sweet)	in-furrow at planting T-band at planting

Pests controlled

In potatoes.

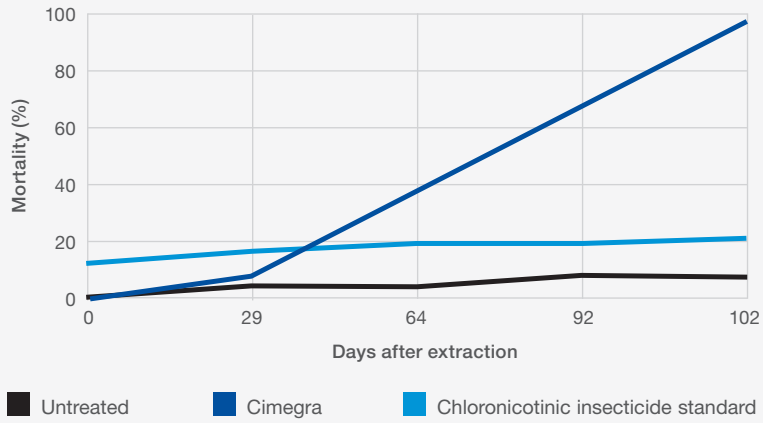
Wireworm[2]

In corn.

Corn rootworm (*Diabrotica virgifera virgifera* and *Diabrotica barberi*)
Wireworm[2]

Source: BASF

Laboratory study examining mortality vs. intoxication of wireworms



Source: W. van Herk, R. Vernon, British Columbia, 2019, 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.*

Application rate

One case of Cimegra insecticide will treat 60 acres (24 hectares).

In potatoes.

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

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

In corn.

For wireworm and corn rootworm control[3]	100 ml/ac (250 ml/ha)
For 76 cm (30″) row spacing[4]	1.9 ml per 100 metres of row

Apply at planting as an in-furrow or T-band spray by directing spray pattern to uniformly cover seed and surrounding soil.

Water volume

Dilute Cimegra insecticide product in a minimum of 50 L of water per hectare (20 L of water per acre). Use sufficient water to ensure thorough coverage of the seed, or seed piece and surrounding seed furrow.

[3] Do not exceed 100 ml/ac (250 ml/ha).
[4] For different row spacing, see label for calculation.

Mixing order

1. Ensure the spray tank is clean before use.
2. Fill the spray tank 1/2 full of water and start agitation.
3. Shake/agitate container well before use.
4. Add the required amount of Cimegra insecticide to the mix tank.
5. Continue agitation while filling the remainder of the spray tank.
6. After use, clean the spray tank according to label precautions.

Application tips

Use sufficient water to ensure thorough coverage of the seed, or seed piece and surrounding seed furrow.

Resistance management

Insecticide use should be based on an IPM program that includes scouting and record keeping, and considers cultural, biological and other chemical control practices. Contact your local extension specialist or certified crop advisors for any additional pesticide resistance management and/or IPM recommendations for the specific site and pest problems in your area.

Follow crops

Immediate plant-back is permitted for all labelled crops. A plant-back interval of 30 days is required for all crops not on the label.

Tank mixes

None on label.
Cimegra is not compatible with in-furrow fertilizers.

Contact your local BASF **AgSolutions®** Grower or Retail Representative or call **AgSolutions** Customer Care at 1-877-371-BASF (2273) for more information.

Cimegra®
Insecticide

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
- Powered by Inscalis®, a unique mode of action that controls labeled insect pests, including those that have developed resistance to other modes of action
- Extended control of labeled pests
- Effective tool in an integrated pest management strategy with low impact on beneficial insects, including predatory and parasitic insects when used according to the label

Active ingredient
Afidopyropen – Group 9D

Formulation
Dispersion concentrate

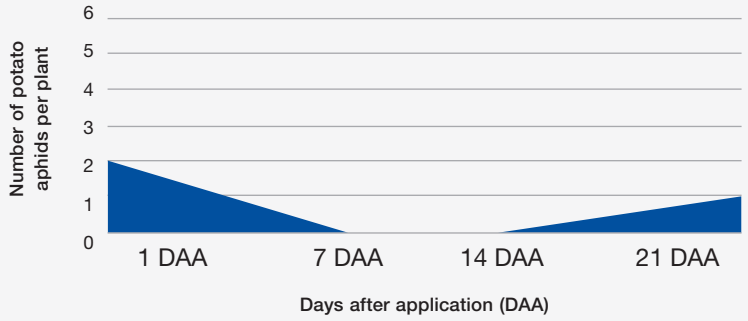
One case contains
2 x 3.24 L jugs

Storage
Does not require heated storage.

Crops	Staging
Alfalfa	emergence to harvest
Grasses, non-grass forages and hay	emergence to harvest
Potatoes	emergence to harvest
Soybeans	emergence to full maturity

Pests controlled	Staging
In potatoes.	all life stages
Green peach aphid (*Myzus persicae*)	
Potato aphid (*Macrosiphum euphoribae*)	
Sweet potato whitefly (*Bemisia tabaci*)	
Silverleaf whitefly (*Bemisia argentifolii*)	
In soybeans.	all life stages
Soybean aphid (*Aphis glycines*)	
In forage, fodder, straw and hay.	all life stages
Pea aphid (*Acyrthosiphon pisum*)	
Blue alfalfa aphid (*Acyrthosiphon kondoi*)[1]	
Spotted alfalfa aphid (*Therioaphis trifolii*)[1]	
Potato leaf hopper (*Empoasca fabae*)[1]	

Efficacy of Sefina® insecticide on potato aphids



Source: Grower Applied Strip Trials, NB, 2019, n=3

[1] Suppression.

Application rates[2]

One case of Sefina insecticide will treat up to 80 acres.

In potatoes.[3,4]

For green peach aphid and potato aphid control	81 ml/ac (0.2 L/ha)
For sweet potato whitefly and silverleaf whitefly	283 to 405 ml/ac (0.7 to 1.0 L/ha)

In soybeans.[5]

For soybean aphid control	81 ml/ac (0.2 L/ha)

In forage, fodder, straw and hay.[6,7]

For pea aphid control	81 ml/ac (0.2 L/ha)
For suppression of blue alfalfa aphid and spotted alfalfa aphid	81 ml/ac (0.2 L/ha)
For suppression of potato leaf hopper	81 to 162 ml/ac (0.2 to 0.4 L/ha)

Water volume

In potatoes and soybeans.

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

[2] Allow a minimum of 7 days between applications.
[3] Do not make more than two sequential applications of Sefina insecticide before using an effective insecticide with a different mode of action.
[4] Do not apply more than 1 L/ac (2.5 L/ha) per year.
[5] Do not apply more than 162 ml/ac (0.4 L/ha) per year.
[6] Refer to label for specific crops.
[7] Do not apply more than 1.2 L/ha per year. Maximum of 4 applications per year.

Mixing order

1. Fill clean spray tank 1/2 full of clean water and start agitation.
2. Add the correct amount of Sefina and continue to agitate until mixed.
3. If tank mix is being applied, add the correct amount while continuing agitation.
4. Clean the spray tank after use.

Application tips

Use high water volumes for thorough and uniform coverage.

Pre-harvest interval

0 days after application for forage, fodder, straw and hay.

7 days after application for potatoes and soybeans.

Follow crops

A plant-back interval of 30 days is required for all crops not on the label.

Tank mixes

Contact your local BASF **AgSolutions®** Grower or Retail Representative or call **AgSolutions** Customer Care at 1-877-371-BASF (2273) for more information on supported tank mixes.

Sefina®
Insecticide Powered by **Inscalis**®

Titan®

Insecticide

Titan® is 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
- Early insect control helps plants grow without damage, maximizing yield potential, quality and reducing the risk of secondary disease

Active ingredient
Clothianidin – Group 4

Formulation
Suspension

One case contains
2 x 3 L jugs

Storage
Requires heated storage.

Source: BASF

Crops
Potatoes

Staging
seed-piece treatment

Pests controlled	Application method	Application rate
Aphid (including potato, green peach, foxglove and buckthorn aphids)	Seed-piece treatment	10.4 to 20.8 ml per 100 kg potato seed pieces
Colorado potato beetle		
Potato leafhopper		
Potato flea beetle		
Wireworm[1] (*Agriotes obscurus, A. lineatus, Limonius agonus, Melanotus* spp., *M. communis*)		20.8 ml per 100 kg potato seed pieces

For extended residual control of pests other than wireworm, apply the higher rate.

[1] Damage suppression only.

Water volume

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

Mixing order

1. Ensure the spray tank is clean before use.
2. Fill the spray tank 1/2 full of water and start agitation.
3. Add the required amount of Titan to the tank.
4. Add the required amount of tank-mix partner, if applicable.
5. Add the recommended amount of colourant, if applicable.
6. Continue agitation while filling the remainder of the spray tank.
7. After use, clean the spray tank according to label precautions.

Application tips

Apply only in areas with adequate ventilation or in areas that are equipped to remove spray mist or dust.

For optimal insect control, good coverage of the seed pieces is required.

Plant seed pieces as soon as practical after cutting and treating.

Resistance management – Do not apply any subsequent applications of a Group 4 insecticide following a Titan seed-piece treatment (i.e., in-furrow or foliar application).

Restricted entry interval – 12 hours

Tank mixes

Seed treatments: Emesto® Silver

Contact your local BASF **AgSolutions®** Grower or Retail Representative or call **AgSolutions** Customer Care at 1-877-371-BASF (2273) for more information on supported tank mixes.

BASF Herbicides

- Advanced Weed Control
- Altitude FX® 3
- Armezon®
- Armezon and Zidua® SC
- Basagran® Forte
- Centurion®
- Certitude®
- Distinct®
- Engenia® (dicamba-tolerant soybeans)
- Engenia
- Weed control is your goal. Stewardship is your priority
- Facet® L
- Frontier® Max
- Heat® LQ pre-harvest
- Liberty® 150 SN
- Two spray or not two spray
- Liberty 200 SN
- Odyssey® NXT
- Odyssey Ultra Q
- Smoulder®
- Solo® ADV
- Solo Ultra Q
- Viper® ADV
- Voraxor®
- Voraxor Complete
- Zidua® SC
- Zidua SC (fall-applied in lentils)
- Merge® surfactant
- BASF 28% UAN
- **Clearfield®** Production System for lentils
- **Clearfield** Production System for wheat
- WAMLEGS - Mixing order for tank mixes

ADVANCED WEED CONTROL

We're not done until your weeds are.

The Advanced Weed Control (AWC) Program is a complete weed management strategy, developed to tackle your specific weed challenges.[1] AWC combines a resistance management approach with effective herbicides. Backed by the Performance Support Guarantee, our team will go the extra mile to earn your trust and help you achieve weed-free fields.

The benefits of the program include the following:

Cleaner fields – Dependable herbicides combined with a weed management strategy provides improved control of labelled weeds, including resistant biotypes. And customized solutions provide flexibility to manage specific challenges of any given field.

Resistance management – Providing numerous herbicide options with multiple modes of action contributes to the long-term success of growers' operations.

Performance Support Guarantee – You can enjoy the peace of mind that comes with hassle-free support in the unlikely event of weed escapes.[2] That even includes resistant biotypes, wild oats, kochia, cleavers and flushing weeds.[1] Eligible Growers can receive up to 100% of the BASF respray purchase value[3] to correct the specific weed problem in each field.

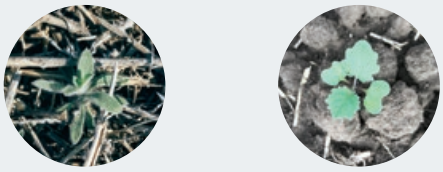
[1] When adhering to specified rates outlined in the product label for the weeds outlined in the program.
[2] When recommended products are used up to labelled rates.
[3] Calculated at the Suggested Retail Price (SRP).

Customized solutions for any weed challenge.

1. Identify your weed challenges.
2. Customize your herbicide solution.

COMMON CHALLENGING WEEDS[1]	RECOMMENDED SOLUTION
Grassy weeds Foxtail barley[2] Green and yellow foxtail Quackgrass Volunteer cereals Wild oats **Broadleaf weeds** Chickweed Dandelion Flixweed Hemp's nettle Lamb's quarters Redroot pigweed Round-leaved mallow Shepherd's purse Stinkweed Volunteer flax Wild buckwheat Wild mustard 	In-Crop Liberty® 150 SN Herbicide + Centurion® Herbicide 1.35 L/acre or higher[3] — 40 to 60 acres/case

[1] Refer to Centurion® and Liberty® 150 herbicide labels for full list of covered weeds and specific application timing.
[2] 40 acres/case rate of Centurion is required for control of foxtail barley.

OTHER WEED ISSUES	RECOMMENDED SOLUTION
Kochia (inc. resistant biotypes) **Volunteer canola** 	Pre-Seed Certitude® Herbicide — 40 acres/case FOLLOWED BY In-Crop Liberty® 150 SN Herbicide — 1.35 L/acre or higher[3]
Cleavers 	In-Crop Liberty® 150 SN Herbicide + Facet® L Herbicide 1.35 L/acre or higher[3] — 160 acres/case

If you have cleavers as well as a range of other challenging weeds, you can use a tank mix of Liberty 150 + Centurion + Facet® L herbicides.

[3] Do not exceed maximum label rates for Liberty 150 herbicide per season.

PEAS

KEY WEEDS CONTROLLED

(inc. resistant biotypes)

Cleavers

Volunteer canola

Kochia

Wild oats

Voraxor® herbicide:

Cleavers
Kochia
Lamb's quarters
Redroot pigweed
Stinkweed
Volunteer canola
Wild buckwheat
Wild mustard

Using Voraxor Complete – the left column plus:

Foxtail (green, yellow)
Waterhemp
Wild oats

RECOMMENDED SOLUTION

Spring Pre-Seed

Voraxor®
Powered by **Tirexor®** Herbicide
(40 ac/case)

OR

Voraxor® Complete
Powered by **Tirexor®** Herbicide
(60 ac/case)

FOLLOWED BY

In-Crop

Viper® ADV
Herbicide

CLEARFIELD® LENTILS

KEY WEEDS CONTROLLED

(inc. resistant biotypes)

Lamb's quarters

Volunteer canola

Wild buckwheat

Wild oats

Foxtail (green, yellow)
Lamb's quarters
Redroot pigweed
Volunteer canola
Wild buckwheat
Wild oats

RECOMMENDED SOLUTION

Fall Application

Zidua® SC
Herbicide
(fall-applied residual; 83-110 ac/case)

+

Spring Pre-Seed

Voraxor® [1]
Powered by **Tirexor®** Herbicide
(80 ac/case)

OR

Spring Pre-Seed

Voraxor® Complete
Powered by **Tirexor®** Herbicide
(80 ac/case)

FOLLOWED BY

In-Crop

Solo® Ultra Q
Herbicide
(for re-cropping flexibility)

OR

Odyssey® Ultra Q
Herbicide
(for flushing weed control)

[1] Rate restrictions apply. Do not use rates higher than 48 ml/ha or injury could result.

SOYBEANS

KEY WEEDS CONTROLLED

(inc. resistant biotypes)

Cleavers

Volunteer canola

Kochia

Wild buckwheat

Voraxor herbicide:

Cleavers
Kochia
Lamb's quarters
Redroot pigweed
Stinkweed
Volunteer canola
Wild buckwheat
Wild mustard

Using Voraxor Complete – the left column plus:

Foxtail (green, yellow)
Waterhemp
Wild oats

RECOMMENDED SOLUTION

GLYPHOSATE-TOLERANT

Pre-Seed

Voraxor[1] Powered by **Tirexor**® Herbicide (40 ac/case)

OR

Voraxor® Complete Powered by **Tirexor**® Herbicide (60 ac/case)

FOLLOWED BY

In-Crop

Viper® ADV Herbicide

Cleavers
Kochia
Lamb's quarters
Redroot pigweed
Stinkweed
Volunteer canola
Wild buckwheat
Wild mustard

DICAMBA-TOLERANT

Pre-Seed

Voraxor[1] Powered by **Tirexor**® Herbicide

FOLLOWED BY

In-Crop

Engenia® Herbicide

GLYPHOSATE-TOLERANT CORN

KEY WEEDS CONTROLLED

(inc. resistant biotypes)

Cleavers

Volunteer canola

Kochia

Wild buckwheat

Voraxor herbicide:

Cleavers
Kochia
Lamb's quarters
Redroot pigweed
Stinkweed
Volunteer canola
Wild buckwheat
Wild mustard

Using Voraxor Complete – the left column plus:

Foxtail (green, yellow)
Waterhemp
Wild oats

Option 2 tank mix – burndown control:

Common ragweed

Option 2 tank mix – residual control:

Barnyard grass
Foxtail (giant, green, yellow)
Redroot pigweed
Waterhemp
Wild oats

RECOMMENDED SOLUTION

OPTION 1

Pre-Seed

Voraxor[1] Powered by **Tirexor**® Herbicide (40 ac/case)

OR

Voraxor® Complete Powered by **Tirexor**® Herbicide (60 ac/case)

FOLLOWED BY

In-Crop

Armezon® Herbicide **+ GLYPHOSATE**

OPTION 2

In-Crop

Zidua® SC Herbicide **+ Armezon®** Herbicide **+ GLYPHOSATE**

(80 ac/case)

[1] Rate restrictions apply. Do not use higher than 40.5 ml/ac (100 ml/ha) or crop injury could result.

Clearfield® Production System for Wheat

Clearfield® Plus Production System for Wheat

BASF We create chemistry

Altitude FX® 3

Herbicide for **Clearfield**® wheat

The only registered herbicide for the Clearfield® Production System for wheat and the Clearfield Plus Production System for wheat, with added flexibility.

- High-level control of grasses including volunteer barley and wild oats resistant to Group 1
- Choice of tank-mix partners for broadleaf control flexibility

Active ingredients

(a) Imazamox – Group 2
(b) Fluroxypyr – Group 4

Formulation

(a) Solution
(b) Emulsifiable concentrate

One case contains

(a) 2.68 L jug
(b) 5 L jug of Starane® II herbicide

Storage

Requires heated storage.

Crops	Staging
Clearfield wheat varieties	3 to 6 leaf[1]

Weeds controlled	Staging
Broadleafs	up to 4 leaf (except where indicated)
Cleavers	(1 to 8 whorls)
Cow cockle	
Green smartweed	(2 to 6 leaf)
Kochia[2]	
Lamb's quarters[3]	
Redroot pigweed	
Round-leaved mallow[3]	
Russian thistle[3]	
Shepherd's-purse	
Stinkweed	
Stork's-bill[3]	(1 to 8 leaf)
Volunteer canola[4]	
Volunteer flax	(1 to 12 cm)
Wild buckwheat[3]	
Wild mustard	
Broadleaf weeds controlled with specific, specialty tank-mix partners[5]	
MCPA Ester (northern broadleafs): Chickweed, cow cockle, hemp-nettle, wild buckwheat	(apply at 3 leaf)
2,4-D Ester (southern broadleafs): Russian thistle, round-leaved mallow	(apply at 4 leaf)
Curtail® herbicide (thistles and perennials): Canada thistle, sow thistle, dandelion	(apply at 3 leaf)
Grasses	up to 4 leaf
Barnyard grass	
Foxtail (green, yellow)	
Japanese brome grass[3]	
Persian darnel	
Volunteer cereals[6]	
Wild oats	

[1] Crop staging can change depending on tank-mix partner. See label for details.
[2] Control of biotypes resistant to Group 2.
[3] Suppression only. Refer to product label for control with specific tank-mix partner.
[4] Non-**Clearfield** canola varieties only.
[5] See application rate section for individual tank-mix rates.
[6] Barley, canary seed, oats, durum, non-**Clearfield** wheat.

Application rates

One case will treat 40 acres.

Two separate tank-mix components are included.

Imazamox (a)	67 ml/ac (167 ml/ha)
Fluroxypyr (b)	126 ml/ac (310 ml/ha)

One of the following broadleaf specialty tank-mix partners[7] must be chosen.

MCPA Ester 600[7]	Northern broadleafs	375 ml/ac (927 ml/ha)
2,4-D Ethylhexyl Ester 700[7]	Southern broadleafs	320 ml/ac (791 ml/ha)
Curtail® M[7]	Thistles and perennials	610 to 810 ml/ac (1.5 to 2 L/ha)

Adjuvant Options

Wheat Variety	Non-Ionic Surfactant[7]	MSO Concentrate with Leci-Tech[7]	Merge Adjuvant[7]
Clearfield	0.25% v/v (e.g. 250 ml per 100 L solution)	-	-
Clearfield Plus	0.25% v/v	1% v/v	0.5% v/v

Water volume

Ground application only	20 to 40 L/ac (5 to 10 gal/ac)

[7] Adjuvant option and optional broadleaf partners are not included in the case.

Mixing order

1. Add 3/4 of clean water needed. Use 50 mesh or a coarser filter screen.
2. Start and continue agitation throughout mixing and spraying.
3. Add imazamox solution (a) first and mix thoroughly.
4. Add all remaining tank-mix partners and mix thoroughly.
5. Continue agitation and add required amount of adjuvant.
6. A silicone anti-foaming agent may be added if needed.
7. Complete filling the tank to the desired level with water.

Application tips

Rainfastness – 3 hours.
Avoid application immediately after a frost or during cold weather.
Avoid sprayer overlap to prevent crop injury.
Apply to actively growing weeds.

Pre-harvest interval

79 days after application for wheat grain and straw.

Follow crops

3 months after application
Winter wheat[8]

1 year after application

Canary seed[8]	Chickpeas	Field peas	Spring barley	Tame oats[8]
Clearfield canola	Durum wheat[8]	Flax[8]	Spring wheat	
Non-**Clearfield** canola[8]	Field corn	Lentils	Sunflowers	

2 years after application
Mustard (condiment-type only)[8]

Refer to tank-mix partner's label for any additional follow-crop restrictions.

[8] If drought conditions are experienced between June 1 and September 1 in the year of application, delay planting of winter wheat, durum wheat, canary seed, tame oats, flax and canola (non-**Clearfield**) by an additional year. If drought is received between June 1 and September 1 in the year of application OR between June 1 and September 1 in the year following application, delay planting of mustard by an additional year.

Tank mixes[9]

Herbicides: Curtail® M, 2,4-D Ethylhexyl Ester 700, MCPA Ester 600

[9] Individual tank-mix partners listed here are required for Altitude FX® 3 herbicide to provide specific broadleaf specialty control. Altitude FX 3 is a tank mix of AC 299, 263 120 AS (imazamox) and Starane® II (fluroxypyr).

Armezon®

Herbicide

SUPPORTED BY THE ADVANCED WEED CONTROL PROGRAM

Your ideal tank-mix partner for post-emergent weed control in glyphosate-tolerant corn.

- Wide application window from 1 to 7 leaf stage
- Innovative Group 27 chemistry for control of weeds resistant to Group 2, glyphosate and triazine

Active ingredient

Topramezone – Group 27

Formulation

Liquid suspension

One case contains

4 x 600 ml jugs

Storage

Requires heated storage.

Weed control with Armezon® herbicide

Armezon + glyphosate

Source: BASF Small Plot Trials, Winkler, MB, 2019

Crops	Staging
Field, seed, sweet and glyphosate-tolerant corn	1 to 7 leaf

Weeds controlled[1]	Staging
Broadleafs	1 to 8 leaf (except where indicated)
Chickweed[2]	
Common ragweed	
Kochia[3]	(less than 10 cm height)
Lamb's quarters[2]	
Redroot pigweed	
Volunteer canola (all types)[4]	(1 to 6 leaf)
Wild mustard	
Grasses	1 to 4 leaf
Barnyard grass[2]	
Foxtail (green, yellow)[2]	

[1] Armezon applied as tank mixture. See Armezon label for tank-mix partners.
[2] Suppression.
[3] All types, including glyphosate-resistant biotypes. Apply when kochia is less than 10 cm.
[4] Including glyphosate-tolerant biotypes.

Application rates

One case of Armezon herbicide will treat 160 acres.

Glyphosate-tolerant corn	Armezon[5] Glyphosate[6,7]	15 ml/ac (37 ml/ha)
Seed, sweet corn	Armezon Atrazine[6] Assist® adjuvant[6] 28% UAN[6]	15 ml/ac (37 ml/ha) 420 ml/ac (500 g ai/ha) 1.25% v/v (12.5 L per 1000 L spray solution) 1.25% v/v (12.5 L per 1000 L spray solution)
Field corn	Armezon Atrazine[6] Merge® adjuvant[6]	15 ml/ac (37 ml/ha) 420 ml/ac (500 g ai/ha) 0.5% v/v (5 L per 1000 L spray solution)

Water volume

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

[5] For control of secondary flushes of volunteer canola, a second application of Armezon at 15 ml/ac (37 ml/ha) may be applied, for a total of 30 ml/ac (74 ml/ha) on glyphosate-tolerant corn before the 7 leaf stage.
[6] Atrazine, glyphosate, Assist, 28% UAN and Merge are sold separately.
[7] Refer to Armezon label for rates.

Mixing order

1. Fill sprayer 1/2 full with clean water and agitate.
2. Add dry tank-mix partners into the spray tank and agitate.
3. Add Armezon herbicide and thoroughly mix.
4. After the Armezon herbicide has visibly dispersed, add any liquid herbicide tank-mix partners.
5. Add either Merge adjuvant to the spray tank or Assist followed by liquid fertilizer (28% UAN) if required.
6. While agitating, fill the remainder of the tank with water up to the proper level.

Application tips

Rainfastness – Limited by glyphosate formulation.

Follow the glyphosate manufacturer's recommendation for rainfast guidelines.

Denser weed infestation requires the use of higher water volumes.

Pre-harvest interval

45 days after application for corn harvest (silage, fodder or grain).

Follow crops[8,9]

4 months after application

Winter wheat

1 year after application

Alfalfa	Lentils (incl. **Clearfield** lentils)	Potatoes
Canola (incl. **Clearfield®** canola)	Navy beans	Soybeans
Field corn	Peas	Spring wheat

[8] Armezon is used in a tank mix; refer to tank-mix partner's label for additional follow-crop restrictions.
[9] If the higher rate of 74 ml/ha is used, fields can only be seeded to winter wheat 4 months after application and spring wheat, field corn and canola the following year.

Tank mixes

Herbicides: Atrazine, glyphosate

Contact your local BASF **AgSolutions®** Grower or Retail Representative or call **AgSolutions** Customer Care at 1-877-371-BASF (2273) for additional information on supported tank mixes.

Armezon® Herbicide

Zidua® SC Herbicide

For early post-emergent weed control.

For early post-emergent weed control that provides rapid burndown and enhanced residual control for flushing weeds, BASF recommends tank mixing Armezon® and Zidua® SC herbicides.

- Flexibility to apply on Roundup Ready® corn between 1 to 4 leaf stage with glyphosate
- Broad-spectrum weed control, including volunteer canola, kochia and grassy weeds
- Incorporates multiple modes of effective action for resistance management
- Fast control of emerged weeds and residual weed control for secondary flushes

	Armezon[1]	Zidua SC
Acres treated	160 ac/case	80 ac/case
Active ingredient(s)	Topramezone	Pyroxasulfone
WSSA Group(s)	27	15
Grassy weeds:		
Barnyard grass	S	**C**
Crabgrass (large)	–	**C**
Green foxtail	S	S
Yellow foxtail	S	S
Ryegrass (Italian)	–	**C**
Wild oats	–	S
Broadleaf weeds:		
Chickweed	S	S
Common ragweed	**C**	–
Kochia	**C**[2]	S
Lamb's quarters	S	S
Redroot pigweed	–	**C**
Volunteer canola	**C**[3]	–
Waterhemp	–	**C**
Application timing	1 to 7 leaf[4]	Pre-seed to 4 leaf
Residual weed control	NA	4 to 6 weeks
Moisture to activate	NA	½ to ¾"

S = suppression C = control

[1] In a tank mix with glyphosate.
[2] All types, including glyphosate-resistant biotypes. Apply when kochia is less than 10 cm.
[3] Includes glyphosate-tolerant biotypes.
[4] 1 to 6 leaf for volunteer canola. 1 to 4 leaf for grasses.

Where's the fit?

- Corn growers who use tillage as part of their weed management strategy
- Time management for busy spring – integrate residual with post-emerge

Effective control of emerged weeds with Armezon + Zidua SC. Showing residual activity of Zidua SC 28 days after treatment

Untreated

Armezon + Zidua SC

Source: BASF Small Plot Trials, Maryhill, ON, 2018

Basagran® Forte

Herbicide

Post-emergent control of the toughest weeds in dry beans and soybeans.

- Efficient control of key broadleaf weeds
- Group 6 chemistry to provide alternative mode of action for control of resistant broadleaf weeds
- Flexible tank-mix options for targeted weed control in dry beans

Active ingredient

Bentazon – Group 6

Formulation

Liquid

One case contains

2 x 10 L jugs
Also available in 130 L bulk

Storage

Requires heated storage.

Crops	Staging
Corn (grain, silage, sweet, seed)	any stage
Dry beans (incl. coloured, white, kidney)	after 1st trifoliate
Faba beans	after 2 leaf
Flax[1]	after 5 cm height
Peas (field and processing)	after 3 leaf pairs/nodes form
Soybeans	any stage

Weeds controlled	Staging	
Broadleafs	(at 900 ml/ac)	(at 700 ml/ac)
Buttercup	6 leaf	–
Canada thistle[2]	–	20 cm height
Cleavers	1 to 3 whorls	–
Cocklebur	10 leaf	6 leaf
Common chickweed	1 to 3 weeks post-emergence	
Common groundsel[3]	10 cm height	–
Common ragweed[3]	6 leaf	–
Corn spurry	10 cm height	–
Field bindweed[2,4,5]	–	6 cm height
Flower-of-an-hour	10 leaf	6 leaf
Giant ragweed	4 leaf	–
Hairy galinsoga	6 leaf	–
Hairy nightshade	6 leaf	–
Jimsonweed	10 leaf	–
Lady's thumb	10 leaf	6 leaf
Lamb's quarters[3]	8 leaf	–
Low cudweed	6 leaf	–
Purslane	6 leaf	–
Redroot pigweed[3,4]	4 leaf	–
Russian thistle[4]	4 leaf	–
Shepherd's-purse	6 leaf	6 leaf
Stinkweed	6 leaf	6 leaf
Velvetleaf[6]	6 leaf	–
Volunteer canola[7]	8 leaf	8 leaf
Wild mustard	10 leaf	6 leaf
Wild radish	6 leaf	–
Sedge		
Yellow nutsedge[2]	–	20 cm height

[1] Excluding low linolenic acid varieties.
[2] For perennial weeds, repeat application 7 to 15 days after first, if needed.
[3] Includes triazine-resistant biotypes.
[4] Suppression.
[5] Treat before it is dark green and has begun to trail.
[6] Will defoliate 4 leaf and larger but regrowth may occur.
[7] Only provides control in field peas up to 4 leaf at 404 ml/ac (1 L/ha) in Alberta.

Application rates

One case of Basagran® Forte herbicide will treat 22 to 29 acres, depending on rate.

Basagran Forte herbicide	700 to 900 ml/ac (1.75 to 2.25 L/ha)
Water volume[8]	
Ground application only	40 to 120 L/ac (10 to 32 gal/ac)

[8] Use larger water volumes for weeds at the upper limit of their recommended stage for treatment.

Mixing order

1. Fill the tank 1/2 full with clean water. Start agitation or by-pass system.
2. When using a tank mix for dry beans (Viper® ADV herbicide), add selected tank-mix partner.[9]
3. Add correct amount of Basagran Forte herbicide and agitate 2 to 3 minutes.
4. When required, add correct amount of nitrogen source.
5. Add remainder of water, agitate and spray.

[9] See respective labels for complete rate and mixing details.

Application tips

Rainfastness – 6 to 8 hours.

Use a minimum of 80 L/ac (20 gal/ac) of water if crop canopy or heavy weed population interferes with thorough spray coverage, or under cool temperature.

Basagran Forte works best when applied between 15°C and 28°C.

When tank mixing, always check the tank-mix partner recommendations for additional staging restrictions.

Follow crops

No follow-crop restrictions.

Tank mixes

Herbicides for dry beans: Viper ADV at 404 ml/ac (1 L/ha) and Basagran Forte at 146 ml/ac (360 ml/ha) and 28% UAN at 809 ml/ac (2 L/ha)

Herbicides for field peas: Basagran Forte at 506 ml/ac (1.25 L/ha) and 28% UAN at 809 ml/ac (2 L/ha)

None on label for all other crops.

Contact your local BASF **AgSolutions®** Grower or Retail Representative or call **AgSolutions** Customer Care at 1-877-371-BASF (2273) for additional information on supported tank mixes.

Centurion®
Herbicide

SUPPORTED BY THE ADVANCED WEED CONTROL PROGRAM

Post-emergent control of the toughest grassy weeds in canola, flax and pulses.

- Wide window of application
- Tank-mix flexibility for enhanced weed control
- No follow-crop restrictions
- Complements Liberty® 150 herbicide for enhanced control of grassy weeds

Active ingredient
Clethodim – Group 1

Formulation
Emulsifiable concentrate

One case contains
3 L jug of Centurion® herbicide
9 L jug of Amigo® adjuvant

Storage
Does not require heated storage.

Effective control of grassy weeds with Centurion

Centurion + Amigo (60 ac/case + 0.5% v/v)

ARROW ALL IN® herbicide (60 ac/case)

Source: BASF Small Plot Trials, Regina, SK, 2019

Crops	Staging[1]
	post-emergence
Brown mustard	
Canola	
Chickpeas	
Dry beans	
Field peas	
Flax	
Lentils	
Potatoes	
Seedling alfalfa	
Soybeans	
Sunflowers	
Yellow mustard	

Weeds controlled	Staging
Grasses	2 to 6 leaf (except where indicated)
Barnyard grass	
Downy brome grass[2]	(before tillering)
Japanese brome grass[2]	(before tillering)
Fall panicum	
Foxtail barley[2]	(1 to 4 leaf)
Green foxtail	
Large crabgrass	
Persian darnel	
Proso millet	
Quackgrass[3,4]	(6 to 15 cm in height)
Smooth crabgrass	
Volunteer barley	
Volunteer canary seed	
Volunteer corn	
Volunteer oats	
Volunteer wheat	
Wild oats	
Witchgrass	
Yellow foxtail	

[1] See label for specific crop applications.
[2] When tank mixed with Liberty 150 herbicide.
[3] Apply at 154 ml/ac (380 ml/ha) for season-long control.
[4] Suppressed at 77 ml/ac (190 ml/ha). Follow up with a fall application of glyphosate for clean fields next season.

Application rates

Centurion, used alone, can be applied at the following rates with the exception of chickpeas and dry beans which have a maximum application rate of 40 ac/case (77 ml/ac). If applied in a tank mix with another product, consult the label for specific rates.

20 ac/case or 154 ml/ac	For control of all the major grass weeds with season-long control of quackgrass (mix with Amigo at 1.0% v/v)
40 ac/case or 77 ml/ac	For control of all the major grass weeds, except quackgrass (mix with Amigo at 0.5% v/v)
60 ac/case or 50 ml/ac	For control of green and yellow foxtail, wild oats and volunteer cereals (wheat, oats and barley) (mix with Amigo at 0.5% v/v)

Water volume[5]

Ground application	22 L/ac (6 gal/ac) minimum
Aerial application	11.3 L/ac (3 gal/ac) minimum

[5] For tank mixing, follow recommendations of tank-mix partners.

Liberty 150 and Centurion tank-mix tips

Centurion tank mixed with Liberty 150 can optimize control of grassy weeds in your InVigor® hybrid canola.

- For foxtail barley, volunteer barley, downy and Japanese brome control, BASF recommends a minimum rate of Centurion at the 40 ac/case with Liberty 150 at 1.35 L/ac or 1.62 L/ac rate

Mixing order

1. Ensure the spray tank is clean before use.
2. Fill the spray tank 1/2 full of water and start agitation.
3. **If tank mixing with Liberty 150 herbicide:** add Amigo, then add Liberty 150, agitate moderately, then add Centurion, in sequential order.
4. **If tank mixing with Liberty 150 and Facet® L herbicide:** add Amigo[6], then add Liberty 150, agitate moderately, then add Facet L, followed by Centurion, in sequential order.
5. Continue agitation while adding the remaining amount of water.[7]

[6] Merge® adjuvant can be used in place of Amigo. The two adjuvants cannot be mixed together.
[7] Agitate moderately, as over-agitation may cause foaming.

Centurion can be antagonized by high levels of bicarbonates in water (300 mg/L is of concern and 500 mg/L or higher will cause issues). The simple remedy is to mix AMS 1.00% v/v.

Tank mixes[8]

Herbicide for LibertyLink® canola: Liberty 150
Herbicide tank mix for LibertyLink canola: Centurion + Liberty 150 + Facet L

[8] See label for other crops.

Application tips

Rainfastness – 1 hour.[9]

[9] Rainfastness is limited by its tank-mix partners—for example, if tank mixed with Liberty 150 or Facet L, this time becomes 4 or 6 hours, respectively.

Pre-harvest interval[10]

60 days after application for brown mustard, canola, chickpeas, dry beans, flax, lentils, potatoes and yellow mustard.
75 days after application for field peas and soybeans.

[10] For seedling alfalfa and sunflowers, see label for details.

Contact your local BASF **AgSolutions®** Grower or Retail Representative or call **AgSolutions** Customer Care at 1-877-371-BASF (2273) for additional information on supported tank mixes.

Centurion®
Herbicide

Certitude®

Herbicide

SUPPORTED BY THE ADVANCED WEED CONTROL PROGRAM

Delivers exceptional pre-seed weed control of herbicide-resistant kochia and volunteer canola and helps improve sustainability by being the first Group 27 herbicide for canola production.

- The first Group 27 herbicide developed for pre-seed use for canola production
- Consistent control with both contact and systemic activity

Active ingredients

Bromoxynil – Group 6
Topramezone – Group 27

Formulation

Certitude® herbicide A – Suspension concentrate

Certitude herbicide B – Emulsifiable concentrate

One case contains

291 ml jug of Certitude A

9.71 L jug of Certitude B

8.1 L jug of Merge® adjuvant

Storage

Requires heated storage.

Volunteer canola control with Certitude herbicide vs. competition

Conquer® II herbicide

Certitude

Source: BASF Small Plot Trials, 2019, 14 DAT

Crops	Staging
Canola	pre-seed

Weeds controlled[1]	Staging
Broadleafs	up to 4 leaf (except where indicated)
Chickweed	
Cleavers	
Cow cockle[2]	
Flixweed	
Hemp-nettle	
Kochia[3]	(up to 10 cm in height)
Lady's thumb	
Lamb's quarters	(up to 15 cm in height)
Narrow-leaved hawk's beard	
Redroot pigweed	
Russian thistle	
Stinkweed[4]	
Volunteer canola	(cotyledon to 6 leaf)
Volunteer flax	
Wild buckwheat	
Wild mustard[2]	
Grasses	
Barnyard grass	
Downy brome	
Green foxtail	
Volunteer barley	
Volunteer wheat	
Wild oats	

[1] When applied with glyphosate (1 Roundup® Equivalent Litre of glyphosate recommended).
[2] Under normal conditions will be controlled up to the 4 leaf stage. Plants beyond this stage are unlikely to be controlled.
[3] Including glyphosate-resistant biotypes.
[4] Including triazine-resistant biotypes.

Application rates

One case of Certitude herbicide will treat 40 acres.

Canola	Certitude A	7 ml/ac (18 ml/ha)
	Certitude B	243 ml/ac (0.6 L/ha)
	Merge	202 ml/ac (0.5 L/ha)

Water volume

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

Mixing order

1. Always start with a clean sprayer. Refer to previously applied product labels for specific cleaning instructions.
2. Fill the clean spray tank 1/2 full of clean water and start agitation.
3. Add Certitude A and continue to agitate until visibly dispersed.
4. Add Certitude B and continue to agitate until mixed.
5. Add glyphosate.
6. Add Merge adjuvant.
7. Continue agitating while adding the remaining amount of water.

Application tips

Restricted entry interval – 24 hours.

Avoid application when heavy rain is forecast.

Should the product freeze, agitate or mix contents well before use.

Increase water volume with moderate to high weed infestation for better coverage. When targeting weeds resistant to Group 9, such as kochia, increase water volume to 10 gallons per acre.

Pre-harvest interval

There is no required pre-harvest interval between a pre-seed application of Certitude and the harvest of canola.

Follow crops

4 months after application

Winter wheat

1 year after application[5]

Alfalfa, barley, canola, field corn, field peas, lentils, navy (white) beans, peas, potatoes, soybeans, spring wheat

[5] For additional BASF supported crops, contact your local BASF **AgSolutions®** Grower or Retail Representative.

Tank mixes

Glyphosate only.

Contact your local BASF **AgSolutions** Grower or Retail Representative or call **AgSolutions** Customer Care at 1-877-371-BASF (2273) for additional information on supported tank mixes.

Certitude®
Herbicide

Distinct®

Herbicide

Selective post-emergent weed control for field corn. Complements glyphosate for superior chemfallow and post-harvest control.

- Controls annual broadleaf weeds in post-emergent corn
- Multiple modes of action with glyphosate to control resistant biotypes in chemfallow and post-harvest
- Help keep fields cleaner to set them up for success the next season
- Excellent follow-crop flexibility that includes pulses and canola

Active ingredients

Dicamba – Group 4
Diflufenzopyr – Group 19

Formulation

Water dispersible granular

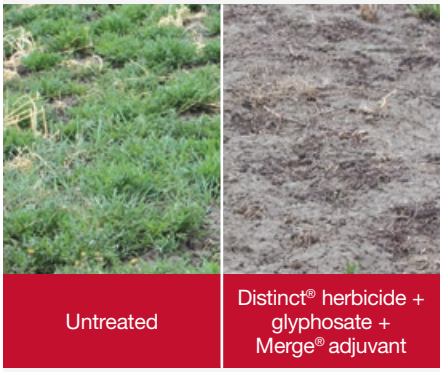
One case contains

2 x 2.3 kg jugs

Storage

Does not require heated storage.

Weed control in spring, following previous September application



Source: BASF Small Plot Trials, 2013

Glyphosate-resistant kochia 61 days after herbicide application

Source: BASF Small Plot Trials, 2013

Application or crop

Field corn
Chemfallow
Post-harvest

Staging

2 to 6 leaf
July to August
prior to first significant frost

Weeds controlled and staging

In field corn.
Apply to actively growing weeds (except where indicated)

Biennial wormwood (2 to 8 leaf)
Canada thistle[1]
Common cocklebur (cotyledon to 6 leaf)
Common ragweed
Giant ragweed[2] (2 to 8 leaf)
Kochia (up to 15 cm height)
Lady's thumb
Lamb's quarters
Perennial sow thistle[2] (2 to 10 leaf)
Redroot pigweed
Tall waterhemp
Velvetleaf
Volunteer adzuki beans (1 to 3 trifoliate)
Volunteer canola (cotyledon to 4 leaf)
Wild buckwheat

In chemfallow and post-harvest.
Apply to actively growing weeds (except where indicated)

Distinct at 58 g/ac tank mixed with glyphosate will control:

Dandelion[1]
Kochia
Lamb's quarters
Narrow-leaved hawk's beard
Redroot pigweed
Round-leaved mallow
Spiny annual sow thistle
Wild buckwheat

Distinct at 115 g/ac tank mixed with glyphosate will control:

Biennial wormwood (2 to 8 leaf)
Canada thistle[1]
Common cocklebur (cotyledon to 6 leaf)
Common ragweed
Dandelion[1]
Kochia[3] (up to 15 cm height)
Lady's thumb
Lamb's quarters
Perennial sow thistle[2] (2 to 10 leaf)
Redroot pigweed
Tall waterhemp
Velvetleaf
Volunteer canola (cotyledon to 4 leaf)
Wild buckwheat

[1] Top growth.
[2] Suppression only.
[3] Includes glyphosate-resistant biotypes at 115 g/ac (285 g/ha) application rate.

Application rates

One case of Distinct herbicide will treat 40 to 80 acres, depending on rate.

Field corn	Distinct herbicide	115 g/ac (285 g/ha)
	Non-ionic surfactant[4]	0.25% v/v
	28% UAN[4]	1.25% v/v
Chemfallow, post-harvest	Distinct herbicide	58 to 115 g/ac (143 to 285 g/ha)
	Glyphosate[4] (360 g ae/L)	0.51 to 1 L/ac (1.25 to 2.5 L/ha)
	Merge adjuvant[4]	200 ml/ac (500 ml/ha)

Water volume

Ground application only	20 to 40 L/ac (5 to 10 gal/ac)

[4] Non-ionic surfactant, 28% UAN, glyphosate and Merge adjuvant are not included in the case.

Mixing order

1. Fill clean spray tank 1/2 full of clean water and start agitation.
2. Add the correct amount of Distinct herbicide and continue to agitate until product is completely dissolved and fully dispersed.
3. For chemfallow or post-harvest, add the correct amount of glyphosate while continuing agitation.
4. For chemfallow or post-harvest, add the recommended amount of Merge adjuvant or a 0.25% v/v of non-ionic surfactant, followed by 1.25% v/v 28% UAN. For field corn, add 0.25% v/v of non-ionic surfactant, followed by 1.25% v/v 28% UAN.
5. Continue agitation while adding the remaining amount of water.

Application tips

Rainfastness – 4 hours.

For denser weeds and thick canopies, use the higher water volume.

Grazing

Do not cut or graze corn for 75 days after application. See label for additional restrictions.

Follow crops

If Distinct is applied prior to September 1

Wheat, barley, oats, canary seed, corn, canola, lentils, soybeans, chickpeas, flax, field peas and sunflowers.

If Distinct is applied[5] prior to October 1

Wheat, barley, oats, canary seed, corn, canola, lentils, field peas and soybeans.

If Distinct is applied[5] prior to October 15

Wheat, barley, oats, canary seed and corn.

[5] Distinct applied at 58 g/ac (143 g/ha). If higher rate is used, rotate to cereal or corn crops only.

Tank mixes

Herbicide for chemfallow and post-harvest application: Glyphosate

None on label for field corn.

Contact your local BASF **AgSolutions®** Grower or Retail Representative or call **AgSolutions** Customer Care at 1-877-371-BASF (2273) for additional information on supported tank mixes.

Distinct®
Herbicide

Engenia®
Herbicide

SUPPORTED BY THE ADVANCED WEED CONTROL PROGRAM

dicamba-tolerant soybeans

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

- Highly concentrated liquid formulation for easier handling and a lower use rate
- Effective resistance management tool for biotypes resistant to Group 2, 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

Storage
Does not require heated storage.

Weed control in Roundup Ready 2 Xtend® soybeans with glyphosate alone versus Engenia® herbicide plus glyphosate

Glyphosate	Engenia + glyphosate

On glyphosate-resistant Canada fleabane.
Source: University of Guelph research trial, Ridgetown, ON, 2015

Weed control in Roundup Ready 2 Xtend® soybeans with glyphosate alone versus Engenia plus Integrity® herbicide plus glyphosate plus Merge® adjuvant

Glyphosate	Engenia + Integrity + glyphosate + Merge

On glyphosate-resistant Canada fleabane.
Source: University of Guelph research trial, Ridgetown, ON, 2015

Crops
Roundup Ready 2 Xtend® and XtendFlex® soybeans[1]

Staging
pre-plant, pre-emergence, early post-emergence

See the label for a complete list of other crops and applications.

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)[10]
Narrow-leaved hawk's beard[6,7]
Perennial sow thistle[5]
Ragweed (common, false, giant)
Redroot pigweed
Russian pigweed
Velvetleaf
Volunteer canola[6,11]

[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 194 to 400 ml/ac (0.48 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 biotypes resistant to Group 2.
[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.
[10] Refer to label for mustard species controlled.
[11] Including conventional, Roundup Ready® and LibertyLink® cultivars, when Engenia is applied at 400 ml/ac (1 L/ha).

Dicamba stewardship

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

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 (no aerial application)

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

Sensitive crop awareness – identify neighbouring crop species

Application volume – use a minimum spray volume of 10 GPA

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

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

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

Application rates

One case will treat 40 to 80 acres of Roundup Ready 2 Xtend® and XtendFlex® soybeans, depending on rate. One shuttle will treat 303 to 624 acres, depending on rate.

Pre-plant, pre-emergence and early post-emergence[12,13]

Roundup Ready 2 Xtend® and XtendFlex® soybeans[14,15,16,17]	194 ml/ac to 400 ml/ac (480 ml/ha to 1000 ml/ha)

Water volume

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

Use higher water volumes to ensure adequate coverage.[13]

Mixing order

1. Use a 50-mesh filter screen.
2. Fill clean tank with 1/2 of the required amount of clean water and agitate during the entire mixing procedure.
3. Add the required amount of Engenia herbicide.
4. If tank mixing, add the appropriate liquid tank-mix partner.
5. Add the rest of the water to the spray tank and maintain sufficient agitation during mixing and spraying to ensure a uniform spray mixture.

Application tips

Rainfastness – 4 hours.

Pre-harvest interval

For application to Roundup Ready 2 Xtend® and XtendFlex® soybeans: 7 to 10 days for soybean forage and 13 to 15 days for soybean hay.

Follow crops

For Roundup Ready 2 Xtend® and XtendFlex® soybeans, a plant-back interval of 120 days is required for all crops not on the Engenia label.

Tank mixes

Herbicide for Roundup Ready 2 Xtend® and XtendFlex® soybeans: Glyphosate[18]

Contact your local BASF **AgSolutions®** Grower or Retail Representative or call **AgSolutions** Customer Care at 1-877-371-BASF (2273) for additional information on supported tank mixes.

[12] See label for a complete list of additional available tank mixes and their rates. Tank-mix options are not included in the case.
[13] See label for water rate application.
[14] Engenia can be used alone or in tank mix with glyphosate for additional broadleaf and grass weed control. See label for important details.
[15] For application to Roundup Ready 2 Xtend® and XtendFlex® soybeans, apply Engenia using nozzles that deliver extremely coarse to ultra-coarse spray droplets.
[16] 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.
[17] 793 ml/ac of Engenia is the maximum total to be applied in a single growing season.
[18] 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.

Engenia® Herbicide

Engenia®

Herbicide

An advanced dicamba formulation with lower-volatility properties.

- Highly concentrated liquid formulation for easier handling and a lower use rate
- Effective resistance management tool for biotypes resistant to Group 2, triazine and glyphosate

Active ingredient

Dicamba – Group 4

Formulation

Solution

One case contains

2 x 8.09 L jugs

Storage

Does not require heated storage.

Weed control in Roundup Ready 2 Xtend® soybeans with glyphosate alone versus Engenia® herbicide plus glyphosate

Glyphosate | Engenia + glyphosate

On glyphosate-resistant Canada fleabane.
Source: University of Guelph research trial, Ridgetown, ON, 2015

Crops

Canary seed	3 to 5 leaf
Roundup Ready 2 Xtend® and XtendFlex® soybeans[1]	pre-plant, pre-emergence, early post-emergence
Field corn	up to 50 cm tall[2]
Pasture grasses	established, actively growing
Red fescue (new seedling)	5 cm tall
Red fescue (established)	shot-blade
Seedling grasses[3]	2 to 4 leaf

In chemfallow and post-harvest.[4]
Apply to actively growing weeds.

Weeds controlled[4]

In-crop application in canary seed and seedling forage grasses.

Buckwheat (tartary, wild)
Canada thistle[5]
Cleavers[6]
Corn spurry
Cow cockle
Green smartweed
Lady's thumb
Perennial sow thistle[5]

Post-emergence in field corn and Roundup Ready 2 Xtend® and XtendFlex® soybeans.[7]

Buckwheat (tartary, wild)
Canada fleabane[8]
Canada thistle[9]
Cleavers
Common chickweed[10,11]
Corn spurry
Cow cockle
Eastern black nightshade[11]
Field bindweed[9]
Green smartweed
Hairy nightshade[10,12]
Kochia[13]
Lady's thumb
Lamb's quarters[14]
Mustards[15]
Narrow-leaved hawk's beard[10,11]
Perennial sow thistle[9]
Ragweed (common[14], false, giant)
Redroot pigweed[14]
Russian pigweed
Velvetleaf
Volunteer canola[10,16]

Pasture, rangeland and non-crop areas.

Canada thistle
Curled dock[5]
English daisy
Field bindweed
Goat's beard[6]
Goldenrod
Ground cherry[6]
Knapweed (diffuse)[6]
Pasture sage[6]
Perennial sow thistle
Poverty weed[6]
Ragwort (tansy)
Sheep sorrel[6]
Thyme-leaved spurge[6]

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 Corn height refers to the crop as it stands, not leaf-extended. Broadcast spray up to 20 cm; larger corn plants require drop nozzles. When using drop pipes (drop nozzles), direct the spray beneath the lower leaves of the corn and onto the weeds and soil. Do not apply to corn over 50 cm in height.
3 For seed and forage production. See label for specific seedling grasses.
4 For a complete list of proper weed staging, please refer to the product label.
5 Top growth only.
6 Controlled with higher rate of Engenia. See label for details.
7 Controlled by Engenia alone at 200 ml/ac to 400 ml/ac (0.5 to 1 L/ha).
8 Post-emergence only.
9 Apply Engenia herbicide annually for three years at the flowering stage of bindweed and the budding stage of thistles.
10 Suppression only.
11 Including biotypes resistant to Group 2.
12 When Engenia is applied at 283 to 400 ml/ac (0.7 to 1 L/ha).
13 Including biotypes resistant to Group 2 and 9.
14 Including atrazine-resistant species in corn.
15 Refer to label for mustard species controlled.
16 Including conventional, Roundup Ready® and LibertyLink® cultivars, when Engenia is applied at 400 ml/ac (1 L/ha).

Application rates

One case will treat 40 to 80 acres of Roundup Ready 2 Xtend® soybeans, depending on rate.

In-crop application.[17,18]

Canary seed	95 ml/ac (0.23 L/ha)
Field corn, Roundup Ready 2 Xtend® and XtendFlex® soybeans[19,20,21,22]	200 to 400 ml/ac (0.5 to 1 L/ha)
Red fescue	190 ml/ac (0.48 L/ha)

Pasture, rangeland and non-crop areas.[17,18]

For brush weed control[23]	0.68 to 1.18 L/ac (1.68 to 2.92 L/ha)
For broadleaf weed control	0.68 to 1.49 L/ac (1.68 L/ha to 3.68 L/ha)
Chemfallow, post-harvest	400 to 800 ml/ac (1 to 2 L/ha)

[17] See label for a complete list of additional available tank mixes and their rates. Tank-mix options are not included in the case.
[18] See label for water rate for application.
[19] Engenia can be used alone or in tank mix with glyphosate for additional broadleaf and grass weed control. See label for important details.
[20] For application to Roundup Ready 2 Xtend® and XtendFlex® soybeans, apply Engenia using nozzles that deliver extremely coarse to ultra-coarse spray droplets.
[21] 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.
[22] 793 ml/ac of Engenia is the maximum total to be applied in a single growing season.
[23] Must be applied in tank mix; see label for tank-mix partners.

Mixing order

1. Use a 50 mesh filter screen.
2. Fill clean tank with 1/2 of the required amount of clean water and agitate during the entire mixing procedure.
3. Add the required amount of Engenia herbicide.
4. If tank mixing, add the appropriate liquid tank-mix partner then add the rest of the water to the spray tank.
5. Maintain sufficient agitation during mixing and spraying to ensure a uniform spray mixture.

Application tips

Rainfastness – 4 hours.

Water volume – Use higher water volumes to ensure adequate coverage.[18]

Do not apply Engenia if the crop is under seeded to legumes.

Pre-harvest interval

For application to Roundup Ready 2 Xtend® and XtendFlex® soybeans: 7 to 10 days for soybean forage and 13 to 15 days for soybean hay.

Grazing

See label for grazing restrictions.

Follow crops

For Roundup Ready 2 Xtend® soybeans, a plant-back interval of 120 days is required for all crops not on the Engenia label. For chemfallow and post-harvest, see label for follow crops.

Tank mixes

Herbicides for corn: Accent®[24], Option®[25]

Herbicide for Roundup Ready 2 Xtend® and XtendFlex® soybeans: Glyphosate[26]

Contact your local BASF **AgSolutions®** Grower or Retail Representative or call **AgSolutions** Customer Care at 1-877-371-BASF (2273) for additional information on supported tank mixes.

[24] Prairie provinces only.
[25] Only in the province of Manitoba.
[26] 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.

Engenia®
Herbicide

Weed control is your goal. Stewardship is your priority.

Proper Engenia® herbicide stewardship is essential to the effectiveness of your weed management program. 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 your sprayer under 25 km/h (no aerial application)

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 GPA

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

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

Engenia®
Herbicide

Engenia Spray Tool

Plan and steward your application with the Engenia Spray Tool by keeping up to date with live information of weather conditions, precipitation probability, inversion potential level, wind speed and wind direction.*

* This tool is for planning purposes and does not replace checking weather in the field at the time of application prior to making a spray application decision.

Access the Engenia Spray Tool at **www.engeniaspraytool.ca** to check current environmental conditions for application in your area.

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

TECH TIP:

Do not apply Engenia when there is a temperature inversion. The three common 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 one hour before sunset.

Facet® L

Herbicide

SUPPORTED BY THE ADVANCED WEED CONTROL PROGRAM

Enhanced control of cleavers in a unique liquid formulation.

- Complements Liberty® 150 herbicide for enhanced control of cleavers
- Easy-to-use liquid formulation
- Consistent control with both contact and systemic activity[1]

Active ingredient

Quinclorac – Group 4

Formulation

Soluble liquid

One case contains

2 x 9.07 L jugs

Storage

Does not require heated storage.

Crops	Staging
Canola	pre-seed/pre-emergence to 6 leaf

Weeds controlled	Staging
Broadleafs	
Annual sow thistle[2]	2 to 6 leaf
Cleavers[3]	1 to 6 whorls[1]
Perennial sow thistle[2]	2 to 6 leaf
Volunteer flax	1 to 8 cm
Grasses	
Barnyard grass	1 to 5 leaf
Green foxtail[4]	up to 2 tillers

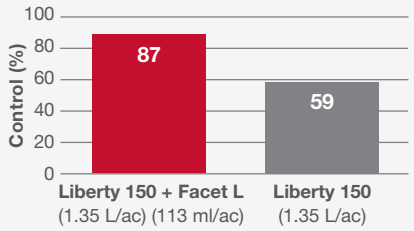
Application rates

Tank mixed with Liberty 150 herbicide, one case of Facet® L herbicide will treat 160 acres at the recommended in-crop rate of 113 ml/ac.

Canola	
Pre-seed/pre-emergence	227 to 279 ml/ac (560 to 690 ml/ha)
In-crop tank mix with Liberty 150 herbicide	113 to 227 ml/ac (279 to 560 ml/ha)
Merge® adjuvant[5] (see product label)	0.5% v/v (e.g. 500 ml per 100 L spray solution)
Water volume	
Ground application only	40 L/ac (10 gal/ac)

[1] When tank mixed with Liberty 150 herbicide.
[2] Suppression only.
[3] For control of secondary flushes, apply pre-seed at a higher application rate of 279 ml/ac (690 ml/ha).
[4] For suppression of secondary flushes, apply pre-seed at a higher application rate of 279 ml/ac (690 ml/ha).
[5] Merge adjuvant may be required and is not included in the case. For additional information and tank mixes, see product label.

Enhanced cleavers control when tank mixed with Liberty 150



Source: BASF Small Plot Trials, 2018, n=10

Facet L applied in-crop

Liberty 150 (1.35 L/ac) **+ Facet L** (113 ml/ac) | **Liberty 150** (1.35 L/ac)

53 days after application
Source: Grower Applied Strip Trials, 2018

Mixing order

1. Always start with a clean sprayer. Refer to previously applied product labels for specific cleaning instructions.
2. Fill the clean spray tank 1/2 full of water and start agitation or by-pass system. Continue agitation throughout mixing procedure.
3. **Facet L plus glyphosate pre-seed/pre-emergence:** add pH adjuster/ AMS (optional), then Facet L, then glyphosate, then Merge, in sequential order.[6]
4. **LibertyLink® System:** add Liberty 150, then Facet L, then Merge in sequential order.[6]
5. **LibertyLink System with Centurion® herbicide:** add Amigo® adjuvant, then Liberty 150, then Facet L, then Centurion, in sequential order.[6]
6. Continue agitating while adding the remaining amount of water.

[6] Follow labels for ingredient volumes and agitate 2 to 3 minutes between steps.

Application tips

Rainfastness – 6 hours.

Restricted entry interval – 12 hours.

Should the product freeze, warm to 5°C prior to use.

Pre-harvest interval

60 days after application for canola.

Follow crops

0 months (same season)

Barley (spring)
Canola
Wheat (spring, durum)

10 months after application

Field peas
Sunflowers
Oats

22 months after application

Flax
Lentils

Tank mixes

Herbicide for LibertyLink canola:
Liberty 150 and Merge at 0.5% v/v
<u>OR</u>
Amigo[7], Liberty 150 and Centurion[8]

[7] Amigo rates vary according to the rate of Centurion. Consult the label for details.
[8] Case includes the adjuvant.

Contact your local BASF **AgSolutions®** Grower or Retail Representative or call **AgSolutions** Customer Care at 1-877-371-BASF (2273) for additional information on supported tank mixes.

Facet® L
Herbicide

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

Active ingredient

Dimethenamid-P – Group 15

Formulation

Emulsifiable concentrate

One case contains
2 x 9 L jugs

Storage
Does not require heated storage.

Consistent performance with Frontier® Max herbicide

Untreated

Frontier Max

Source: Grower Applied Strip Trials, PEI, 2012

Crop

Potatoes

Timing

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

Weeds controlled

Broadleafs

Redroot pigweed[1,2]
Nightshade (eastern black)[1,2]

Grasses

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

Sedge

Yellow nutsedge[3]

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

Application rates

One case of Frontier Max herbicide will treat 46 to 59 acres (18.6 to 23.9 ha). One jug will treat 23 to 29.4 acres (9.3 to 11.9 ha).

	Application rates based on % organic matter		
Soil type	**Less than 3% organic**	**3% to 6% organic**	**7% to 10% organic**
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 Frontier Max at the higher rates in the table on fine textured or high organic soils and for heavier weed problems.

Mixing order

1. Ensure the spray tank is clean before use.
2. Fill the tank 1/2 full of water and start agitation.
3. Add the required amount of Frontier Max herbicide to the tank.
4. Continue agitation while filling the remainder of the spray tank.
5. After use, clean the spray tank according to label precautions.

Application tips

Apply Frontier Max only in a single application in potatoes. Do not exceed the specified rate by soil type in a single application.

Restricted entry interval – 24 hours.

Resistance management – Rotate the use of Frontier Max or other Group 15 herbicides within a growing season (sequence) or among growing seasons, with different herbicide groups that control the same weeds in a field. Tank mix with herbicides from a different group.

Pre-harvest interval

40 days after application for potatoes.

Tank mixes

Herbicides: Lorox® (Linuron)

Contact your local BASF **AgSolutions®** Grower or Retail Representative or call **AgSolutions** Customer Care at 1-877-371-BASF (2273) for additional information on supported tank mixes.

Heat® LQ

Powered by **Kixor®** Herbicide

pre-harvest

Cut straight to an easier harvest.

- Consistent crop and weed dry down
- Easier crop cutting, more bushels per hour and increased fuel efficiency with less dockage
- Cleaner fields the following spring

Active ingredient

Saflufenacil – Group 14

Formulation

Water-based suspension concentrate

One case contains

1.73 L jug of Heat® LQ herbicide
2 x 8.1 L jugs of Merge® adjuvant

Also available as a tote (4 x 10.79 L Heat LQ and 400 L Merge)

Storage

Requires heated storage.

Complete canola dry down

Glyphosate	Heat LQ + glyphosate + Merge

19 days after treatment
Source: Grower Applied Strip Trial, Western Canada, 2020

Crops	Staging[1]
Harvest aid	
Canola	Apply when the crop has reached 80% seed-colour change.
Chickpeas[2]	Apply when majority of plants are mature with only the upper part remaining green. Seed moisture is 30% or less. Majority of Desi type seeds are yellow/brown, and Kabuli type seeds are tan/white.
Dry common beans[2,3], soybeans[2]	Apply when stems are green to brown, pods are mature (yellow, brown) and 80 to 90% of leaves have dropped.
Field peas[2]	Apply when about 75% of pods have dried down (changed colour).
Flax[4]	Apply when 75 to 80% of bolls are brown and when seed moisture is less than 30%.
Red lentils[5]	Apply when bottom 15% of pods are mature and brown with ripened seeds. The bottom pods should rattle when shaken.
Sunflowers[6]	Apply when the backs of the heads and bracts are turning yellow, and seed moisture is 20 to 30%.
Pre-harvest weed management	
Barley[7], triticale, wheat (spring, durum, winter)	Hard dough stage with less than 30% moisture. A thumbnail impression remains on seed.

Refer to the Heat LQ pre-harvest crop staging guide for recommendations on each registered crop when you visit **agsolutions.ca/HeatLQStaging**.

Maximum Residue Limits

Please note: At the time of printing (2023), BASF has not fully established import tolerances (maximum residue limits (MRLs)) for mustard for all markets around the world. Because this crop is heavily exported, and some exports are made to markets where these MRLs have not been established, **BASF does not recommend the use of Heat LQ as a harvest aid on mustard for the 2023 season.**

[1] Heat LQ herbicide must be applied after physiological maturity (less than 30% seed moisture).
[2] Consult with grain buyer prior to application as the Keep It Clean 2023 Product Advisory indicates caution for glyphosate applications on all pulse crops except red lentils.
[3] When tank mixed with glyphosate, consult glyphosate label or your BASF Sales Representative for information regarding use on specific varieties of dry common beans.
[4] Glyphosate is not supported for pre-harvest use on flax. Use Heat LQ as a standalone product only.
[5] Heat LQ is supported for pre-harvest use on red lentil varieties only. DO NOT apply Heat LQ pre-harvest to green lentils. Please check with your grain buyer prior to the pre-harvest application of Heat LQ in red lentils.
[6] Glyphosate is not registered for pre-harvest use in sunflowers. Use Heat LQ as a standalone product only.
[7] BASF supports the use of Heat LQ herbicide for pre-harvest on feed barley only.

Application rates

One case of Heat LQ herbicide tank mixed with glyphosate will treat 40 acres. One tote treats 1,000 acres.

Heat LQ tank mixed with glyphosate rate	43 ml/ac (106 ml/ha)
Glyphosate[8] (360 g ae/L)	1.0 L/ac (2.5 L/ha)
Merge adjuvant[9]	200 to 400 ml/ac (0.5 to 1 L/ha)

(Heat LQ should always be tank mixed with glyphosate.)[10]

(Use all Merge included in the case or tote of Heat LQ.)

Water volume

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

(BASF recommends using higher water volumes for best results, specifically on canola.)

Aerial application[11]	20 L/ac (5 gal/ac)

[8] Glyphosate is not included in the case.
[9] Merge adjuvant is required and is included with Heat LQ herbicide. Use all Merge included in the case.
[10] Glyphosate is not recommended for use on flax.
[11] Heat LQ is registered for aerial applications.

Mixing order

1. Fill clean spray tank 1/2 full of clean water and start agitation.
2. Add the correct amount of Heat LQ herbicide and continue to agitate until mixed.
3. Add the correct amount of glyphosate while continuing agitation.
4. Add the correct amount of Merge adjuvant to the tank last.
5. Continue agitation while adding the remaining amount of water.
6. Continue agitation or run the by-pass system.

Application tips

Rainfastness – Heat LQ is extremely rainfast and is only limited by glyphosate.

Follow the glyphosate manufacturer's recommendation for rainfast guidelines.

Pre-harvest interval

2 days after application for chickpeas and dry common beans.
3 days after application for barley, canola, field peas, flax, red lentils, soybeans, triticale and wheat.
7 days after application for sunflowers.

Follow crops

In the spring following fall application.

Barley (spring, malt, winter)
Canary seed
Canola (all types incl. **Clearfield**® canola)
Chickpeas
Corn (field, sweet)
Field peas
Flax
Lentils
Oats
Soybeans
Wheat (spring incl. **Clearfield** wheat, winter, durum)

Tank mixes

Herbicide: Glyphosate

Note: Consult glyphosate label for more information including pre-harvest interval and staging.

Contact your local BASF **AgSolutions®** Grower or Retail Representative or call **AgSolutions** Customer Care at 1-877-371-BASF (2273) for additional information on supported tank mixes.

Heat® LQ
Powered by **Kixor**® Herbicide

Liberty® 150 SN

Herbicide

SUPPORTED BY THE ADVANCED WEED CONTROL PROGRAM

Exceptional, consistent performance.

- **Exceptional performance:** Consistent, industry-leading control of broadleaf and grassy weeds
- **Trusted formulation:** Over 25 years in development, designed for optimal performance and usability
- **Performance support guarantee:** Liberty® 150 herbicide will meet labelled expectations or we will support

Active ingredient

Glufosinate ammonium – Group 10

Concentration

150 g/L

Formulation

Solution

One case contains

2 x 13.5 L jugs
Also available in 108 L shuttle, 432 L tote and 864 L tote

Storage

Requires heated storage.

Crops	Staging
Canola (LibertyLink® varieties only)	cotyledon until prior to bolting

Weeds controlled	Staging
Broadleafs	1 to 6 leaf (except where indicated)
Canada thistle[1]	up to 10 cm height
Cleavers[2]	1 to 2 whorls
Common chickweed	1 to 4 leaf pairs
Cow cockle	1 to 4 leaf
Dandelion	1 to 15 cm rosette
Flixweed	up to 10 cm height
Hemp-nettle	1 to 3 leaf pairs
Jimsonweed	
Kochia	up to 8 cm height
Lady's thumb	
Lamb's quarters	
Perennial sow thistle	1 to 8 leaf
Redroot pigweed	1 to 4 leaf
Round-leaved mallow	1 to 4 leaf
Russian thistle	up to 8 cm height
Scentless chamomile	up to 10 cm height
Shepherd's-purse	
Smartweed	
Stinkweed	1 to 8 leaf
Stork's bill	1 to 3 leaf
Volunteer flax	up to 6 cm height
Wild buckwheat	1 to 3 leaf
Wild mustard	1 to 5 leaf
Grasses	1 to 4 leaf (except where indicated)
Barnyard grass	
Brome grass (downy, Japanese)[3]	1 to 6 leaf
Foxtail barley[4]	
Green foxtail	1 to 6 leaf
Quackgrass[5]	
Volunteer barley[6]	
Volunteer wheat	
Wild oats	

[1] Suppression only.
[2] Tank mix with Facet® L herbicide for enhanced cleaver control.
[3] Spring-germinated brome only; best results are obtained after a pre-seed or burndown application with a glyphosate herbicide.
[4] When tank mixed with Centurion® herbicide at 77 ml/ac.
[5] When tank mixed with Centurion at 154 ml/ac.
[6] Suppression only. Tank mix with Centurion herbicide for control.

Application rates

One case will treat 17 to 20 acres, one shuttle will treat 67 to 80 acres, one 432 L tote will treat 267 to 320 acres and one 864 L tote will treat 533 to 640 acres.

Canola	1.35 to 1.62 L/ac (3.33 to 4 L/ha)[7,8]

Water volume

Ground application	45 L/ac (10 gal/ac)
Aerial application	22 L/ac (6 gal/ac)

[7] Early timing of first pass at 1.35 to 1.62 L/ac is critical. A second pass of 1.35 to 1.62 L/ac may be applied 10 to 14 days after the first application for flushing weeds.
[8] No more than 4.86 L/ac of Liberty 150 herbicide can be applied in a single season.

Mixing order

1. Thoroughly clean sprayer with water containing detergent.
2. Fill clean spray tank 1/2 full of water. Start agitation system.
3. **If tank mixing with Centurion herbicide:** Add Amigo®[9] adjuvant, then add Liberty 150, agitate moderately, then add Centurion, in sequential order.
4. **If tank mixing with Facet L herbicide:** Add Liberty 150, agitate moderately, then add Facet L, then add Merge® adjuvant, in sequential order.
5. **If tank mixing with Facet L and Centurion herbicide:** Add Amigo[9], then add Liberty 150, agitate moderately, then add Facet L, followed by Centurion, in sequential order.
6. Continue agitation while adding the remaining amount of water.[10]

[9] Merge adjuvant can be used in place of Amigo. The two adjuvants cannot be mixed together.
[10] Agitate moderately, as over-agitation may cause foaming.

Pre-harvest interval

60 days after application for canola.

Follow crops

No plant back interval

Alfalfa	Dry common beans	Field corn
Canola	(not grown for seed)	Potato

70 days after application

Barley	Millet	Rye	Triticale
Buckwheat	Oats	Sorghum	Wheat

120 days after application for all other crops

Liberty and Trait Agreement (LTA)

Ensure you have a signed LTA in place. Contact your local InVigor® hybrid canola or Liberty retailer. Talk to your BASF **AgSolutions®** Grower Representative. Call **AgSolutions** Customer Care at 1-877-371-BASF (2273). Follow the LTA terms and conditions.

Tank mixes[11]

Herbicides for LibertyLink canola: Centurion, Facet L

Contact your local BASF **AgSolutions** Grower or Retail Representative or call **AgSolutions** Customer Care at 1-877-371-BASF (2273) for additional information on supported tank mixes.

[11] See label for tank-mix application rates targeting specific weeds.

Two spray or not two spray.

Take action against weeds and other pests in your canola crop by choosing the products that best fit the needs of your operation. Start by identifying whether you need to do one or two passes of Liberty® 150 herbicide. In situations where you have a high pressure of troublesome weeds, it is recommended you apply Liberty 150 at 1.62 L/ac for optimal control.

1 PASS

- 1.35 L/ac or 1.62 L/ac
- Low weed pressure
- Excellent spraying conditions
- Small weeds

1 or 2 passes of Liberty 150?

TANK-MIX PARTNERS

Facet® L herbicide (cleavers)
Centurion® herbicide (grasses)
Insecticide
Nexicor® fungicide (blackleg)

- 1.35 L/ac or 1.62 L/ac
- Medium to high weed pressure
- Marginal spraying conditions
- Multiple flushes

2 PASS

There can be a total of 3 products in the spray tank at one time. Split apply if more than 3 are needed.

Once you've determined if you need one or two passes of Liberty 150, identify what pest(s) are your highest concerns to determine which products should be tank mixed and applied to your canola.

PRIORITIES

Which product in which pass?

What pest(s) are the highest concern in the first pass?

Select your highest priorities to manage with the first pass; if required, follow up with a second application.

OPTIONS

1 Cleavers and flea beetles are leading concerns

2 Wild oats and flea beetles are leading concerns

3 Wild oats and cleavers are leading concerns

TANK-MIX ORDER

Liberty 150 > Facet L > Insecticide > Merge® adjuvant

Amigo® adjuvant > Liberty 150 > Centurion > Insecticide

Amigo > Liberty 150 > Facet L > Centurion

Nexicor fungicide can be tank mixed with Liberty 150, Facet L, Centurion and an insecticide; however, it is recommended that you only tank mix three of these products at one time to avoid potential crop tolerance issues and residue in your spray tank.

Liberty® 200 SN

Herbicide

Enlist E3™ and XtendFlex® soybeans

Liberty-tolerant corn and soybeans

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, including glyphosate-resistant biotypes
- Flexible with respect to application timing, rates and tank mixes
- Quick, complete burndown of weeds

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

Storage

Requires heated storage.

Crops	Staging
Corn (LibertyLink® varieties only)	1 to 8 leaf[1,2]
Soybeans (Enlist E3™ and XtendFlex®)	cotyledon to first flower[1]

Weeds controlled	Staging
Broadleaf weeds	1 to 6 leaf (except where indicated)
Canada fleabane[3,4]	Up to 10 cm
Canada thistle[5]	
Chickweed	1 to 8 leaf
Cleavers[4,6]	Up to the 4 whorl stage
Cocklebur	1 to 4 leaf
Common ragweed[3]	1 to 7 leaf
Eastern black nightshade	1 to 5 leaf
Field bindweed[5]	
Giant ragweed[3,6]	1 to 8 leaf
Green pigweed	
Jimsonweed[7]	
Kochia[3,4,8]	Up to 10 cm
Lady's thumb	
Lamb's quarters	
Perennial sow thistle	1 to 4 leaf
Redroot pigweed	
Shepherd's-purse	
Stinkweed	1 to 8 leaf
Velvetleaf[7]	1 to 4 leaf
Volunteer canola[9]	
Waterhemp[3,10]	1 to 8 leaf
Wild buckwheat	1 to 4 leaf
Wild mustard	1 to 4 leaf
Wormseed mustard	
Grasses	1 to 4 leaf (except where indicated)
Barnyard grass	1 to 5 leaf
Bristly foxtail	
Fall panicum	
Giant foxtail	1 to 5 leaf
Green foxtail	1 to 5 leaf
Large crabgrass	1 to 5 leaf
Old witchgrass	
Proso millet	1 to 5 leaf
Quackgrass[5,7]	
Wild oats	
Yellow foxtail	

[1] Apply when weeds are actively growing.
[2] 5 to 6 visible collars (the leaf is counted once the next leaf is visible in the whorl).
[3] Including glyphosate-resistant varieties.
[4] Including biotypes resistant to Group 2.
[5] Season-long suppression.
[6] Suppression only.
[7] Add ammonium sulphate to the tank at a rate of 6 L/ha (49% solution) or 3 kg/ha (99%).
[8] Including biotypes resistant to Group 4.
[9] Including conventional, Roundup Ready® and **Clearfield®** biotypes.
[10] In corn and soybeans only. For control of later emerging flushes of waterhemp. To control early flushes, an application of a registered pre-emergent herbicide, such as Zidua® SC herbicide, is recommended.

Application rates[11]

One case of Liberty® 200 SN herbicide treats 20 acres. One tote treats 400 acres.

Liberty 200 SN	1.0 L/ac (2.5 L/ha)
Ammonium sulfate	Up to 2.4 L/ac (6 L/ha)
Water volume	
Ground application	Minimum 45 L/ac (10 gal/ac)

Mixing order

1. Thoroughly clean sprayer with water containing detergent.
2. Fill clean spray tank 3/4 full of water. Start agitation system.
3. Add ammonium sulfate (if required).
4. Add the correct amount of Liberty 200 SN and continue to agitate until mixed.
5. Continue agitation while adding the remaining amount of water.[12]

[11] See label for use rates on specific weeds and weed stages.
[12] Agitate moderately, as over-agitation may cause foaming.

Application tips

Rainfastness – 4 hours.

Spray in the middle of the day in warm (over 10°C) and sunny conditions, and when weeds are small and actively growing.

Liberty 200 SN is a contact herbicide; therefore, avoid applying when there is dew. Use a higher water volume (10 gal/ac) and use nozzles designed to achieve a medium to coarse droplet size (250 to 350 microns) for good contact and optimal coverage.

Pre-harvest interval

70 days after application for soybeans.

86 days after application for corn.

Grazing

Treated corn and soybean fields can be grazed 20 days after application.

Follow crops

Anytime after application (LibertyLink varieties only): Canola, field corn, soybeans

70 days after application: Barley, buckwheat, millet, oats, rye, sorghum, triticale, wheat

120 days after application: All other crops

Tank mixes

Contact your local BASF **AgSolutions®** Grower or Retail Representative or call **AgSolutions** Customer Care at 1-877-371-BASF (2273) for information on supported tank mixes.

Odyssey® NXT

Herbicide

Reliable 1-pass weed control in multiple crops including **Clearfield®** lentils, soybeans and field peas.

- Controls flushing weeds, including volunteer canola
- Proven control of a wide spectrum of key weeds in a single pass
- Lasting activity to control multiple flushes of shallow-germinating weeds
- Wide window of application
- Provides the same performance as Odyssey® herbicide in new packaging which includes Merge® adjuvant

Active ingredients

Imazamox – Group 2
Imazethapyr – Group 2

Formulation

Water dispersible granular

One case contains

2 x 692 g jugs of Odyssey NXT herbicide
2 x 8.1 L jugs of Merge adjuvant

Storage

Requires heated storage.

Crops[1]	Staging
Alfalfa (for seed production)	1 to 4 leaf
Birdsfoot trefoil (for seed production)	1 to 4 leaf
Clearfield lentils	1 to 9 node
Faba beans	1 to 6 leaf
Fenugreek	1 to 4 true leaf
Field peas	1 to 6 true leaf
Seedling clover (for seed production)	1 to 4 leaf
Soybeans	1 to 3 true leaf

Weeds controlled	Staging
Broadleafs	cotyledon to 4 leaf (except where indicated)
Chickweed	
Cleavers	(4 whorls)
Flixweed	
Green smartweed	
Hemp-nettle[2]	
Lamb's quarters[3]	
Redroot pigweed	
Russian thistle[2]	
Shepherd's-purse	
Stinkweed	
Stork's-bill	
Volunteer canola	
Volunteer tame mustard	
Wild buckwheat[2]	
Wild mustard	
Grasses	1 to 4 true leaf
Barnyard grass	
Green foxtail	
Persian darnel	
Volunteer barley	
Volunteer tame oats	
Volunteer wheat	
Wild oats	

[1] Registered for use only in the Prairie Provinces.
[2] Suppression in less competitive crops, such as field peas and **Clearfield** lentils.
[3] Suppression only.

Application rates

One case of Odyssey NXT herbicide will treat 80 acres.

Odyssey NXT herbicide	17 g/ac (43 g/ha)
Merge adjuvant[4]	0.5% v/v (e.g. 500 ml per 100 L solution)

Water volume

Ground application only	20 to 40 L/ac (5 to 10 gal/ac)

[4] Merge adjuvant (required for optimum activity) is included in the Odyssey NXT case.

Mixing order

1. Use a 50 mesh (or coarser) filter screen and fill the spray tank 3/4 full with the correct amount of water. Start and continue agitation throughout mixing.
2. Add the required amount of Odyssey NXT and continue to agitate until fully dissolved.
3. After the herbicide is dissolved, if using a tank mix, add the correct amount of second herbicide and continue agitating.
4. Continue agitation while adding the required amount of Merge adjuvant. If excess foaming occurs, a silicone anti-foaming agent may be added (e.g. Halt®).
5. Complete filling the tank to the desired level with water. If agitation is stopped for more than 5 minutes, re-suspend spray solution by full agitation prior to commencing spraying again.
6. Between loads of tank mix, check in-line and nozzle screens and rinse clean if needed.

Application tips

Rainfastness – 3 hours.

Apply in warm weather to weeds that are actively growing.

Avoid applying immediately after or preceding a frost or unseasonably cold weather.

Pre-harvest interval

60 days after application for faba beans, fenugreek, field peas and **Clearfield** lentils.

85 days after application for soybeans.

Field peas treated with Odyssey NXT may be fed to livestock 30 days after application. Application to alfalfa, birdsfoot trefoil and clover is for seed production only. Harvested crop is not to be fed to livestock.

Follow crops[5]

1 year after application

Chickpeas, **Clearfield** canola, field corn, field peas, lentils (incl. **Clearfield** lentils), soybeans, spring barley, spring wheat, tame oats[6]

2 years after application

Canola[7], canary seed, durum wheat, flax, sunflowers

Tank mixes

Contact your local BASF **AgSolutions®** Grower or Retail Representative or call **AgSolutions** Customer Care at 1-877-371-BASF (2273) for information on supported tank mixes.

[5] Refer to label for additional follow crop restrictions. Contact your local BASF **AgSolutions** Grower or Retail Representative for details on any crops not listed here.

[6] If drought conditions are experienced between June 1 and September 1 in the year of application, delay planting of tame oats by an additional year.

[7] If drought conditions are experienced between June 1 and September 1 in the year of application or between June 1 and September 1 in the year following application, delay planting of canola (non-**Clearfield**) by an additional year.

Odyssey® Ultra Q

Herbicide

SUPPORTED BY THE ADVANCED WEED CONTROL PROGRAM

Multiple modes of action for proven, early-season control of tough grassy and broadleaf weeds.

- Early post-emergence treatment for control, including multiple flushing weeds
- Proven control of a wide-spectrum of key grassy weeds
- Wide application window of up to 6 leaf on grassy weeds and up to 4 leaf on broadleaf weeds
- Management of resistant grassy weeds with multiple modes of action

Active ingredients

(a) Imazamox – Group 2
Imazethapyr – Group 2

(b) Quizalofop-p-ethyl – Group 1

Formulation

(a) Water dispersible granules

(b) Emulsifiable concentrate

One case contains

(a) 692 g jug of Odyssey® NXT herbicide

(b) 6.16 L jug of Caziva® Ultra Q herbicide
8.1 L jug of Merge® adjuvant

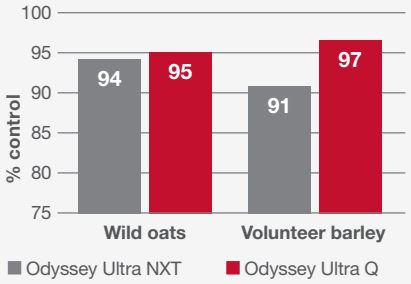
Storage

Requires heated storage.

Grassy weed control 21 days after application in peas

Source: BASF Small Plot Trials, Regina, SK, 2020

Weed control of wild oats and volunteer cereals in peas and lentils, 42 days after application



Source: BASF Small Plot Trials, 2021, n=5

Crops[1]	Staging
Clearfield® lentils	1 to 9 node
Faba beans	1 to 6 leaf
Field peas	1 to 6 true leaf
Soybeans	1 to 3 true leaf

Weeds controlled	Staging
Broadleafs	cotyledon to 4 leaf
Chickweed	
Cleavers	
Flixweed	
Green smartweed	
Hemp nettle[2]	
Lamb's quarters[3]	
Redroot pigweed	
Russian thistle[2]	
Shepherd's-purse	
Stinkweed	
Stork's-bill	
Volunteer canola (non-**Clearfield** varieties)	
Volunteer tame mustard	
Wild buckwheat[2]	
Wild mustard	
Yellow foxtail	
Grasses	1 to 6 true leaf or up to 2 tillers (except where indicated)
Barnyard grass	
Downy brome	
Foxtail barley	
Green foxtail (incl. biotypes resistant to Group 1 or 2)[4]	
Japanese brome	
Persian darnel	
Quackgrass[3]	
Volunteer barley	
Volunteer corn	
Volunteer tame oats	
Volunteer, spring and durum wheat (incl. **Clearfield** wheat)	
Wild oats (incl. biotypes resistant to Group 1 or 2)[4]	
Yellow foxtail	

[1] Registered for use only in the Prairie Provinces.
[2] Suppression in field peas and **Clearfield** lentils.
[3] Suppression.
[4] Odyssey Ultra Q herbicide tank mix will not control weed biotypes that have multiple-resistance to both Group 1 and Group 2 herbicides.

Application rates

One case of Odyssey Ultra Q herbicide will treat 40 acres.

(a)	Odyssey NXT herbicide	17 g/ac (43 g/ha)
(b)	Caziva Ultra Q herbicide	154 ml/ac (380 ml/ha)[5]
	Merge adjuvant[6]	0.5% v/v (e.g. 500 ml per 100 L spray solution)

Water volume

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

[5] (b) Caziva Ultra Q can be topped up using an equivalent quizalofop-p-ethyl product to a maximum rate of 305 ml/ac (750 ml/ha) to provide additional control of grasses. See label for details.
[6] Merge adjuvant is required, is included within Odyssey Ultra Q in the case and will treat 40 acres at the 10 gal/ac water volume.

Mixing order

1. Start with a clean sprayer. Fill the spray tank with 3/4 of the required amount of clean water, start agitation and continue agitation throughout the entire mixing and spraying procedure.
2. Add the required amount of (a) Odyssey NXT and continue to agitate until fully dissolved.
3. Add the required amount of (b) Caziva Ultra Q while agitating the spray solution.
4. After the herbicide is dissolved, continue the agitation and add the required amount of Merge adjuvant. If excess foaming occurs, a silicone anti-foaming agent may be added (e.g. Halt®).
5. Complete filling the tank to the desired level with water. If agitation is stopped for more than 5 minutes, re-suspend spray solution by full agitation prior to commencing spraying again.
6. Between loads of tank mix, check in-line and nozzle screens and rinse and clean if necessary.
7. Upon completion of spraying, thoroughly flush tank, boom, hoses and in-line and nozzle screens with clean water to avoid possible injury to other crops.

Application tips

Rainfastness – 3 hours.

Apply in warm weather to weeds that are actively growing.

Avoid applying immediately after or preceding a frost or when the temperature is under 5ºC.

Pre-harvest interval

60 days after application for faba beans.

65 days after application for **Clearfield** lentils and field peas.[7]

85 days after application for soybeans.[8]

[7] Field peas may be fed to livestock 30 days after application.
[8] Do not graze treated soybeans or cut for hay; sufficient data is not available to support these uses.

Follow crops[9]

1 year after application

Chickpeas, **Clearfield** canola, field corn, field peas, lentils (incl. **Clearfield** lentils), soybeans, spring barley, spring wheat, tame oats[10]

2 years after application

Canola[11], canary seed, durum wheat, flax, sunflowers

[9] Refer to label for additional follow crop restrictions. Contact your BASF Sales Representative for details on any crops not listed here.
[10] If drought conditions are experienced between June 1 and September 1 in the year of application, delay planting of tame oats by an additional year.
[11] If drought conditions are experienced between June 1 and September 1 in the year of application or between June 1 and September 1 in the year following application, delay planting of canola (non-**Clearfield**) by an additional year.

Tank mixes

Contact your local BASF **AgSolutions®** Grower or Retail Representative or call **AgSolutions** Customer Care at 1-877-371-BASF (2273) for information on supported tank mixes.

Smoulder®

Powered by **Kixor®** Herbicide

New, effective control of broadleaf weeds in a pre-seed application to start the season with cleaner fields.

- Post-emergence burndown of emerged weeds and residual pre-emergence control of secondary flushes of volunteer canola prior to seeding wheat and barley
- Control of tough winter annual and perennial weeds like narrow-leaved hawk's beard, dandelion and Canada thistle
- Burndown control of resistant broadleaf weeds, including resistant biotypes of kochia (Group 2, 4 and 9)

Active ingredients

Metsulfuron-methyl – Group 2
Saflufenacil – Group 14

Formulation

Water dispersible granules

One case contains

907 g jug of Smoulder® herbicide
2 x 8.1 L jugs of Merge® adjuvant

Storage

Requires heated storage.

Extended residual control of Roundup Ready® canola, 35 DAT

Heat® LQ herbicide (80 ac/jug rate)

Smoulder (80 ac/jug rate)

Glyphosate (450 g ae/ha) and Merge (0.5 L/ha) included with both treatments.

Source: BASF Small Plot Trials, Lethbridge, AB, 2019

Crops	Staging
Barley	pre-seed
Wheat (incl. durum, spring and winter)	pre-seed
Post-harvest	

Weeds controlled[1]	Staging
Broadleafs	8 leaf (except where indicated)
Canada fleabane	(15 cm)
Canada thistle[1]	(15 cm)
Cleavers	(4 whorl stage)
Dandelion[1]	(15 cm maximum)
Flixweed[1]	
Kochia[2]	(15 cm)
Lamb's quarters	
Narrow-leaved hawk's beard	(8 cm)
Redroot pigweed	
Round-leaved mallow	
Stinkweed	
Volunteer canola[3]	
Wild buckwheat	
Wild mustard	

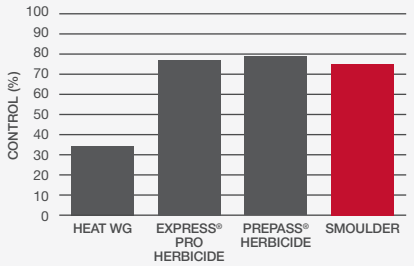
Application rates

One case of Smoulder herbicide will treat 80 acres.

Barley and wheat	11 g/ac (28 g/ha)
Post-harvest[4]	11 g/ac (28 g/ha)
All applications	
Merge	200 to 400 ml/ac (0.5 to 1 L/ha)
Water volume	
Ground application	20 to 40 L/ac (5 to 10 gal/ac)

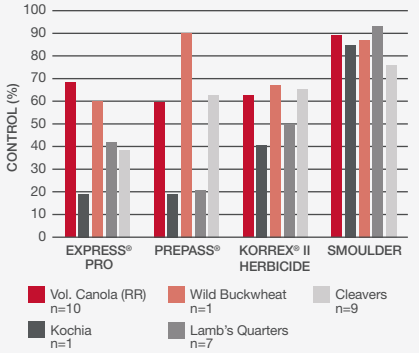
[1] When applied with glyphosate. It is recommended that Smoulder only be used when tank mixed with glyphosate.
[2] Including biotypes resistant to Group 2, 4 and 9.
[3] Provides control of secondary flushes (including Roundup Ready® and LibertyLink®) in addition to burndown control of volunteer canola (all types).
[4] Post-harvest application is only to be used prior to seeding wheat, barley and oats.

Residual volunteer canola control, 22-50 DAT



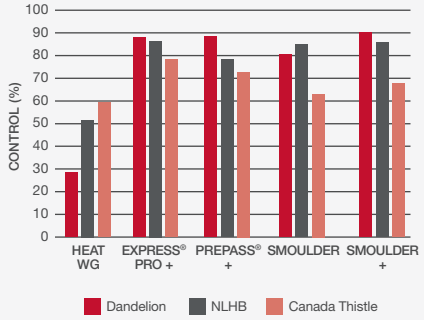
Source: BASF Small Plot Trials, 2016-2020, n>11

Enhanced annual burndown performance, 11-19 DAT



All treatments applied without glyphosate.
Source: BASF Small Plot Trials, 2020-2021

Perennial/winter annual weed control, 28-36 DAT



+ indicates glyphosate added (450 g ae/ha)
Source: BASF Small Plot Trials, 2017-2020, n=4

Mixing order

1. Use a 50 mesh filter screen and fill clean spray tank 1/2 full of water. Start agitation system.
2. Add the required amount of Smoulder herbicide and continue agitation until completely dissolved and product is fully dispersed.
3. Add in glyphosate.
4. Add the required amount of Merge adjuvant.
5. Continue agitation while adding the remaining amount of water to fill the tank.
6. Continue to agitate or run the by-pass system.
7. After any break in sprayer operation, agitate thoroughly before spraying again.

Sprayer cleanout instructions

1. Immediately after spraying, completely drain the spray tank.
2. First rinse: Fill tank 1/10 full of water; rinse spray tank for 15 minutes; flush through booms and hoses. Remove all end caps or open ball valves and flush solution through boom ends. Drain tank completely.
3. Second rinse: Fill tank with clean water. Add a commercial grade tank cleaner or 1 L of household ammonia (minimum 3% ammonia) per 100 L of water and agitate and flush booms. Agitate for 15 minutes. Remove end caps or opening ball valves to flush booms and hoses after allowing cleaning solution to stand in sprayer tank and booms for several hours or overnight. Drain tank after flushing boom and hoses. Clean nozzles and screens separately with a cleaning agent or an ammonia solution.
4. Third rinse: Rinse tank with clean water and flush through boom and hoses. Remove all end caps or open ball valves and flush solution through boom ends. Drain tank.

Application tips

Restricted entry interval – 12 hours.
Do not use on soils that have large gravelly or sandy areas, eroded knolls or calcium deposits.
Do not apply during periods of dead calm or gusty winds.

Pre-harvest interval

60 days when used as a pre-seed application.

Grazing

Wheat and barley forage may be used as feed (hay or silage) or grazed 30 or more days after application.

Follow crops

24 hours after pre-seed application
Barley, wheat (durum, spring and winter)
11 months after application
Canola (all types), faba beans, field corn, flax[5], **Clearfield®** lentils, peas, soybeans
Following season after post-harvest application
Oats, spring barley, wheat (spring or durum)

[5] Flax may only be seeded 11 months after application in Black and Dark Brown soil zones. In the Brown soil zone, flax may be seeded 22 months after application.

Tank mixes

Glyphosate only.

Contact your local BASF **AgSolutions®** Grower or Retail Representative or call **AgSolutions** Customer Care at 1-877-371-BASF (2273) for additional information on supported tank mixes.

Smoulder®
Powered by **Kixor®** Herbicide

Solo® ADV

Herbicide

Provides reliable control of tough weeds with rotational flexibility in a convenient liquid formulation.

- Includes a built-in adjuvant, for ease of handling and reduced fill-up times
- Provides the re-cropping flexibility of Solo® herbicide in a convenient liquid formulation
- Delivers reliable control of tough grasses and targeted broadleaf weeds

Active ingredient

Imazamox – Group 2

Formulation

Solution

One case contains

2 x 6.5 L jugs
or
3 x 4.33 L jugs

Storage

Requires heated storage.

Weed control in Clearfield lentils

Solo ADV

Source: Grower Applied Strip Trials, Wilkie, SK, 2015

Crops	Staging
Clearfield® lentils	1 to 9 node
Clearfield sunflowers	2 to 8 leaf
Soybeans	cotyledon to 4 leaf

Weeds controlled	Staging
Broadleafs	cotyledon to 4 leaf (except where indicated)
Cleavers[1]	(1 to 4 whorls)
Cow cockle	
Green smartweed	
Lamb's quarters	
Redroot pigweed	
Round-leaved mallow[1]	
Russian thistle	
Shepherd's-purse	
Stinkweed	
Volunteer canola[2]	
Wild buckwheat[1]	
Wild mustard	
Grasses	1 to 4 true leaf stage up until early tillering
Barnyard grass	
Green foxtail	
Japanese brome grass[1]	
Persian darnel	
Volunteer barley	
Volunteer canary seed	
Volunteer durum wheat	
Volunteer spring wheat[2]	
Volunteer tame oats	
Wild oats	
Yellow foxtail	

Application rates

Both case options will treat 40 acres.

Solo ADV herbicide	325 ml/ac (800 ml/ha)
Water volume	
Ground application only	40 L/ac (10 gal/ac)

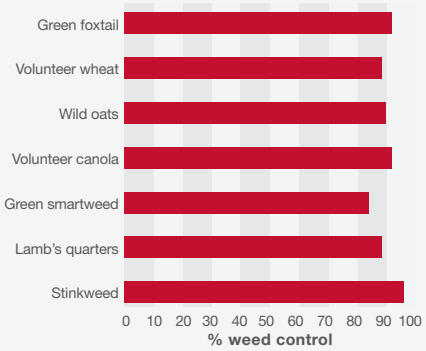
[1] Suppression only.
[2] Non-**Clearfield** varieties.

Green foxtail control after Solo ADV application in Clearfield lentils

Solo ADV

Source: Grower Applied Strip Trials, Frobisher, SK, 2015

Solo ADV weed control efficacy



Source: BASF Small Plot Trials, Saskatchewan, 2015

Mixing order

1. Always start with a clean sprayer. Refer to previously applied product labels for specific cleaning instructions.
2. Fill the clean tank with 1/2 to 3/4 of the required amount of clean water and start agitation system. Agitation should be running during the entire mixing procedure.
3. Add the correct amount of Solo ADV herbicide and continue to agitate.
4. If required, add the correct amount of Poast® Ultra herbicide while agitating the spray solution.
5. Continue the agitation while filling the spray tank with the remaining amount of water.
6. Thoroughly flush tank, boom, hoses and nozzle screens with clean water to avoid possible injury to other crops.

Application tips

Note: Solo ADV may contain a small amount of sediment, which is completely normal. Always perform a triple rinse of the jug when preparing the spray solution.

Rainfastness – 3 hours.

Avoid application immediately before or after frost or during unseasonably cold weather. Treat when weeds are actively growing.

Pre-harvest interval

60 days after application for **Clearfield** lentils and soybeans.

70 days after application for **Clearfield** sunflowers.

Grazing

Do not graze treated **Clearfield** lentils or soybeans or cut for hay within 20 days of application.

Do not graze treated **Clearfield** sunflower plants or cut for straw.

Follow crops

3 months after application
Winter wheat[3]

1 year after application
Canary seed[3], **Clearfield** canola, non-**Clearfield** canola[3], chickpeas, durum wheat[3], field corn, field peas, flax[3], lentils, soybeans, spring barley, spring wheat, sunflowers (incl. **Clearfield** sunflower) and tame oats[3]

2 years after application
Mustard (condiment-type only)[3]

Tank mixes

Contact your local BASF **AgSolutions®** Grower or Retail Representative or call **AgSolutions** Customer Care at 1-877-371-BASF (2273) for additional information on supported tank mixes.

[3] If drought conditions are experienced between June 1 and September 1 in the year of application, delay planting of winter wheat, durum wheat, canary seed, tame oats, flax and canola (non-**Clearfield**) by an additional year. If drought is received between June 1 and September 1 in the year of application OR between June 1 and September 1 in the year following application, delay planting of mustard by an additional year.

Solo® Ultra Q

Herbicide

SUPPORTED BY THE ADVANCED WEED CONTROL PROGRAM

Two modes of action for proven control of grasses and tough broadleaf weeds, with rotational flexibility.

- Built-in adjuvant, for ease of handling and reduced fill-up times
- Reliable control of a wide spectrum of tough grasses and targeted broadleaf weeds
- Extended application window on grassy weeds
- Multiple modes of action for management of resistant weeds

Active ingredients

(a) Imazamox – Group 2

(b) Quizalofop-p-ethyl – Group 1

Formulation

(a) Liquid solution

(b) Emulsifiable concentrate

One case contains

(a) 2 x 6.5 L jugs of Solo® ADV herbicide

(b) 6.16 L jug of Caziva® Ultra Q herbicide

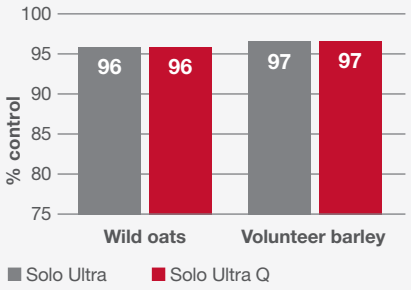
Storage

Requires heated storage.

Grassy weed control 21 days after application in Clearfield lentils

Source: BASF Small Plot Trials, Vanscoy, SK, 2020

Weed control of wild oats and volunteer cereals in peas and lentils, 42 days after application



Source: BASF Small Plot Trials, 2021, n=3

Crops	Staging
Clearfield® lentils	1 to 9 node
Clearfield sunflowers	2 to 8 leaf
Soybeans	cotyledon to 4 leaf

Weeds controlled	Staging
Broadleafs	cotyledon to 4 leaf (except where indicated)
Cleavers[1]	(1 to 4 whorls)
Cow cockle	
Green smartweed	
Lamb's quarters	
Redroot pigweed	
Round-leaved mallow[1]	
Russian thistle	
Shepherd's-purse	
Stinkweed	
Volunteer canola (non-**Clearfield** varieties)	
Wild buckwheat[1]	
Wild mustard	
Grasses	1 to 6 leaf stage up until early tillering
Barnyard grass	
Downy brome	
Foxtail barley	
Green foxtail	
Japanese brome grass	
Persian darnel	
Volunteer barley	
Volunteer canary seed	
Volunteer corn	
Volunteer durum wheat[2]	
Volunteer spring wheat[2]	
Volunteer tame oats	
Wild oats[3]	
Yellow foxtail	

[1] Suppression only.
[2] All varieties including **Clearfield**.
[3] Including biotypes resistant to Group 1 and Group 2. Solo Ultra Q will not control biotypes that have multiple-resistance to both Group 1 and Group 2 herbicides.

Application rates

One case of Solo Ultra Q herbicide will treat 40 acres.

(a)	Solo ADV herbicide	325 ml/ac (800 ml/ha)
(b)	Caziva Ultra Q herbicide	154 ml/ac (380 ml/ha)[4]

Water volume

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

[4] (b) Caziva Ultra Q can be topped up to a maximum rate of 305 ml/ac (750 ml/ha) to provide additional control of grasses. See label for details.

Mixing order

1. When applying Solo Ultra Q herbicide, always start with a clean sprayer. Refer to previously applied product labels for specific cleaning instructions.
2. Fill the clean tank with 1/2 to 3/4 of the required amount of clean water and start agitation system. Agitation should be running during the entire mixing procedure.
3. Add the correct amount of (a) Solo ADV and continue to agitate.
4. Add the correct amount of (b) Caziva Ultra Q while agitating the spray solution.
5. Continue the agitation while filling the spray tank with the remaining amount of water.
6. Maintain continuous and constant agitation throughout application until spraying is complete.

Application tips

Note: (a) Solo ADV may contain a small amount of sediment, which is completely normal. Always perform a triple rinse of the jug when preparing the spray solution.

Rainfastness – 3 hours.

Apply in warm weather to weeds that are actively growing. Avoid applying immediately before or after a frost or during unseasonably cold weather. Treat when weeds are actively growing.

Pre-harvest interval

65 days after application for **Clearfield** lentils.

70 days after application for **Clearfield** sunflowers.

80 days after application for soybeans.

Grazing

Do not graze treated crops or cut for hay. Sufficient data is not available to support these uses.

Follow crops[5]

3 months after application

Winter wheat[6]

1 year after application

Canary seed[6], **Clearfield** canola, non-**Clearfield** canola[6], chickpeas, durum wheat[6], field corn, field peas, flax[6], lentils, soybeans, spring barley, spring wheat, sunflowers (incl. **Clearfield** sunflowers) and tame oats[6]

2 years after application

Mustard (condiment-type only)[6]

[5] Refer to label for additional follow-crop restrictions. Contact your BASF Sales Representative for details on any crops not listed here.

[6] If drought conditions are experienced between June 1 and September 1 in the year of application, delay planting of winter wheat, durum wheat, canary seed, tame oats, flax and canola (non-**Clearfield**) by an additional year. If drought is received between June 1 and September 1 in the year of application OR between June 1 and September 1 in the year following application, delay planting of mustard by an additional year.

Tank mixes

Contact your local BASF **AgSolutions®** Grower or Retail Representative or call **AgSolutions** Customer Care at 1-877-371-BASF (2273) for information on supported tank mixes.

Viper® ADV

Herbicide

SUPPORTED BY THE ADVANCED WEED CONTROL PROGRAM

Proven, broad-spectrum weed control for field peas, soybeans and dry edible beans.

- Convenient, user-friendly 100% liquid formulation
- Multiple modes of action to help manage resistant weeds
- Control of resistant wild mustard and volunteer canola
- Excellent rotational flexibility

Active ingredients

Imazamox – Group 2
Bentazon – Group 6

Formulation

Liquid concentrate

One case contains

2 x 8.1 L jugs
Also available in 129.6 L drum

Storage

Requires heated storage.

Cleaver control, 7 days after application of Viper® ADV herbicide

Untreated | Viper ADV

Source: Grower Applied Strip Trials, SK, 2012

Volunteer canola control with application of Viper ADV herbicide vs glyphosate

Glyphosate | Viper ADV

Source: Grower Applied Strip Trials, SK, 2012

Crops	Staging
Dry edible beans[1]	1 to 2 trifoliate leaf
Field and succulent peas	3 to 6 above ground node (3 to 6 true leaf)
Soybeans	cotyledon to 4th trifoliate

Weeds controlled	Staging
Broadleafs	cotyledon to 4 leaf
Cleavers[2,3]	
Cow cockle	
Green smartweed	
Hemp-nettle[3]	
Kochia[2,3]	
Lamb's quarters	
Redroot pigweed	
Round-leaved mallow[3]	
Russian thistle	
Shepherd's-purse	
Sow thistle (annual)[3]	
Sow thistle (perennial)[4]	
Stinkweed	
Volunteer canola[5]	
Volunteer lentils[5]	
Wild buckwheat[3]	
Wild mustard[2]	
Grasses	1 to 4 true leaf or early tillering
Barnyard grass	
Green foxtail	
Japanese brome grass[3]	
Persian darnel	
Volunteer barley	
Volunteer canary seed	
Volunteer durum wheat	
Volunteer spring wheat[6]	
Volunteer tame oats	
Wild oats	
Yellow foxtail	

[1] Dry edible beans may vary in their tolerance to herbicides. See label for important notes. For dry edible beans, Viper ADV requires addition of Basagran® Forte herbicide plus 28% UAN.
[2] Includes resistant biotypes.
[3] Suppression.
[4] Top growth suppression only.
[5] Including **Clearfield®** and non-**Clearfield** varieties.
[6] Excluding **Clearfield** wheat.

Application rates

One case will treat 40 acres. One shuttle treats 320 acres.

Viper ADV herbicide[7]	404 ml/ac (1 L/ha)
28% UAN[8]	809 ml/ac (2 L/ha)

Water volume

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

[7] For dry edible beans only, Viper ADV requires the addition of Basagran Forte herbicide at 146 ml/ac (360 ml/ha) to control additional weeds. Basagran Forte is not included in case.
[8] Addition of a nitrogen source (28% UAN) is recommended for grass control, and is not included in the case.

Mixing order

1. Add 3/4 of needed water.
2. Start agitation and continue agitation throughout mixing and spraying procedure.
3. Add the required amount of Viper ADV herbicide.
4. If tank mixing Basagran Forte herbicide for dry edible beans or glyphosate for Roundup Ready® soybeans[9], add the required amount of tank-mix partner.
5. Add correct amount of nitrogen source (required for grass control).
6. Complete filling with water and continue agitation.

Application tips

Rainfastness – 6 hours.

Avoid application immediately before or after frost or during unseasonably cold weather. Apply in warm weather (15°C to 28°C) when weeds are actively growing.

Use higher water volume on dense weeds and thicker canopies.

Initial transient crop yellowing may occur but is outgrown and will not affect yield.

Pre-harvest interval

40 days after application for succulent peas.

60 days after application for field peas, soybeans and dry edible beans.

Follow crops

3 months after application

Winter wheat[10]

1 year after application

Canary seed[10]
Clearfield canola
Chickpeas
Durum wheat[10]
Field corn
Field peas
Flax[10]
Lentils
Non-**Clearfield** canola[10,11]
Soybeans
Spring barley
Spring wheat
Sunflowers (incl. **Clearfield** sunflowers)
Tame oats[10]

2 years after application

Mustard (condiment-type only)[10]

Tank mixes

Herbicide for dry edible beans: Basagran Forte at 146 ml/ac (360 ml/ha)

Herbicide for Roundup Ready® soybeans: Glyphosate[9]

None on label for field or succulent peas.

Contact your local BASF **AgSolutions®** Grower or Retail Representative or call **AgSolutions** Customer Care at 1-877-371-BASF (2273) for information on supported tank mixes.

[9] For soybeans, 28% UAN is not required when tank mixing with glyphosate.
[10] If drought conditions are experienced between June 1 and September 1 in the year of application, delay planting of winter wheat, durum wheat, canary seed, tame oats, flax and canola (non-**Clearfield**) by an additional year. If drought is received between June 1 and September 1 in the year of application OR between June 1 and September 1 in the year following application, delay planting of mustard by an additional year.
[11] Research studies have shown that non-**Clearfield** canola may be safely planted the year following an application of Viper ADV in all regions of Western Canada except the Northern Peace River Region of Alberta (any area in Township 100 and north, including the areas of Keg River, La Crete, Fort Vermilion and High Level). In this region, non-**Clearfield** canola can be grown safely the second year following an application (2 YAT).

Voraxor®

Powered by **Tirexor®** Herbicide

SUPPORTED BY THE ADVANCED WEED CONTROL PROGRAM

The new standard in pre-seed burndown control.

- Improved burndown with increased activity, compared to Heat® LQ herbicide, on most broadleaf weeds
- Enhanced residual consistency and weed spectrum, including cleavers, kochia and wild mustard
- Contains the new unique active ingredient Tirexor®

Active ingredient

Saflufenacil – Group 14
Trifludimoxazin – Group 14

Formulation

Suspension concentrate

One case contains

1 x 1.56 L jug Voraxor® herbicide

2 x 8.1 L Merge® adjuvant

Storage

Requires heated storage.

Voraxor vs competitors, 14 to 21 days after treatment (DAT)

Aim® EC herbicide	GoldWing® herbicide	Voraxor

Glyphosate was not included in this trial.
Source: BASF Small Plot Trials, Saskatoon, SK, 2020

Crops	Staging
Barley	pre-seed and pre-emergence
Chickpeas	
Faba beans	
Field corn	
Lentils	
Peas (dried field)	
Soybeans	
Wheat (incl. durum, spring and winter)	
Chemfallow	apply to actively growing weeds less than 15 cm in height

Weeds controlled	Staging
Broadleafs[1]	8 leaf (except where indicated)
Canada fleabane	
Cleavers[2]	(4 whorl stage)
Kochia[2]	(15 cm)
Lamb's quarters[2]	
Narrow-leaved hawk's beard	(8 cm)
Redroot pigweed[2]	
Round-leaved mallow	
Shepherd's-purse[3]	
Stinkweed[2]	
Volunteer canola[2,4]	
Wild buckwheat[2]	
Wild mustard[2]	

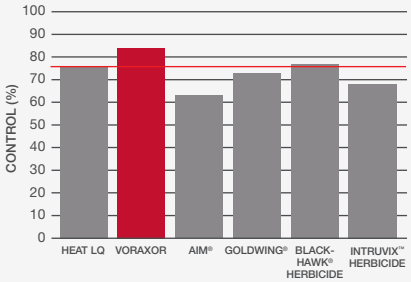
Application rates[4]

One case of Voraxor herbicide will treat 30 to 80 acres, depending on rate. One case will treat 80 acres for burndown and 30 to 40 acres for residual control.

Lentils	19.5 ml/ac (48 ml/ha)[5]
Field corn and soybeans	19.5 to 40.5 ml/ac (48 to 100 ml/ha)[6]
Faba beans, chickpeas, wheat (incl. durum, spring and winter), peas and barley	19.5 to 58 ml/ac (48 to 144 ml/ha)
Chemfallow	19.5 to 29 ml/ac (48 to 72 ml/ha)
All applications	
Merge adjuvant	200 to 400 ml/ac (0.5 to 1 L/ha)
Water volume	
Ground application only	20 to 40 L/ac (5 to 10 gal/ac)

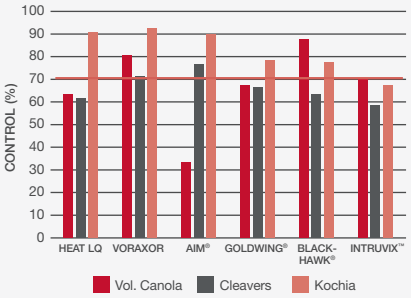
[1] Voraxor applied at 19.5 to 29 ml/ac (48 to 72 ml/ha) provides rapid burndown control of all weeds listed below.
[2] Apply Voraxor at a rate of 41.5 to 57 ml/ac (100 to 140 ml/ha) for suppression of secondary flushes.
[3] Suppression only.
[4] All types including Roundup Ready®.
[5] Rate restrictions apply. Do not use rate higher than 19.5 ml/ac (48 ml/ha) or injury could result.
[6] Rate restrictions apply. Do not use higher than 40.5 ml/ac (100 ml/ha) or injury could result.

Annual broadleaf weed control burndown, 28 to 36 DAT



Weeds controlled: redroot pigweed, volunteer canola, lamb's quarters, wild mustard, cleavers, kochia and wild buckwheat
Source: BASF Small Plot Trials, 2020, n=22

New active with improved burndown over Heat LQ



Glyphosate was not included in this trial.
Source: BASF Small Plot Trials, 2020-2021, n=25 to 28 DAT

Mixing order

1. Thoroughly clean the sprayer prior to use by flushing the system with water containing detergent. Refer to previously applied product labels for specific cleaning instructions.
2. Fill the clean spray tank 1/2 full with clean water. Start the agitation system. Agitation should be running during the entire mixing procedure.
3. Add the correct amount of Voraxor and continue to agitate until thoroughly mixed.
4. Prior to adding glyphosate, add the correct amount of herbicide tank-mix partner if required.
5. Add in glyphosate.
6. Add the correct amount of Merge adjuvant.
7. Continue agitation while filling the remainder of the tank with water necessary to fill the spray tank.
8. Maintain continuous and constant agitation throughout application until spraying is complete. After any break in spraying, agitate thoroughly before spraying again.
9. Thoroughly clean the sprayer after use by flushing the system with clean water and detergent.

Application tips

Restricted entry interval –12 hours.

Avoid application when heavy rain is forecast.

Do not apply during periods of dead calm or when winds are gusty.

Pre-harvest interval

There is no required pre-harvest interval between a pre-seed or pre-emergent application and harvest.

Follow crops

3 months after application[7]

Winter wheat

Plant back crops[8]

Barley, dry field peas, lentils, field corn, soybean, wheat (spring, winter, durum)

Following season[7]

Barley, canola, dry common beans, dry field peas, flax, field corn, lentils, mustard, soybean, wheat (spring, durum)

[7] Following a spring application of Voraxor.

[8] To be planted in the same season in case of crop failure. Rate restrictions apply. Lentils, field corn and soybeans can only be grown as plant back crops provided that a maximum product rate of 19.5 ml/ac (48 ml/ha) for lentils and 40.5 ml/ac (100 ml/ha) for field corn and soybeans was applied in the previous crop. A second application of Voraxor cannot be made in the rescue crop. Crops can also be planted in the next season following chemfallow treatment applied after August 1.

Tank mixes

Herbicide for all crops: Glyphosate

Herbicide for lentils, field corn, soybeans, peas (dried field), chickpeas and faba beans:
Zidua® SC herbicide

Contact your local BASF **AgSolutions®** Grower or Retail Representative or call **AgSolutions** Customer Care at 1-877-371-BASF (2273) for additional information on supported tank mixes.

Voraxor®
Powered by **Tirexor®** Herbicide

Voraxor® Complete

Powered by **Tirexor®** Herbicide

SUPPORTED BY THE ADVANCED WEED CONTROL PROGRAM

The most consistent pre-seed burndown on the market, with outstanding residual activity to provide you with a one-two punch to start the season.[1]

- Combining new, unique Tirexor® herbicide with trusted active ingredient Kixor® for burndown control, and Zidua® SC herbicide for reliable residual
- High-performance, broad-spectrum weed control including activity on grassy weeds
- Enhanced residual activity including efficacy on volunteer canola, cleavers, kochia, wild mustard, foxtail (green and yellow) and wild oats

Active ingredient

Saflufenacil – Group 14
Trifludimoxazin – Group 14
Pyroxasulfone – Group 15

Formulation

Suspension concentrate

One case contains

1 x 1.56 L jug Voraxor® herbicide

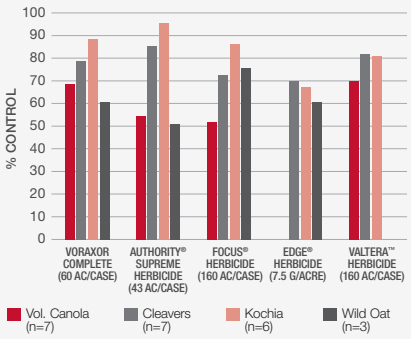
3.89 L jug Zidua SC herbicide

2 x 8.1 L Merge® adjuvant

Storage

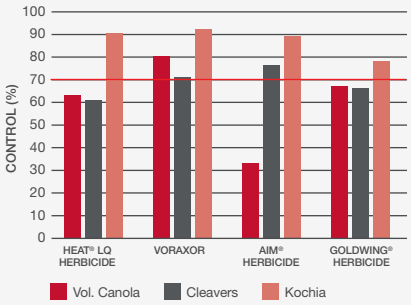
Requires heated storage.

Residual weed control, 21 to 35 DAT



Source: BASF Small Plot Trials, Western Canada, 2020-2021

Burndown control in pulses (Voraxor only), 28 to 36 DAT



Glyphosate was not included in this trial.
Source: BASF Small Plot Trials, 2020, n=10

Crops	Staging
Chickpeas	pre-seed and pre-emergence
Faba beans	
Field corn	
Lentils	
Peas (dried field)	
Soybeans	

Weeds controlled	Staging
Broadleafs	8 leaf (except where indicated)
Canada fleabane[2]	
Cleavers[3]	(4 whorls)
Common waterhemp[3]	(prior to emergence)
Dandelion[4]	(15 cm height)
Eastern black nighsthade[3]	
Kochia[2,3]	(15 cm height)
Lamb's quarters[3]	
Narrow-leaved hawk's beard	(8 cm height)
Redroot pigweed[3]	
Round-leaved mallow	
Shepherd's-purse[5]	
Stinkweed[3]	
Volunteer canola[3,6]	
Wild buckwheat[3]	
Wild mustard[3]	
Grasses	prior to emergence
Barnyard grass[7]	
Downy brome[7]	
Foxtail (green, yellow)[7]	
Japanese brome[7]	
Wild oats[7]	

[1] BASF internal trials, 2020, n=10.
[2] Includes biotypes resistant to Group 2, Group 4 and glyphosate.
[3] Residual suppression (may be rate dependent).
[4] Top growth burndown control only of perennial plants.
[5] Burndown suppression only.
[6] All herbicide-tolerant canola systems, including glyphosate-tolerant canola.
[7] Residual suppression only.

Voraxor Complete vs competitors

Volunteer canola, wild mustard and kochia resistant to Group 2, lamb's quarters and wild oat control (front to back). All treatments included glyphosate in the pre-seed burndown. Source: BASF Small Plot Trials, Lethbridge, AB, 2021

Application rates[8]

One case of Voraxor Complete will treat 40 to 80 acres, depending on rate. One case will treat 40 to 80 acres for corn, peas (dried field) and soybeans, and 80 acres for lentils.

Field corn	Voraxor herbicide 19.5 to 40.5 ml/ac (48 to 100 ml/ha) Zidua SC herbicide 49 to 97 ml/ac (120 to 240 ml/ha)
Lentils	Voraxor herbicide 19.5 ml/ac (48 ml/ha)[9] Zidua SC herbicide 49 ml/ac (120 ml/ha)
Chickpeas, faba beans, peas (dried field)	Voraxor herbicide 19.5 to 40.5 ml/ac (48 to 100 ml/ha) Zidua SC herbicide 49 to 97 ml/ac (120 to 240 ml/ha)
Soybeans	Voraxor herbicide 19.5 to 40.5 ml/ac (48 to 100 ml/ha) Zidua SC herbicide 49 to 97 ml/ac (120 to 240 ml/ha)

All applications

Merge adjuvant	200 to 400 ml/ac (0.5 to 1 L/ha)

Water volume

Ground application only	20 to 40 L/ac (5 to 10 gal/ac)

Mixing order

1. Use a 50 mesh filter screen and fill clean spray tank 1/2 full of water. Start agitation system.[10]
2. Add Zidua SC followed by Voraxor followed by glyphosate; continue agitation.
3. Add Merge. If excess foaming occurs, add an anti-foaming agent.
4. Continue agitation while adding the remaining amount of water.
5. Continue agitation or run the by-pass system. After any break in spraying, agitate thoroughly before spraying again.

Note: Always follow the WAMLEGS mixing procedure when tank mixing.

Application tips

Restricted entry interval –12 hours.
Avoid application when heavy rain is forecast.
Do not apply during periods of dead calm or when winds are gusty.
Do not use on peat or muck soils with 7% or more organic matter content.

Pre-harvest interval

There is no required pre-harvest interval between a pre-seed or pre-emergent application and harvest.

Follow crops

3 months after application[11]
Winter wheat

Following season[11]
Barley, canola, dry common beans, peas (dried field), field corn, flax, lentils, mustard, soybean, wheat (spring, durum)

Tank mixes

Herbicide for all crops: Glyphosate

Contact **AgSolutions®** Customer Care or your local BASF **AgSolutions** Grower or Retail Representative for additional information on supported tank mixes.

[8] All types including Roundup Ready®.
[9] Rate restrictions apply. Do not use rates of Voraxor higher than 19.5 ml/ac (48 ml/ha) or injury could result.
[10] Do not over-agitate at any point in the process.
[11] Following a spring application of Voraxor.

Voraxor® Complete
Powered by **Tirexor®** Herbicide

Zidua® SC

Herbicide

SUPPORTED BY THE ADVANCED WEED CONTROL PROGRAM

Residual control of key annual grasses and select broadleaf weeds.

- Group 15 chemistry delivers management of tough weeds, including redroot pigweed and green and yellow foxtail
- Residual activity helps to stop germinating weed seedlings before or soon after crop emergence
- Wide window of application from early pre-seed to early post-emergence and post-harvest

Active ingredient

Pyroxasulfone – Group 15

Formulation

Suspension concentrate

One case contains

2 x 4.05 L jugs

Storage

Requires heated storage.

Application or crop	Staging
Chickpeas	pre-seed, pre-emergence
Field corn	pre-seed[1], pre-emergence, early post-emergence up to 4 leaf
Faba beans, field peas	pre-seed, pre-emergence
Herbicide-tolerant soybeans[2]	pre-seed[1], pre-emergence, early post-emergence up to 3rd trifoliate
Lentils	pre-seed, pre-emergence, fall prior to seeding
Sunflowers	pre-seed[1], pre-emergence
Potatoes	pre-emergence (after planting or following drag-off or hilling)
Post-harvest	after harvest

Weeds controlled/suppressed	Staging
Broadleafs	prior to emergence
Cleavers[3]	
Common chickweed[3]	
Eastern black nightshade[3]	
Kochia[3]	
Lamb's quarters[3]	
Palmer amaranth	
Redroot pigweed[3,4]	
Shepherd's-purse[3]	
Waterhemp[3,4]	
Wild buckwheat[3]	
Grasses	prior to emergence
Annual bluegrass[5]	
Barnyard grass[4]	
Crabgrass (large)[4]	
Downy brome[3]	
Foxtail (giant[4], green[3,4], yellow[3,4])	
Japanese brome[3]	
Ryegrass (Italian)[4]	
Wild oats[3]	

[1] Up to 30 days before seeding.
[2] Talk to your grain buyer before applying to conventional or IP soybeans.
[3] Early-season residual suppression only.
[4] Controlled at 101 to 200 ml/ac (250 to 493 ml/ha).
[5] Provides control when applied as a post-harvest treatment prior to weed emergence.

Application rates

One case of Zidua® SC herbicide will treat 40 to 165 acres.

Crop	Rate by soil texture for residual control				Recommended acres/case
Residual control					
	Coarse	Medium-fine		Fine	
		Organic matter ≤ 3%	3% ‹ Organic matter ‹ 7%		
Field corn (pre-plant, pre-emerge, early post-emerge) or herbicide-tolerant soybeans (pre-plant, pre-emerge)	101 ml/ac (250 ml/ha)	134 ml/ac (332 ml/ha)	169 ml/ac (417 ml/ha)	200 ml/ac (493 ml/ha)	40 to 80
Post-harvest application	49 to 97 ml/ac (120 to 240 ml/ha)[6]				83 to 165
Early-season residual suppression[7]					
Herbicide-tolerant soybeans (early post-emerge)	73 ml/ac (180 ml/ha)				110
Chickpeas, dry field peas, potatoes, sunflowers	49 to 97 ml/ac (120 to 240 ml/ha)				83 to 165
Lentils	49 to 73 ml/ac (120 to 180 ml/ha)				110 to 165
Fall application					
Chickpeas, dry field peas, lentils	73 to 97 ml/ac (180 to 240 ml/ha)				83 to 110

[6] Application rates are for all soil types. Use the higher rate for longer residual and under heavier weed populations.
[7] When an in-crop application of another registered herbicide is planned.

Water volume

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

Mixing order

Add products separately. Do not mix multiple products at the same time.

1. Use a 50 mesh filter screen and fill clean tank 1/2 to 3/4 full of water.
2. Add water conditioners if needed.
3. Add a **W**ettable powder or water dispersible granular (WG) tank-mix partner if applicable.
4. **A**gitate.[8]
5. Add a **M**icro-encapsulated (ME) tank-mix partner if applicable.
6. Add the required amount of Zidua SC herbicide.
7. Add a **L**iquid, solution or suspension tank-mix partner if applicable.
8. Add an **E**mulsifiable concentrate (EC) tank-mix partner if applicable.
9. Add **G**lyphosate if needed.
10. Add any **S**urfactants or adjuvants if required.
11. Fill the remainder of the tank with water. If the solution is left for an extended period of time, agitate once every 8 hours before spraying again.

Note: A detergent-based cleaning solution should be used before changing over to a different chemistry.

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

Application tips

Restricted entry interval – 12 hours. Minimum seed depth is 2.5 cm for chickpeas, corn, field peas and lentils, and 4 cm for soybeans. A minimum of 2 inches of soil covering the vegetative portion of potato plants following drag-off or hilling is required. Zidua SC must be applied and activated by moisture prior to weed emergence. When adequate moisture is not received after Zidua SC application, weed control may be improved by irrigation (except flood irrigation). Do not use on peat or muck soils with 7% or more organic matter content. Do not apply more than 1 application of Zidua SC per season.

Grazing

Do not feed or graze treated hay or forage to livestock.

Tank mixes

Herbicides for field peas and lentils: Glyphosate[9,10], Heat® LQ[11], Voraxor®[11]
Herbicides for chickpeas: Glyphosate[9,10], Heat LQ[11]
Herbicides for corn: Aatrex® Liquid 480, Armezon®, glyphosate[9], Heat LQ[11]
Herbicides for soybeans: Engenia®, glyphosate[9], Heat LQ[11]
Herbicide for sunflowers: Glyphosate[9]
Herbicide for potatoes: Glyphosate
Herbicides for post-harvest application: Engenia, glyphosate[9]

[9] Glyphosate present as isopropylamine salt, di-ammonium salt or potassium salt.
[10] Can be applied in fall to lentils.
[11] Pre-seed or pre-emergence only.

Zidua® SC
Herbicide

Zidua® SC

Herbicide

late fall application

Zidua SC herbicide now available for late fall application before planting lentils next spring.

Get your spring weed cleanup started with Zidua® SC herbicide. When applied before ground freeze, a fall application of Zidua SC provides residual activity on key weeds next spring. Follow up with a spring pre-seed application of Voraxor® herbicide to give lentils a cleaner start to the growing season.

- Zidua SC is Group 15 chemistry that provides suppression of a broad-spectrum of weeds, including broadleaf weeds resistant to Group 2, 4 and 9 and grass weeds resistant to Group 1 and 2
- Provides residual suppression the following spring on key grass and broadleaf weeds including cleavers, kochia, lamb's quarters, pigweed, wild oat, and green and yellow foxtail
- Supported by the Advanced Weed Control Program when followed by Voraxor pre-seed and an eligible in-crop herbicide

See how fall-applied Zidua SC compares.

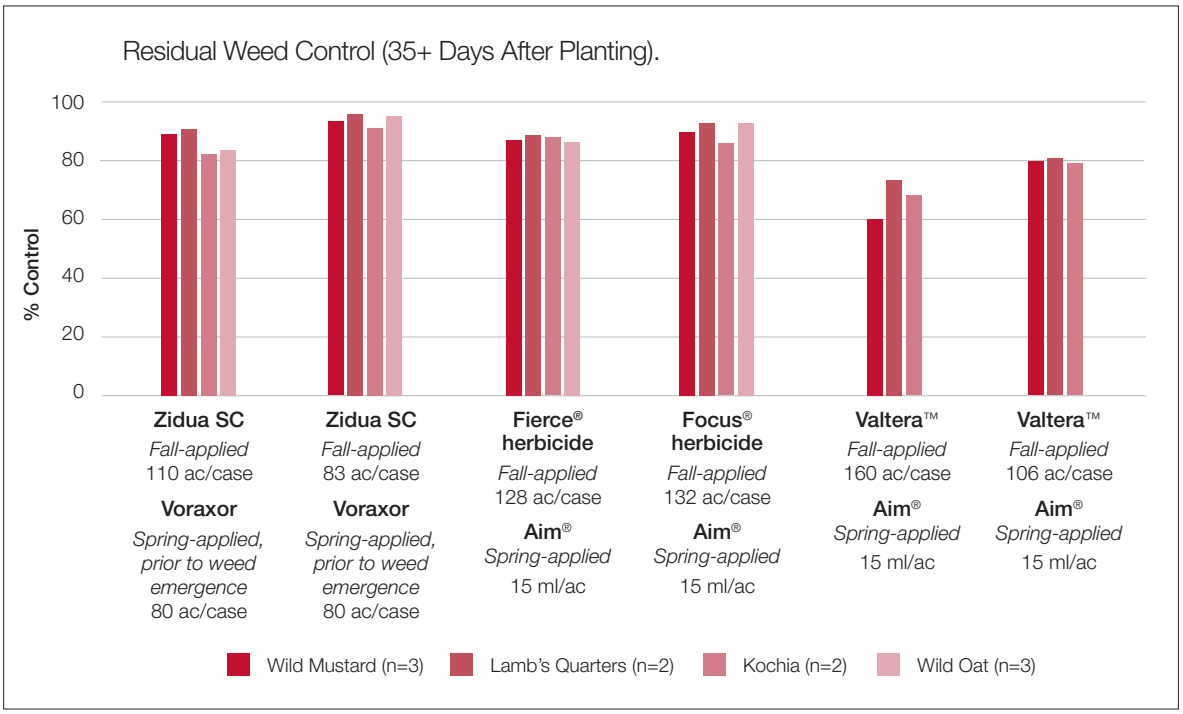
Untreated

Fall-applied Zidua SC followed by spring-applied Heat® LQ herbicide*

Fall-applied Valtera™ herbicide followed by spring-applied Aim® herbicide*

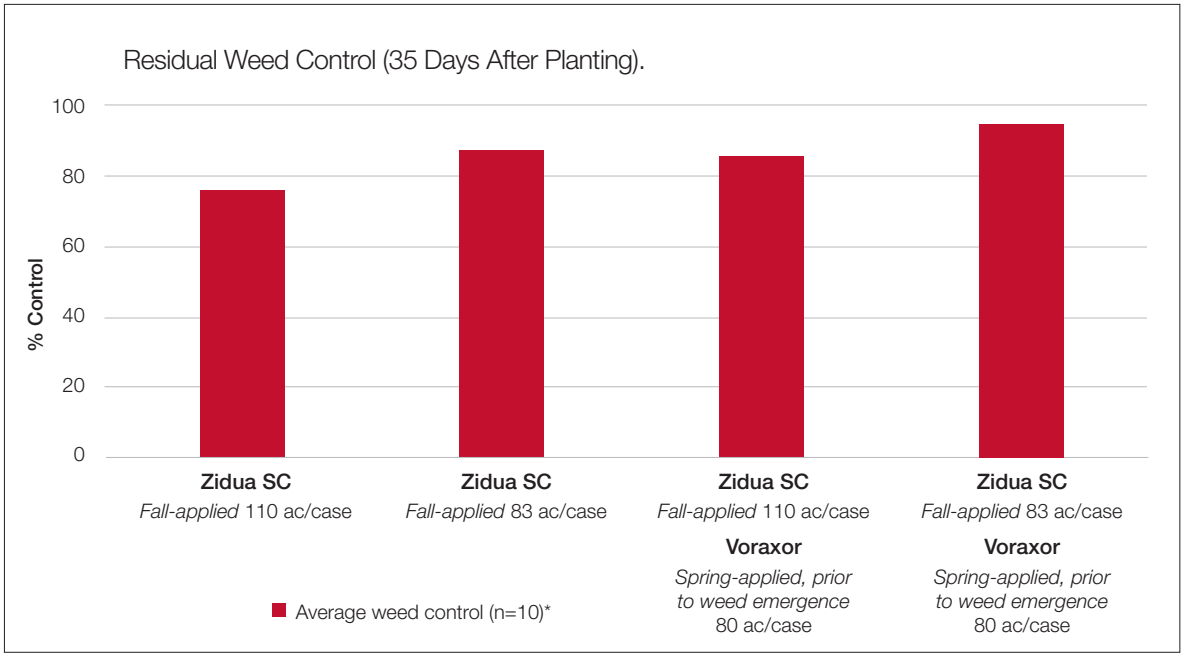
*Prior to weed and crop emergence
Source: BASF Small Plot Trials, Regina, SK, 2021

Combine fall Zidua SC with spring Voraxor for better weed control.



Residual activity on lamb's quarters, wild mustard, kochia and wild oat is based on fall application of Zidua SC prior to freeze up and spring application of Voraxor 0-3 days before seeding. Fall application of competitors is followed by Aim® herbicide in the spring.
Source: BASF Small Plot Trials, Lethbridge, AB and Vanscoy, SK, 2020-2021, n=10

Fall Zidua SC with spring Voraxor offers more consistent, broad-spectrum weed control.



*Lamb's quarters, kochia, wild oats and wild mustard

Note: 2021 was very dry during seeding in Lethbridge, AB and Vanscoy, SK locations, with less than optimal activation of all spring-applied treatments, where this data was collected.
Source: BASF Small Plot Trials, Lethbridge, AB and Vanscoy, SK, 2020-2021, n=10

Merge®

Surfactant

A blended surfactant designed for use with a wide range of BASF herbicides.

- Packaged separately for flexibility and handling convenience
- Merge® surfactant helps ensure maximum uptake of specific BASF herbicides into weeds
- Purchase and use only what is required, reducing storage, waste and disposal concerns

Active ingredients

Surfactant blend
and solvent

Formulation

Emulsifiable concentrate

One case contains

2 x 8.1 L jugs
Also available in 130 L shuttle

Storage

Requires heated storage.

Application rates

Merge surfactant is a requirement when using the BASF herbicides listed in the table below.

The amount of Merge applied depends on the herbicide and the water volume rates used. See the individual herbicide labels for more complete information.

The following table can serve as a guide for determining the approximate amount of Merge required.

	Acres/case herbicide	Merge requirement (at water volume of 40 L/ac (10 gal/ac))
Armezon® herbicide	160	0.5% v/v[1]
Certitude® herbicide	40	1 jug/40 ac[2] (incl. with herbicide)
Distinct® herbicide	40 to 80	1 jug/40 ac[3]
Facet® L herbicide	160	0.5% v/v[2]
Heat® LQ herbicide	30 to 80	1 jug/40 ac[3] (incl. with herbicide)
Heat Complete herbicide	30 to 80	1 jug/40 ac[3] (incl. with herbicide)
Odyssey® NXT herbicide	40	0.5% v/v[2] (incl. with herbicide)
Odyssey Ultra Q herbicide	40	0.5% v/v[2] (incl. with herbicide)
Poast® Ultra herbicide	80 to 120	1% v/v[2]
Smoulder® herbicide	80	1 jug/40 ac[3] (incl. with herbicide)
Voraxor® herbicide	30 to 80	1 jug/40 ac[3] (incl. with herbicide)
Voraxor Complete herbicide	40 to 80	1 jug/40 ac[3] (incl. with herbicide)

Mixing order

1. Thoroughly clean sprayer prior to use, using instructions of the previously used product.
2. Fill spray tank 1/2 full with clean water and start agitation system.
3. Add the required amount of herbicide.
4. If tank mixing herbicides, add the required amount of tank-mix partner.
5. Add the correct amount of Merge surfactant.
6. Complete filling with water and continue agitation.

[1] Merge can be added when tank mixed with glyphosate (not required).
[2] Merge is required at a rate that fluctuates with water volume used. At 40 L/ac (10 gal/ac), Merge would treat 40 acres.
[3] Merge is required at a standard rate regardless of herbicide and water rate used.

28% UAN

Liquid Fertilizer

Maximize performance of Viper® ADV herbicide with the addition of BASF 28% UAN.

- BASF 28% UAN helps the two active ingredients in Viper ADV work together to help ensure effective control of grasses and broadleaf weeds
- Addition of BASF 28% UAN increases spray droplet retention and herbicide absorption by weed foliage
- Sprayer grade, filtered to maximize sprayer performance

Active ingredient

Urea – Ammonium nitrate

Formulation

Water-based solution

One case contains

2 x 8.0 L jugs
Also available in 128 L shuttle

Storage

Requires heated storage.

Function

BASF 28% UAN is recommended for tank mixing with Viper ADV herbicide for effective control of grassy weeds in field and succulent peas, dry beans and soybeans.

Application rates

Two cases of BASF 28% UAN required for each case of Viper ADV herbicide.

One shuttle provides enough nitrogen for 4 cases of Viper ADV herbicide.

BASF 28% UAN[1]	809 ml/ac (2 L/ha)
Viper ADV herbicide[2,3]	404 ml/ac (1 L/ha)

Water volume

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

Mixing order

1. Add 3/4 of needed water.
2. Start agitation and continue agitation throughout mixing and spraying procedure.
3. Add the required amount of Viper ADV herbicide.
4. If tank mixing a herbicide, add the required amount of tank-mix partner.
5. Add the correct amount of BASF 28% UAN (recommended for grass control).
6. Complete filling with water and continue agitation.

Tank mixes

Herbicides for dry edible beans:

Viper ADV at 404 ml/ac (1 L/ha) and Basagran® Forte at 146 ml/ac (360 ml/ha) and BASF 28% UAN at 809 ml/ac (2 L/ha)

Herbicides for field peas:

Basagran Forte at 506 ml/ac (1.25 L/ha) and
BASF 28% UAN at 809 ml/ac (2 L/ha)

[1] For dry edible beans only.
[2] Viper ADV herbicide is purchased separately.
[3] For dry edible beans only. Viper ADV can be tank mixed with Basagran Forte herbicide to control additional weeds.

Clearfield® Production System for Lentils | BASF We create chemistry

High-performing genetics. Innovative solutions.

The **Clearfield®** Production System is a great way to grow lentils, combining excellent genetics across all major red and green lentil market classes. BASF has worked with the Crop Development Centre (CDC) to develop herbicide-tolerant varieties, leading to the release of CDC Impact and CDC Imperial, the first herbicide-tolerant lentil varieties on the market. Currently, there are 21 **Clearfield** varieties to choose from across all major lentil classes. These varieties are designed for maximum yield potential and quality with the option to choose from different height, maturity or disease resistance traits to suit your operation.

		Yield % CDC Maxim		Resistance to[1]:	
Market class	**Variety**	**Area 1 & 2**	**Area 3 & 4**	**Ascochyta blight**	**Anthracnose race 1**
Extra small red	CDC Imp	95	94	MR	MR
Small red	CDC Maxim	100	100	MR	MR
	CDC Dazil	97	92	MR	I
	CDC Impulse	108	102	MR	MR
	CDC Nimble	108	107	MR	MR
	CDC Proclaim	106	102	MR	MR
	CDC Simmie	109	103	MR	MR
Large red	CDC KR-2	105	90	MR	MR
	CDC Sublime	118	109	MR	MR
Small green	CDC Imvincible	94	81	MR	MR
	CDC Jimini	108	100	- -	- -
Medium green	CDC Impress	87	71	MR	S
	CDC Imigreen	78	71	MR	MS
Large green	CDC Grimm	94	82	MR	MR
	CDC Lima	93	88	MR	MR
	CDC Impower	82	68	MR	S
French green	CDC Peridot	84	91	I	MS
Green cotyledon	CDC QG-3	92	66	I	MR
	CDC QG-4	93	91	I	MR
Spanish brown	CDC SB-3	90	87	I	MR
	CDC SB-4	103	101	I	MR

Source: Saskatchewan Seed Growers Association, Seed Guide, 2022

[1] Resistance ratings: R=Resistant; MR=Moderately Resistant; I=Intermediate Resistance; MS=Moderately Susceptible; S=Susceptible.

Grow a better future.

Our seed partners are dedicated to the integrity of the **Clearfield** trait and understand the demand for **Clearfield** lentil varieties to tackle the challenges of production. That's why a portion of BASF **Clearfield** herbicide sales are reinvested into the CDC breeding program to support ongoing research and development of new **Clearfield** lentil varieties. When you have your seed **Clearfield**-Confirm® tested annually and use a BASF **Clearfield** herbicide on your lentils, you invest in that research and development with the CDC. Plus, you get the benefits of the BASF Ag Rewards Program and helpful product support.

CDC breeding objectives:

- Improving disease resistance, with a focus on ascochyta, anthracnose and stemphylium blight
- Herbicide tolerance for improved weed management
- Higher yields for improved economic returns

Clearfield® Production System for Wheat

Clearfield® Plus Production System for Wheat

BASF We create chemistry

Combines top genetics with customizable weed control to help achieve the cleanest fields possible.

The **Clearfield®** Production System for wheat is the only herbicide-tolerant wheat system that delivers complete control of volunteer barley and cereal off-types. It features varieties with high yield potential, reduced lodging and disease resistance while providing a weed control solution specifically designed for use on **Clearfield** wheat.

Clearfield wheat varieties

- Top-yielding genetics from high-performance wheat varieties
- Herbicide-tolerant traits help you maximize weed control
- Choose from varieties bred for early maturity, short stature, good standability and resistance to fusarium head blight

Clearfield-Confirm testing

Prior to using your own farm-saved seed or selling it to others, you must first have it **Clearfield**-Confirm® tested. When you **Clearfield**-Confirm test annually and use a BASF herbicide on your wheat, you help ensure it has not been contaminated with non-**Clearfield** seed. Plus, you reap the benefits of the BASF Ag Rewards Program, helpful product support and investment in continued research and development with the CDC.

Send samples to one of the SGS Canada Inc. seed labs below:
280 Portage Close, Unit 310, Sherwood Park, AB T8H 2R6 (1-800-952-5407)
10136128 Ave, Unit 106, Grand Prairie, AB T8V 4H3 (1-877-532-8889)

Clearfield Production System for wheat herbicide	
Altitude FX® 3 herbicide	Offers high-level control of grasses including volunteer barley and wild oats resistant to Group 1, plus your choice of tank-mix partner for customizable broadleaf weed control.

Compatible seed treatments	
Insure® Cereal FX4 seed treatment	Formulated with Xemium®, Insure Cereal FX4 combines four modes of action with **Plant Health Benefits**[1] to deliver effective broad-spectrum protection against seed- and soil-borne diseases.
Teraxxa® F4 seed treatment	In addition to offering four fungicide active ingredients for effective broad-spectrum protection against key seed- and soil-borne diseases, including fusarium, Teraxxa F4 is a proven cereal seed treatment that provides true wireworm control by breaking the lifecycle.

Compatible herbicides	
Distinct® herbicide	Complements glyphosate for effective chemfallow and post-harvest control of broadleaf weeds, including resistant biotypes.
Heat® LQ herbicide	Applied pre-seed or pre-emergent with glyphosate for rapid burndown of tough broadleaf weeds with residual activity (at higher rates) on key flushing weeds. Applied **pre-harvest** with glyphosate for fast, complete dry down of tough broadleaf weeds and improved harvest efficiency.
Smoulder® herbicide	Applied pre-seed for superior burndown control of resistant broadleaf weeds, including resistant biotypes of kochia (Group 2, 4 and 9).
Voraxor® herbicide	Applied pre-seed and pre-emergent for improved burndown with increased activity on most broadleaf weeds.

Compatible fungicides	
Nexicor® fungicide	Three modes of action with proven **Plant Health Benefits**[1] for broad-spectrum control of key cereal leaf diseases, including rust, septoria and tan spot.
Sphaerex® fungicide	Improved cereal head timing fungicide for management of late-season leaf diseases with enhanced protection for yield and grain quality.

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

Mixing order for tank mixes.

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

Wettable powders, flowable

Agitate, **A**nti-flowing compounds, buffers

Microcapsule suspension

Liquid and soluble

Emulsifiable concentrates

High load **G**lyphosates

Surfactants

Always remember:

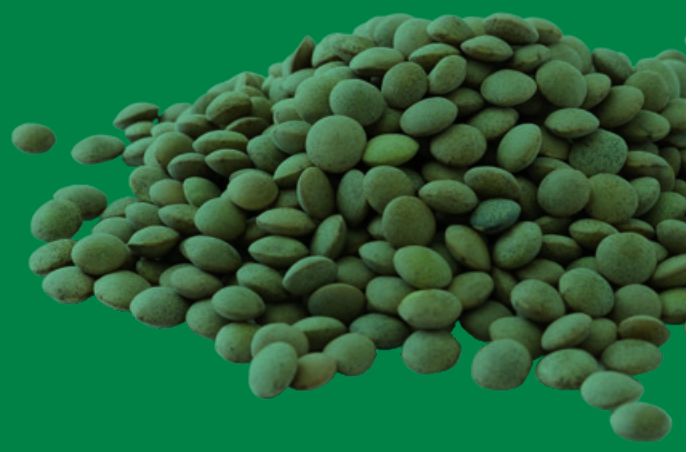
W.A.M.L.E.G.S.

Always consult the label prior to mixing.

4830

BASF Fungicides

- Caramba®
- Cevya®
- Cotegra®
- Dyax®
- Forum®
- Lance®
- Nexicor®
- RevyPro®
- Sercadis®
- Serifel®
- Sphaerex®
- Veltyma®



Caramba®

Fungicide

Preventative protection against challenging leaf diseases and fusarium.

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

Active ingredient

Metconazole – Group 3

Formulation

Liquid

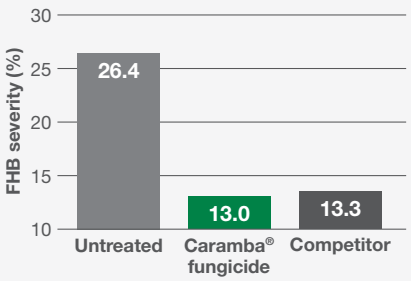
One case contains

2 x 8.1 L jugs
Also available in 128 L shuttle and 400 L tote

Storage

Requires heated storage.

Reduction in fusarium head blight (FHB) severity in wheat



Source: Grower Applied Strip Trials, 2010-2017, n=42

Crops	Staging
Barley	full head emergence to 3 days after full emergence[1]
Corn (field, sweet, pop, seed types)	full silking to silk browning[2]
Oats	20% flower[1,3]
Rye	20% flower[1,3]
Triticale	20% flower[1,3]
Wheat (all types incl. durum)	20% flower[1,3]

Diseases controlled

In barley.

Fusarium head blight (*Fusarium graminearum*)[4]
Leaf rust *(Puccinia hordei)*
Net blotch *(Pyrenophora teres)*
Powdery mildew (*Erysiphe graminis*)
Scald (*Rhynchosporium secalis*)
Spot blotch (*Cochliobolus sativus*)[4]
Stripe rust (*Puccinia striiformis*)

In corn (field, sweet, pop, seed types).

Fusarium ear rot (*Fusarium graminearum*)[4]
Gibberella ear rot (*Gibberella zeae*)[4]

In oats.

Crown rust *(Puccinia coronata)*
Fusarium head blight (*Fusarium graminearum*)[4]
Septoria leaf blotch *(Septoria avenae)*

In rye.

Fusarium head blight (*Fusarium graminearum*)[4]
Leaf rust *(Puccinia recondita)*
Powdery mildew (*Erysiphe graminis*)
Stripe rust (*Puccinia striiformis*)

In wheat (all types incl. durum) and triticale.

Fusarium head blight (*Fusarium graminearum*)[4,5]
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 (*Cochliobolus sativus*)[4]
Stem rust (*Puccinia graminis*)
Stripe rust (*Puccinia striiformis*)
Tan spot (*Pyrenophora tritici-repentis*)

[1] For suppression of fusarium head blight and leaf disease control at heading. For leaf disease control prior to heading, apply before the appearance of symptoms.
[2] This is BBCH stage GS 63-67.
[3] This is BBCH stage GS 61-63.
[4] Suppression only.
[5] Not suppressed or controlled in triticale. Wheat only.

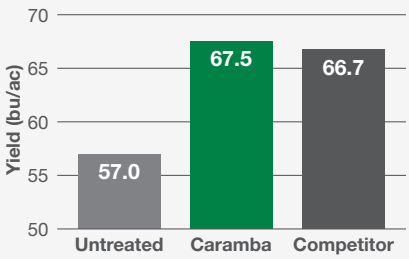
Fusarium head blight management with Caramba

Untreated

Caramba

Source: Grower Applied Strip Trials, AB, 2011

Increased wheat yield with Caramba



Source: Grower Applied Strip Trials, 2010-2017, n=55

Application rates

One case of Caramba fungicide will treat 40 acres at the fusarium rate and 60 to 80 acres[6] at the cereal leaf disease rate. One shuttle treats 320 acres at the fusarium rate. One tote treats 1,000 acres at the fusarium rate.

For fusarium head blight, fusarium ear rot, gibberella ear rot	405 ml/ac (1 L/ha)
For cereal leaf diseases	202 to 283 ml/ac (500 to 700 ml/ha)[6]

Water volume

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

[6] These rates should be used only for leaf disease control prior to heading. They are not recommended for applications targeting fusarium head blight, fusarium ear rot or gibberella ear rot.

Mixing order

1. Ensure the spray tank is clean before use.
2. Fill the spray tank 1/2 full of water and start agitation.
3. Add the required amount of Caramba fungicide to the tank.
4. Continue agitation while filling the remainder of the spray tank.
5. After use, clean the spray tank according to label precautions.

Application tips

Rainfastness – 1 hour.

Caramba should be applied preventatively, prior to the onset of disease.

Avoid application when heavy rain is forecast.

Apply when conditions are favourable for disease development.

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 pop and field corn.

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

Tank mixes

None on label.

Contact your local BASF **AgSolutions®** Grower or Retail Representative or call **AgSolutions** Customer Care at 1-877-371-BASF (2273) for additional information on supported tank mixes.

Cevya®

Revysol® Fungicide

Cevya® 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
- 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
- Timing and tank-mix flexibility to adapt to the season's needs

Active ingredient

Mefentrifluconazole – Group 3

Formulation

Suspension concentrate

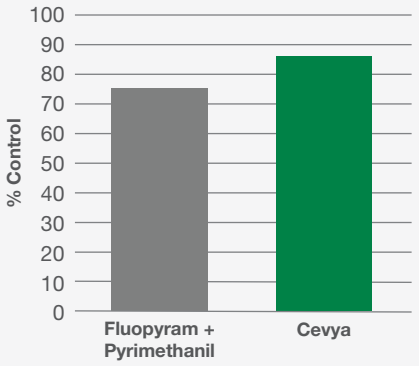
One case contains

2 x 4 L jugs

Storage

Requires heated storage.

Early blight control



Source: BASF Small Plot Trials, 2016-2018, n=3

Crops

Potatoes

Timing

7 to 14 day application interval

Cevya fungicide should be used preventatively.

Diseases controlled

In potatoes.

Early blight *(Alternaria solani)*

Black dot *(Colletotrichum coccodes)*[1]

Brown spot *(Alternaria alternata)*[1]

[1] Suppression.

Application rates

One case of Cevya fungicide will treat 32 to 42 ha (80 to 104 acres).

Potatoes	0.19 to 0.25 L/ha (0.075 to 0.1 L/ac)

Under high disease pressure and during rapid growth, use the higher rate and shorter spray interval.

Mixing order

1. Ensure the spray tank is clean before use.
2. Fill the spray tank 1/2 full of water and start agitation.
3. Add the required amount of Cevya to the tank.
4. Add the required amount of tank-mix partner, if applicable.
5. Continue agitation while filling the remainder of the spray tank.
6. After use, clean the spray tank according to label precautions.

Application tips

Rainfastness - 1 hour.
Restricted entry interval - 12 hours.
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.

Pre-harvest interval

7 days.

Tank mixes

None on label.

Contact your local BASF **AgSolutions®** Grower or Retail Representative or call **AgSolutions** Customer Care at 1-877-371-BASF (2273) for information on supported tank mixes.

Cotegra®

Fungicide

The standard for sclerotinia management in canola.

- Combines two leading active ingredients in a convenient liquid premix
- Provides yield protection from sclerotinia or white mold in canola, field peas, lentils, chickpeas, soybeans and dry beans
- Offers effective performance on early-season pulses diseases, including anthracnose populations resistant to Group 11

Active ingredients

Boscalid – Group 7
Prothioconazole – Group 3

Formulation

Suspension concentrate (SC) liquid premix

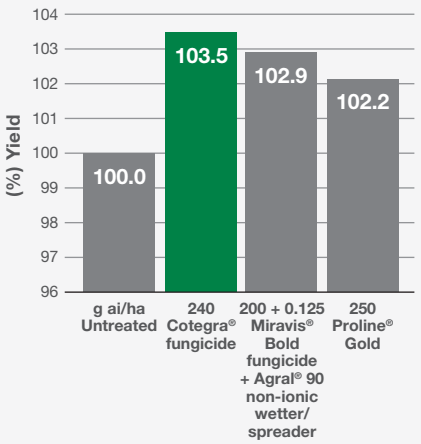
One case contains

2 x 9.8 L jugs

Storage

Requires heated storage.

Canola yield protection from sclerotinia



Source: BASF Small Plot Trials, 2020-2022, n=10

Crops

Crops	Staging
Canola, oriental mustard, rapeseed	20 to 50% flowering
Chickpeas, field peas, lentils	beginning of flowering or at first sign of disease*
Dry beans[1]	20 to 50% flowering
Soybeans	prior to disease development (late R1/R2 to R3)

*If planned as a second application, apply 7-14 days after the first application, depending on weather conditions and disease severity.

Diseases managed

In canola, oriental mustard, rapeseed.
Sclerotinia stem rot *(Sclerotinia sclerotiorum)*[2]

In chickpeas.
Ascochyta blight (*Ascochyta rabiei*)[2]
Gray mold (*Botrytis cinerea*)[3]
White mold *(Sclerotinia sclerotiorum)*[3]

In dry beans.
White mold *(Sclerotinia sclerotiorum)*[3]

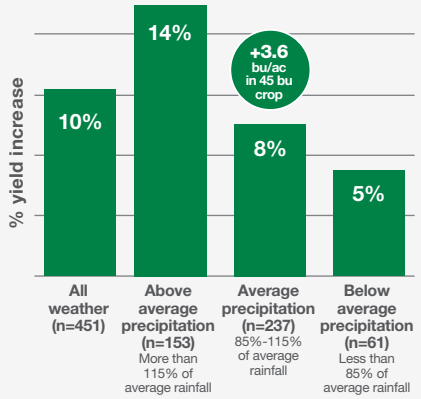
In field peas.
Ascochyta blight *(Ascochyta pinodes)*[4]
Mycosphaerella blight *(Mycosphaerella pinodes)*[4]
White mold *(Sclerotinia sclerotiorum)*[5]

In lentils.
Anthracnose *(Colletrotrichum lentis)*[4]
Gray mold (*Botrytis cinerea*)[5]
White mold *(Sclerotinia sclerotiorum)*[6]

In soybeans.
Asian soybean rust *(Phakopsora pachyrhizi)*[2]
Frog eye leaf spot *(Cercospora sojina)*[2]
Pod and stem blight (*Diaporthe phaseolorum*)[2]
Septoria brown spot *(Septoria glycines)*[3]
White mold *(Sclerotinia sclerotiorum)*[3]

[1] Dry beans include *Lupinus* spp. (grain lupin, sweet lupin, white lupin, white sweet lupin), *Phaseolus* spp. (field beans (dry common and coloured beans) such as kidney, black, cranberry, pink, navy bean, pinto bean, tepary bean, lima bean (dry)), *Vigna* spp. (adzuki bean, blackeyed pea, catjang, cowpea, crowder pea, moth bean, mung bean, rice bean, southern pea, urd bean, broad or faba bean (dry)).
[2] Control.
[3] Suppression.
[4] Suppression at the low rate of 80 ac/case (0.6 L/ha) and control at the high rate of 70 ac/case (0.7 L/ha).
[5] Suppression at the high rate of 70 ac/case (0.7 L/ha).
[6] Control at the high rate of 70 ac/case (0.7 L/ha).

Sclerotinia fungicide return in canola across varying weather conditions



Under average precipitation, a sclerotinia fungicide provides a 7.9% yield increase. In a 45-bushel canola crop, this is 3.6+ bushel/acre.

Source: BASF Small Plot Trials, 2007-2017, n=451

Application rates

One case of Cotegra fungicide will treat 50 to 80 acres, depending on crop.

Canola, field peas, lentils, oriental mustard, rapeseed[7]	240 to 280 ml/ac (0.6 to 0.7 L/ha)
Chickpeas, soybeans	280 ml/ac (0.7 L/ha)
Dry beans	400 ml/ac (1 L/ha)

Water volume

Ground application[8]	40 L/ac (10 gal/ac) minimum
Aerial application	20 L/ac (5 gal/ac) minimum

[7] Use the high rate for canola, oriental mustard and rapeseed and the control of anthracnose on lentils if weather conditions are favourable for disease development (i.e. high humidity/moisture) and/or when risk for disease development is high (i.e. narrow host rotation with disease history and high potential for inoculum).
[8] Higher water volumes recommended for optimal coverage.

Mixing order

1. Fill the cleaned spray tank 1/2 full of water and start agitation.
2. Add the required amount of Cotegra fungicide to the tank.
3. Continue agitation while filling the remainder of the spray tank.
4. After use, clean the spray tank according to label precautions.

Application tips

Rainfastness – Avoid applying when rain is forecasted within 3 hours of application.

Pre-harvest interval

36 days after application for canola, oriental mustard and rapeseed.

21 days after application for chickpeas, dry beans, field peas, lentils and soybeans.

Tank mixes

Contact your local BASF **AgSolutions®** Grower or Retail Representative or call **AgSolutions** Customer Care at 1-877-371-BASF (2273) for additional information on supported tank mixes.

Cotegra®
Fungicide

Dyax®

Xemium® Fungicide

Designed for pulses with increased levels of Xemium® for improved disease control.

- Increased rate of Xemium provides even more consistent and continuous disease control
- Broad-spectrum disease control
- Proven **Plant Health Benefits**[1] for increased growth efficiency, better management of minor stress and greater yield potential[2]

Active ingredients

Pyraclostrobin – Group 11
Fluxapyroxad – Group 7

Formulation

Suspension liquid premix

One case contains

2 x 9.6 L jugs

Storage

Requires heated storage.

Crops	Staging
Field peas	start of flowering or prior to row closure
Lentils	start of flowering or prior to row closure if second application is required, apply a fungicide containing an alternative mode of action
Chickpeas	at the onset of symptoms prior to row closure do not apply consecutive applications of Dyax® fungicide
Flax	20 to 50% flowering
Soybeans, faba beans, dry beans	start of flowering or at onset of symptoms

Note: If disease persists or weather conditions are favourable for disease development, make a second application 10 to 14 days later with a fungicide that contains an alternative mode of action.

Diseases managed

In field peas.
Mycosphaerella blight (*Mycosphaerella pinodes*), ascochyta blight (*Ascochyta pisi*), powdery mildew (*Erysiphe pisi*), Asian soybean rust (*Phakopsora pachyrhizi*) and suppression of white mold (*Sclerotinia sclerotiorum*)

In lentils.
Anthracnose (*Colletotrichum truncatum*), ascochyta blight (*Ascochyta lentis*) and suppression of white mold (*Sclerotinia sclerotiorum*)

In chickpeas.
Ascochyta blight (*Ascochyta rabiei*) and suppression of white mold (*Sclerotinia sclerotiorum*)

In flax.
Pasmo (*Septoria linicola*) and suppression of sclerotinia stem rot (*Sclerotinia sclerotiorum*)

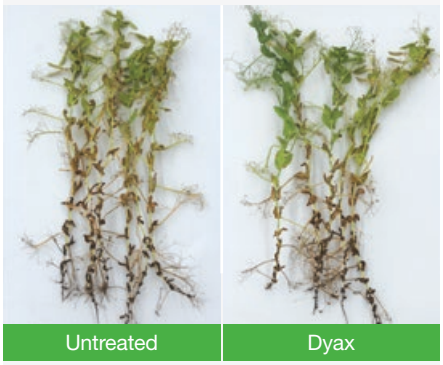
In faba beans.
Asian soybean rust (*Phakopsora pachyrhizi*), suppression of ascochyta blight (*Ascochyta* spp.) and white mold (*Sclerotinia sclerotiorum*)

In soybeans.
Asian soybean rust (*Phakopsora pachyrhizi*), suppression of frog eye leaf spot (*Cercospora sojina*), septoria brown spot (*Septoria glycines*) and sclerotinia stem rot (*Sclerotinia sclerotiorum*)

In dry beans.
Rust (*Uromyces appendiculatus*), anthracnose (*Colletotrichum lindemuthianum*), Asian soybean rust (*Phakopsora pachyrhizi*), powdery mildew (*Erysiphe* spp.) and suppression of white mold (*Sclerotinia sclerotiorum*)

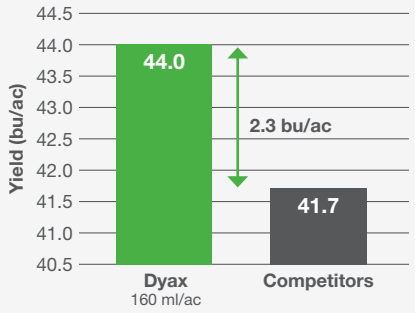
[1] **Plant Health Benefits** refer to products that contain the active ingredient pyraclostrobin.
[2] All comparisons are to untreated, unless otherwise stated.

Dyax fungicide controls mycosphaerella blight in field peas



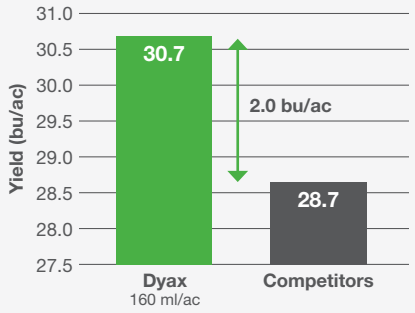
Source: Grower Applied Strip Trials, Drumheller, AB, 2011

Yield protection with Dyax on field peas



Source: Grower Applied Strip Trials, 2017, n=6

Yield protection with Dyax on lentils



Source: Grower Applied Strip Trials, 2017, n=7

Application rates

One case of Dyax fungicide will treat 120 to 160 acres, depending on rate.

Field peas, lentils, chickpeas, faba beans, flax, soybeans, dry beans[3]	120 to 160 ml/ac (300 to 400 ml/ha)

Water volume

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

[3] To suppress white mold, apply Dyax at 240 to 320 ml/ac (600 to 800 ml/ha).

Mixing order

1. Fill the cleaned spray tank 1/2 full of water and start agitation.
2. Add the required amount of Dyax fungicide to the tank.
3. If tank mixing, add the required amount of the tank-mix partner.
4. Continue agitation while filling the remainder of the spray tank.
5. After use, clean the spray tank according to label precautions.

Application tips

Rainfastness – 1 hour.

Do not apply during periods of dead calm, gusty winds or conditions conducive to spray drift.

Do not apply more than 2 applications of any fungicide containing a Group 11 or Group 7 active ingredient per season.

Use at least the minimum water volume to ensure thorough coverage of the foliage.

Pre-harvest interval

21 days after application for soybeans and flax.

30 days after application for field peas, lentils, chickpeas, faba beans and dry beans.

Tank mixes

None on label.

Contact your local BASF **AgSolutions®** Grower or Retail Representative or call **AgSolutions** Customer Care at 1-877-371-BASF (2273) for additional information on supported tank mixes.

Dyax®
Xemium® Fungicide

Forum®

Fungicide

Excellent activity on late blight in potatoes, both in the field and into storage.

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

Active ingredient

Dimethomorph – Group 40

Formulation

Suspension concentrate

One case contains

2 x 4.5 L jugs

Storage

Requires heated storage.

Crop[1]

Potatoes

Timing

5 to 10 day interval

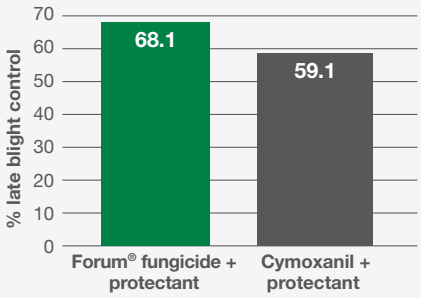
During periods of rapid growth or high disease pressure, use a shorter interval. See label for details.

Diseases controlled

Late blight (*Phytophthora infestans*)

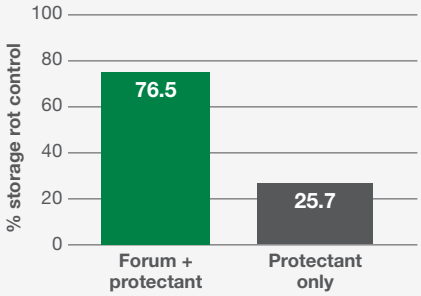
Suppression of tuber blight in storage (*Phytophthora infestans*)

Curative late blight control



Source: BASF Small Plot Trials, 2001-2006, n=17

Storage rot control with Forum fungicide and protectant applied pre-harvest



Source: BASF Small Plot Trials, 2001-2006, n=7

[1] Refer to label for additional crops.

Application rates

One case of Forum fungicide will treat 50 acres (20.2 ha).

Potatoes	182 ml/ac (450 ml/ha)

Always apply Forum as a tank mix with a protectant/contact fungicide to protect against late blight and for resistance management.

Mixing order

1. Ensure the spray tank is clean before use.
2. Fill the tank 1/2 full of water and start agitation.
3. Add the required amount of Forum fungicide to the tank while agitating.
4. Add the required amount of fungicide tank mix partner to the tank.
5. Continue agitation while filling the remainder of the spray tank.
6. After use, clean the spray tank according to label precautions.

Application tips

Apply a maximum of three applications per season.

Rainfastness – 2 hours.

Restricted entry interval – 12 hours.

Resistance management – In order to reduce the risk of developing fungicide resistance, Forum fungicide must be used in a tank mix with other fungicides effective against late blight.

Pre-harvest interval

4 days after application for potatoes.

Tank mixes

Fungicides: See label for details.

Contact your local BASF **AgSolutions®** Grower or Retail Representative or call **AgSolutions** Customer Care at 1-877-371-BASF (2273) for information on supported tank mixes.

Lance®

Fungicide

A proactive approach to disease control in a range of crops including canola, dry beans and lentils.

- Unique Group 7 with systemic activity
- Proven and consistent yield protection
- Cost-effective sclerotinia control relative to competitor sclerotinia control products

Active ingredient

Boscalid – Group 7

Formulation

Wettable granules

One case contains

2 x 2.83 kg jugs

Storage

Does not require heated storage.

Control of sclerotinia stem rot with Lance® fungicide

Untreated

Lance

Source: Grower Applied Strip Trials, AB, 2012

[1] To control sclerotinia stem rot and suppress alternaria black spot. Apply at late flowering to early green pod to control alternaria black spot.

[2] Except for soybeans.

[3] Suppression.

[4] Control with higher rate 227 to 312 g/ac (560 to 770 g/ha).

Crops	Staging
Alfalfa (for seed production)	20 to 50% flowering
Canola, mustard	20 to 50% flowering[1]
Chickpeas, lentils	beginning of flowering
Dry beans[2]	20 to 50% flowering
Field peas	beginning of flowering
Potatoes	apply preventatively from tuber initiation through bulking
Succulent beans	20 to 50% flowering
Succulent peas	beginning of flowering
Sunflowers	early flower

Note: For most crops, applications can be repeated if conditions are conducive for disease development. See label for details.

Diseases controlled

In canola and mustard.
Alternaria black spot *(Alternaria brassicae* and *raphani)*[3]
Sclerotinia stem rot *(Sclerotinia sclerotiorum)*

In chickpeas and lentils.
Ascochyta blight (*Ascochyta* spp.)
Gray mold (*Botrytis cinerea)*
White mold (*Sclerotinia sclerotiorum*)

In dry beans.[2]
White mold (*Sclerotinia sclerotiorum)*

In field peas.
Ascochyta blight (*Ascochyta* spp.)
Gray mold (*Botrytis cinerea*)
Mycosphaerella blight (*Mycosphaerella* spp.)

In potatoes.
Early blight *(Alternaria solani*)

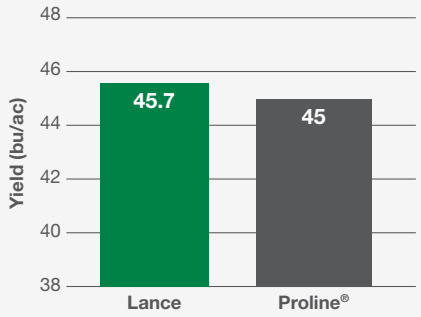
In succulent beans.
Gray mold (*Botrytis cinerea*)
White mold *(Sclerotinia sclerotiorum*)[4]

In succulent peas.
Ascochyta blight (*Ascochyta* spp.)
Mycosphaerella blight (*Mycosphaerella* spp.)
White mold (*Sclerotinia sclerotiorum*)[4]

In sunflowers.
Leaf spot (*Alternaria helianth*)[3]
Sclerotinia head rot (*Sclerotinia sclerotiorum*)[3]

In alfalfa.
Blossom blight (*Sclerotinia sclerotiorum* and *Botrytis cinerea*)
Common leaf spot (*Pseudopeziza medicaginis*)
Leaf spot (*Leptosphaerulina briosiani*)
Spring black stem (*Phoma medicagnis*)

Yield protection with Lance vs. Proline® fungicide on canola



Source: Grower Applied Strip Trials, 2008-2017, n=79

Yield protection with Lance fungicide

Untreated

Lance

Source: Grower Applied Strip Trials, Moose Jaw, SK, 2012

Application rates

One case of Lance fungicide will treat 18 to 40 acres, depending on crop.

Canola[5], mustard[5]	142 g/ac (350 g/ha)
Chickpeas[6], field peas[7], lentils[6], alfalfa[5]	170 g/ac (420 g/ha)
Dry beans[5]	227 to 312 g/ac (560 to 770 g/ha)
Potatoes	71 to 127 g/ac (175 to 315 g/ha)
Succulent beans[7], succulent peas[7]	170, 230 to 312 g/ac (420, 560 to 770 g/ha)
Sunflowers[6]	142 to 259 g/ac (350 to 640 g/ha)

Water volume

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

[5] Ground, aerial and pivot or sprinkler irrigation.
[6] Ground and aerial application only.
[7] Ground application only.

Mixing order

1. Fill the spray tank 1/2 full of water and start agitation.
2. Add the required amount of Lance fungicide to the tank.
3. If tank mixing, add the required amount of the tank-mix partner.
4. Continue agitation while filling the remainder of the spray tank.
5. After use, clean the spray tank according to label precautions.

Application tips

Rainfastness – 2 hours.

Lance should be applied preventatively, prior to the onset of disease.

Avoid application when heavy rain is forecast.

Apply when conditions are favourable for disease development.

Grazing

Do not graze or feed treated alfalfa to livestock.

Pre-harvest interval

7 days after application for succulent beans and succulent peas.

21 days after application for dry beans, canola, chickpeas, lentils, mustard, field peas and sunflowers.

30 days after application for potatoes.

Tank mixes

Insecticides: Matador® 120 EC or Warrior®[8]

Contact your local BASF **AgSolutions®** Grower or Retail Representative or call **AgSolutions** Customer Care at 1-877-371-BASF (2273) for additional information on supported tank mixes.

[8] For succulent beans only.

Lance®
Fungicide

Nexicor®

Xemium® Fungicide

For control of the toughest leaf diseases in cereals and blackleg in canola.

- Enhanced, broad-spectrum control of key cereal leaf diseases, including rust, septoria and tan spot
- Builds on proven **Plant Health Benefits**[1] to increase growth efficiency and help better manage minor stress, leading to greater yield potential[2]
- High-level control of blackleg in canola
- Combines three powerful modes of action, including the unique mobility of Xemium®, for more consistent and continuous control

Active ingredients

Propiconazole – Group 3
Fluxapyroxad – Group 7
Pyraclostrobin – Group 11

Formulation

Emulsifiable concentrate

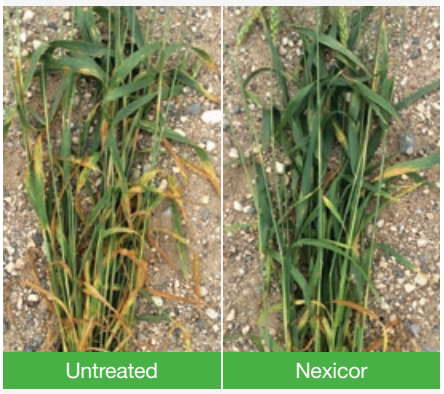
One case contains

2 x 8.0 L jugs
Also available in 130 L shuttle

Storage

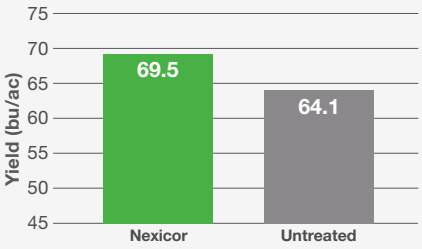
Requires heated storage.

A greener cereal crop with Nexicor® fungicide



Source: Grower Applied Strip Trials, Stenen, SK, 2017

Increased yield potential at high disease pressure in cereals



Source: Grower Applied Strip Trials, Western Canada, 2016, n=15

Crops

Barley, oats, rye, triticale, wheat (all types)

Canola

Staging

stem elongation to early head emergence[3]

2 to 6 leaf (rosette)

Diseases controlled

In barley.
Net blotch *(Pyrenophora teres)*
Scald *(Rhynchosporium secalis)*
Stripe rust *(Puccinia striiformis)*
Spot blotch *(Cochliobolus sativus)*

In canola.
Blackleg *(Leptosphaeria maculans)*

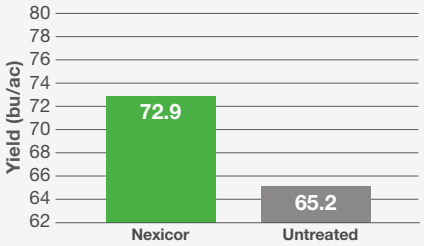
In oats.
Crown rust *(Puccinia coronata)*
Septoria leaf blotch *(Septoria avenae)*

In rye.
Leaf rust *(Puccinia recondita)*
Powdery mildew *(Erysiphe graminis* f. sp. *tritici)*

In wheat (all types) and triticale.
Leaf rust *(Puccinia recondita)*
Powdery mildew *(Erysiphe graminis* f. sp. *tritici)*
Septoria leaf spot *(Septoria tritici* or *Leptosphaeria nodorum)*
Stripe rust *(Puccinia striiformis)*
Spot blotch *(Cochliobolus sativus)*
Tan spot *(Pyrenophora tritici-repentis)*

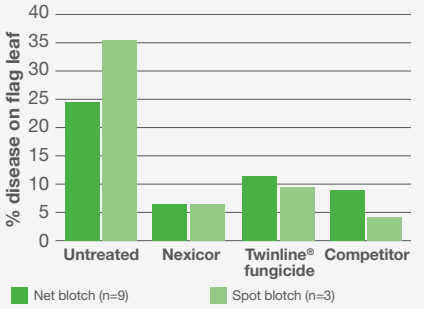
[1] **Plant Health Benefits** refer to products that contain the active ingredient pyraclostrobin.
[2] All comparisons are to untreated, unless otherwise stated.
[3] While Nexicor fungicide can be applied between stem elongation and early head emergence (GS 31-55), research suggests that applying at flag-leaf (GS 37-39) helps maximize yield potential in cereals.

Increased yield potential at low disease pressure in cereals



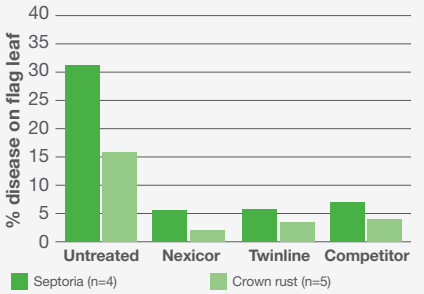
Source: Grower Applied Strip Trials, Western Canada, 2017, n=13

Effective control of diseases in barley



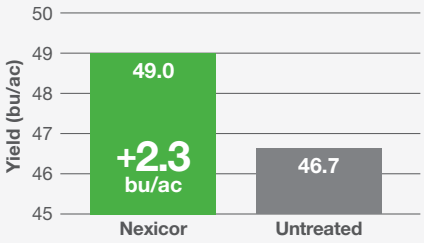
Source: BASF Small Plot Trials, Western Canada, 2015-2016

Effective control of diseases in oats



Source: BASF Small Plot Trials, Western Canada, 2015-2016

Increased early-season disease control in canola



Source: Grower Applied Strip Trials, Western Canada, 2016-2017, n=32

Application rates

One case of Nexicor fungicide treats 80 acres.
One shuttle treats 640 acres.

Barley, canola, oats, rye, triticale, wheat	202 ml/ac (500 ml/ha)

Water volume

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

Mixing order

1. Fill the spray tank 1/2 full of water and start agitation.
2. Add the required amount of Nexicor fungicide to the tank.
3. If tank mixing, add the required amount of the tank-mix partner.
4. Continue agitation while filling the remainder of the spray tank.

Application tips

Rainfastness – 1 hour.

Nexicor can be applied from stem elongation (GS 31) until early head emergence (GS 55) in cereals. For best results, apply prior to disease development or at the onset of symptoms. For optimal disease control and **Plant Health Benefits**[1], apply at flag leaf.[3]

Do not apply during periods of dead calm, gusty winds or conditions conducive to spray drift. Use the minimum water volumes and ensure thorough coverage of foliage.

For cereals, do not apply more than two applications of any fungicide containing a Group 11 or Group 7 active ingredient per season.

For canola, do not follow up with a Group 11 fungicide as the first subsequent fungicide treatment if additional applications are required.

Pre-harvest interval

30 days after application for canola.

45 days after application for barley, oats, rye, triticale, wheat.

Tank mixes

Herbicides for canola: Ares®[4], Liberty®[5], glyphosate[6]

None on label for cereals.

Contact your local BASF **AgSolutions®** Grower or Retail Representative or call **AgSolutions** Customer Care at 1-877-371-BASF (2273) for additional information on supported tank mixes.

[4] For **Clearfield®** canola only.
[5] For glufosinate-tolerant canola varieties.
[6] For glyphosate-tolerant canola varieties.

Nexicor®
Xemium® Fungicide

RevyPro®

Fungicide

NEW

New and innovative pulse fungicide.

- Pulse fungicide designed and researched in Western Canada
- Proven performance on all major pulse diseases regardless of pathogen's Group 11 resistance status
- Effective on early- and late-season diseases to help improve yield across crops[1]
- Powered by the latest BASF technology, Revysol®, for broader, stronger and longer management of diseases

Active ingredients

Mefentrifluconazole – Group 3
Prothioconazole – Group 3

Formulation

Emulsifiable concentrate

One case contains

2 x 8.6 L jugs

Storage

Store away from food or feed. Requires heated storage.

Healthier lentil fields with RevyPro® fungicide*

RevyPro	Delaro® 325 SC fungicide	Elatus® fungicide

Source: Grower Applied Strip Trials, Outlook, SK, 2022
*Subject to sound agronomic practices and environmental conditions.

Crops

Chickpeas, dry beans, faba beans, field peas and lentils

Staging

Apply at the beginning of flowering or at the onset of symptoms. If a second application is required, apply a fungicide containing an alternative mode of action 10 to 14 days after first application.

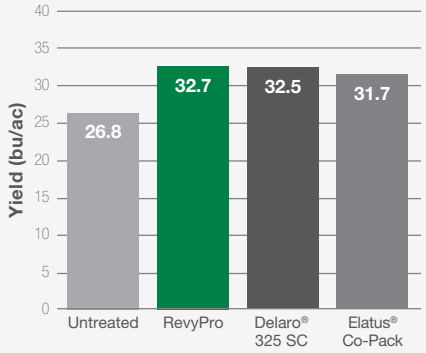
Diseases controlled

In chickpeas, dry beans, faba beans, fields peas and lentils.

Anthracnose (*Colletotrichum lentis, C. lindemuthianum*)[2,3]
Ascochyta blight (*Ascochyta* spp.)[3]
Gray mold/Chocolate spot (*Botrytis cinerea*)[4]
Mycosphaerella blight (*Mycosphaerella pinodes*)[5]
Powdery mildew (*Erysiphe pisi*)[4]
White mold (*Sclerotinia sclerotiorum*)[4]

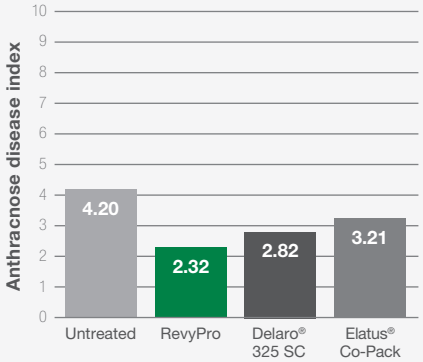
[1] BASF Small Plot Trials, Saskatchewan, 2020.
[2] In lentils and dry beans only.
[3] Including populations resistant to Group 11 chemistry.
[4] Suppression.
[5] In field peas only.

Yield in lentils with RevyPro



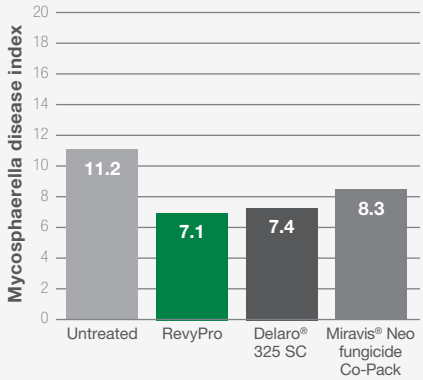
Source: Grower Applied Strip Trials, AB & SK, 2022, n=12

Anthracnose control in lentils



Activity on anthracnose resistant to Group 11 chemistries.
Source: Grower Applied Strip Trials, AB & SK, 2022, n=14

Mycosphaerella blight control in field peas



Source: Grower Applied Strip Trials, AB, SK & MB, 2022, n=24

Application rates

One case of RevyPro treats 40 acres.

In chickpeas, dry beans, faba beans, fields peas and lentils	405 ml/ac (1.0 L/ha)

Water volume

Ground application	10 gal/ac (100 L/ha)
Aerial application	5 gal/ac (50 L/ha)

Mixing order

1. Ensure the spray tank is clean before use. Follow the clean-out recommendations stated on the label of the product that was previously used.
2. Fill the spray tank 1/2 full of water and start agitation.
3. Add the required amount of RevyPro to the tank.
4. Add the required amount of the tank-mix partner (if applicable).
5. Continue agitation while filling the remainder of the spray tank.
6. After use, clean the spray tank according to label precautions.

Application tips

Rainfastness – Do not apply when heavy rain is forecast.

Restricted entry interval – 12 hours.
Use at least the minimum water volumes to ensure thorough coverage of foliage. See guidelines above.

Pre-harvest interval

21 days after application for all labelled crops.

Tank mixes

None on label.

Contact **AgSolutions®** Customer Care or your local BASF **AgSolutions** Grower or Retail Representative for additional information on supported tank mixes.

RevyPro®
Fungicide

Sercadis®

Xemium® Fungicide

Consistent, continuous control of key diseases.

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

Active ingredient

Fluxapyroxad – Group 7

Formulation

Suspension

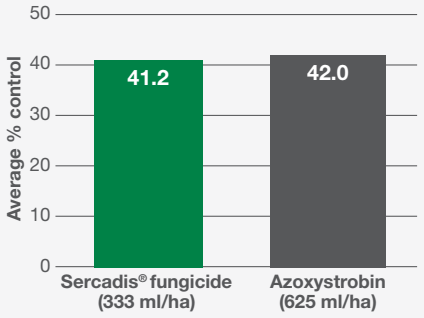
One case contains

2 x 1.35 L jugs

Storage

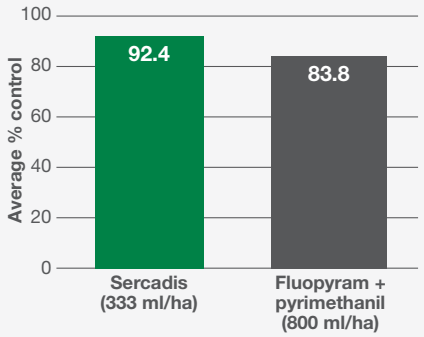
Requires heated storage.

Rhizoctonia black scurf control



Source: BASF Small Plot Trials, 2010, n=2

White mold control



Source: BASF Small Plot Trials, Oregon, USA, 2010, n=1

Crop[1]	Timing
Potatoes	
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

Early blight (*Alternaria solani*)

Rhizoctonia canker (*Rhizoctonia* spp.)[2]

White mold (*Sclerotinia sclerotiorum*)

[1] Refer to label for additional crops.

[2] When applied in furrow.

Application rates

One case of Sercadis fungicide will treat 20 to 40 acres, depending on rate.

For early blight	67 to 135 ml/ac (167 to 333 ml/ha)
For rhizoctonia canker[2], white mold	135 ml/ac (333 ml/ha)

For control of rhizoctonia, apply in-furrow spray by uniformly covering seed pieces and surrounding soil. Spray pattern should be a 10 to 20 cm (4" to 8") band that is applied to the seed piece prior to being covered with soil.

Product rate (ml per 1000 metres of row)

81 cm (32") rows	86 cm (34") rows	91 cm (36") rows	96.5 cm (38") rows	101 cm (40") rows
26 ml	28 ml	30 ml	32 ml	34 ml

Mixing order

1. Ensure the spray tank is clean before use.
2. Fill the tank 1/2 full of water and start agitation.
3. Add the required amount of Sercadis fungicide to the tank.
4. Add the required amount of tank-mix partner, if applicable.
5. Add the recommended amount of adjuvant, if applicable.
6. Continue agitation while filling the remainder of the spray tank.
7. After use, clean the spray tank according to label precautions.

Application tips

Rainfastness – 1 hour.

Restricted entry interval – 12 hours.

Resistance management – Tank mix 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.

Use of a non-ionic surfactant at 0.125% v/v is recommended.

Pre-harvest interval

7 days after application for potatoes.

Tank mixes

None on label.

Contact your local BASF **AgSolutions®** Grower or Retail Representative or call **AgSolutions** Customer Care at 1-877-371-BASF (2273) for information on supported tank mixes.

Sercadis®
Xemium® Fungicide

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 potato production challenges
- Sets the standard for purity, performance and quality

Active ingredient

Bacillus amyloliquefaciens
strain MBI 600 – Group BM02

Formulation

Wettable powder

One pack contains

4 x 2 kg jugs

Storage

Requires heated storage.

Crops

Potatoes

Staging

7 to 10 day application interval

Serifel® fungicide must be used preventatively.
Maximum application rates and shorter spray intervals are recommended when conditions favour high disease pressure.

Diseases suppressed

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

[1] In-furrow.
[2] Partial suppression.

Application rate

One jug of Serifel fungicide will treat 4 to 8 ha (10 to 20 acres).

Potatoes (foliar) 0.25 to 0.5 kg/ha (0.1 to 0.2 kg/ac)

Potatoes (in-furrow)[3]

Product Rate (kg/ha)	Product Rate (kg per 1000 metres of row)				
	81 cm (32") rows	86 cm (34") rows	91 cm (36") rows	96.5 cm (38") rows	101 cm (40") rows
0.25 to 0.5	0.020 to 0.041	0.022 to 0.043	0.023 to 0.046	0.024 to 0.048	0.025 to 0.051

[3] Consult label for in-furrow use instructions.

Mixing order

1. Ensure the spray tank is clean before use.
2. Fill the spray tank 3/4 full of water and start agitation.
   a. The pH of the spray solution should be between 4 and 9.
3. Before adding Serifel to the spray tank, create a pre-slurry by mixing the required amount of Serifel with water in a bucket.
4. With the spray tank agitation system running, add the Serifel pre-slurry to spray tank.
5. Add the required amount of tank-mix partner, if applicable.
6. Add the recommended amount of adjuvant, if applicable.
7. Continue agitation while filling the remainder of the spray tank, throughout mixing and application.
8. The spray mixture should be applied shortly after mixing. Do not allow the spray mixture to sit overnight.
9. After use, clean the spray tank according to label precautions.

The product mixture should be applied shortly after mixing. DO NOT store mixed suspensions of Serifel overnight.

Application tips

Rainfastness – 3 hours.

Restricted entry interval – 4 hours or until sprays have dried.

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.

Pre-harvest interval

0 days for all labeled crops.

Tank mixes and additives

BASF supported tank-mix partners include:

- Apogee® plant growth regulator
- Cabrio® fungicide
- Cantus® fungicide
- Kumulus® fungicide
- Sercadis® fungicide
- Abamectin
- Acetamiprid
- Azoxystrobin
- Chlorantraniliprole
- Copper hydroxide
- Copper oxychloride
- Copper sulfate
- Cyprodinil
- Difenoconazole
- Dinutefuron
- Fenhexamid
- Fludioxonil
- Fluopyram
- Imidacloprid
- Non-ionic surfactant
- Organosilicone surfactant
- Paraffinic oil
- Pyrimethanil
- Spinosad
- Spirotetramat
- Trifloxystrobin

For other information concerning additives and supported tank mixes, contact your local BASF **AgSolutions®** Grower or Retail Representative or call **AgSolutions** Customer Care at 1-877-371-BASF (2273).

Sphaerex®

Fungicide

New and improved cereal head timing fungicide.

- Helps improve yield and protects quality
- Best-in-class fusarium head blight (FHB) efficacy to drive improved quality management
- Sphaerex® fungicide provides management of leaf diseases in barley, oats, rye, triticale and wheat
- Flexible use pattern for a diversity of situations

Active ingredients

Metconazole – Group 3
Prothioconazole – Group 3

Formulation

Emulsifiable concentrate

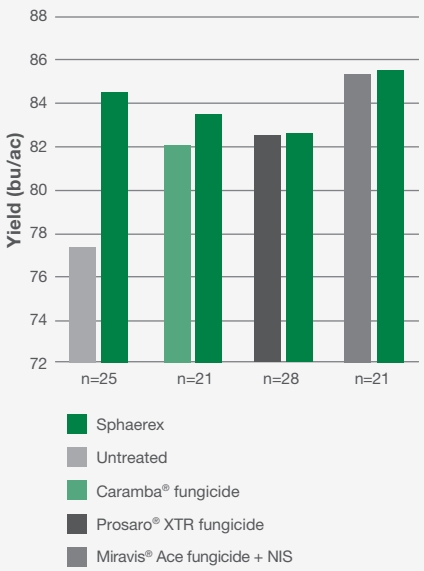
One case contains

2 x 8.65 L jugs
Also available in 139 L drum

Storage

Requires heated storage.

Higher yield potential with Sphaerex on wheat



Source: Grower Applied Strip Trials, 2020

Crops	Staging
Barley	75% spike emergence to 3 days after full emergence[1]
Oats	early panicle to flowering[2]
Rye, triticale	anthesis stage[3]
Wheat (durum, spring, winter)	75% head emergence to end of flowering[4]

Diseases controlled

In barley.
Ergot (*Claviceps purpurea*)[5], fusarium head blight (*Fusarium graminearum*)[1], leaf rust (*Puccinia hordei*), net blotch (*Pyrenophora teres*), powdery mildew (*Erysiphe graminis*), scald (*Rhynchosporium secalis*), spot blotch (*Cochliobolus sativus*)[6], stripe rust (*Puccinia striiformis*)

In oats.
Crown rust (*Puccinia coronata*), ergot (*Claviceps purpurea*)[5], fusarium head blight (*Fusarium graminearum*)[2], stagonospora (septoria) leaf blotch and black stem (*Stagonospora avenae syn. Septoria avenae*)

In rye and triticale.
Ergot (*Claviceps purpurea*)[5], fusarium head blight (*Fusarium graminearum*)[3], leaf rust (*Puccinia recondita*), powdery mildew (*Erysiphe graminis*), stripe rust (*Puccinia striiformis*)

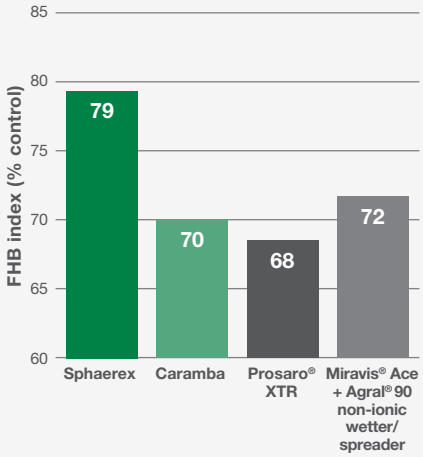
In wheat (all types incl. durum wheat).
Ergot (*Claviceps purpurea*)[5], fusarium head blight (*Fusarium graminearum*)[4], leaf rust (*Puccinia recondita*), powdery mildew (*Erysiphe graminis* f. sp. *tritici*), septoria/stagonospora leaf blotch (*Septoria tritici* or *Stagonospora nodorum*), spot blotch (*Cochliobolus sativus*)[6], stem rust (*Puccinia graminis*), stripe rust (*Puccinia striiformis*), tan spot (*Pyrenophora tritici-repentis*)

Increased FHB efficacy with Sphaerex

Source: BASF Greenhouse Trials, SK, 2022, 15 days after disease inoculation at anthesis, 18 days after fungicide application

[1] For suppression of FHB, apply when 75-100% of main stem barley spikes are emerged until 3 days after.
[2] For suppression of FHB, apply at anthesis stage or at early panicle stage when anthers are yellow to white.
[3] For suppression of FHB, apply at early heading stage when anthers are yellow to white.
[4] For suppression of FHB, apply Sphaerex as a preventative application, 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.
[5] Suppression at the 80 ac/case rate (0.53 L/ha).
[6] For suppression of spot blotch only.

Best-in-class quality management and FHB control



Source: Grower Applied Strip Trials, 2020, n=16

Application rates

One case of Sphaerex treats 80 to 108 acres. One drum treats 640 to 864 acres.

Barley, oats, rye, triticale, wheat (all types)	160 to 216 ml/ac (0.4 to 0.53 L/ha)

Water volume

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

Mixing order

1. Ensure the spray tank is clean before use.
2. Fill the spray tank 1/2 full of water and start agitation.
3. Add the required amount of Sphaerex to the tank.
4. Continue agitation while filling the remainder of the spray tank.
5. After use, clean the spray tank according to label precautions.

Application tips

Sphaerex should be applied preventively, prior to the onset of disease.

Avoid application when heavy rain is forecasted.

Apply when conditions are favourable for disease development.

Restricted Entry Interval (REI) is 24 hours for all crops and activities.

All crops can be grazed or fed to livestock 30 days after application.

Do not apply Sphaerex beyond the anthesis stage (>GS 69) when kernels begin milk development stage (GS 70).

Do not make more than one application of Sphaerex per year.

Rotational crops: A plant-back interval of 35 days is required for all crops not listed on the label.

Pre-harvest interval

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

Tank mixes

None on label.

Contact **AgSolutions®** Customer Care or your local BASF **AgSolutions** Grower or Retail Representative for additional information on supported tank mixes.

Sphaerex®
Fungicide

Veltyma®

Revysol® Fungicide

An 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

Active ingredients

Mefentrifluconazole – Group 3
Pyraclostrobin– Group 11

Formulation

Suspension concentrate

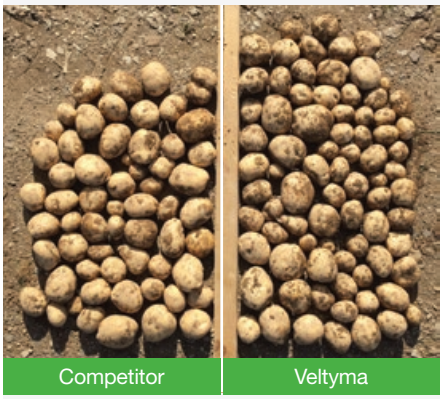
One case contains

2 x 8.1 L jugs

Storage

Requires heated storage.

Potential yield increase with Veltyma® fungicide



Source: Grower Applied Strip Trials, NB, 2021

Crop

Potatoes

Timing

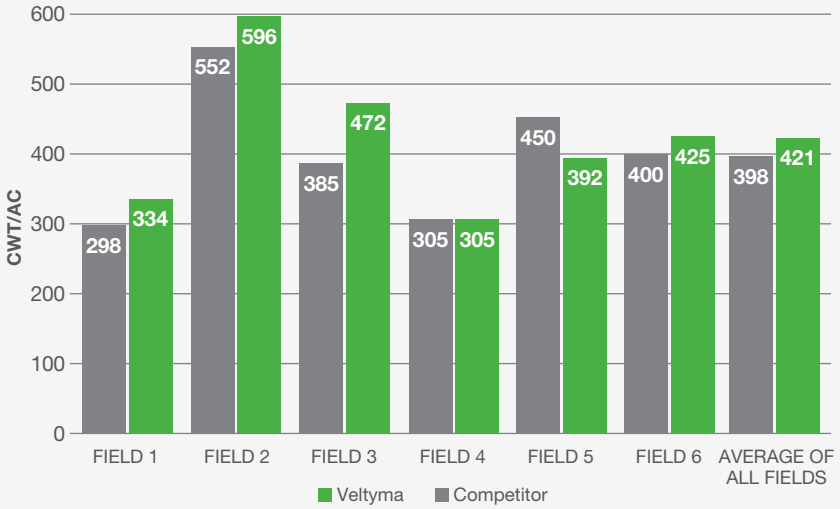
7 to 14 day application interval

Diseases controlled

In potatoes.

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

Potato yield compared to competitor



Source: Grower Applied Strip 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 biotypes resistant to Group 11 chemistries.

Application rate

One case of Veltyma will treat 80 acres.

Potatoes	500 ml/ha (202 ml/ac)

Mixing order

1. Ensure the spray tank is clean before use. Follow the clean-out recommendations stated on the label of the product that was previously used.
2. Fill the spray tank 1/2 full of water and start agitation.
3. Add the required amount of Veltyma to the tank.
4. Add the required amount of the tank-mix partner (if required).
5. Continue agitation while filling the remainder of the spray tank.
6. After use, clean the spray tank according to label precautions.

Application tips

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

Restricted entry interval – 12 hours.

Resistance management – Fungicide use should be based on an integrated disease management program that includes scouting, historical information related to pesticide use and crop rotation and considers host plant resistance, impact of environmental conditions on disease development, disease thresholds, as well as cultural, biological and other chemical control practices.

Pre-harvest interval

7 days after application for potatoes.

Tank mixes

None on label.

Contact your local BASF **AgSolutions®** Grower or Retail Representative or call **AgSolutions** Customer Care at 1-877-371-BASF (2273) for information on supported tank mixes.

Additional Resources

- Chickpea solutions
- Faba bean solutions
- Flax solutions
- Dry beans solutions
- Alfalfa solutions

Chickpea solutions.

Chickpeas

Brand	Timing	Rate	Notes
Insure® Pulse seed treatment	Apply prior to seeding.	300 ml/100 kg of seed	Thorough seed coverage helps to optimize protection from seed- and soil-borne diseases. Seed should be tested for germination, vigour and disease and well-cleaned prior to treatment to provide maximum coverage.
Nodulator® CP SCG inoculant	Apply directly in-furrow.	One bag will treat up to 10 acres	Unique solid core granular (SCG) formulation containing *Bradyrhizobium* sp. (*Cicer*), a highly efficient, more active strain of rhizobium specifically selected to perform on chickpeas.
Voraxor® Complete herbicide	Apply pre-seed or pre-emergence.	Voraxor 19.5 to 40.5 ml/ac + Zidua® SC herbicide 49 to 97 ml/ac	
Voraxor herbicide	Apply pre-seed or pre-emergence.	19.5 to 58 ml/ac	
Centurion® herbicide	Post-emergence – apply to actively growing weeds.	50 to 77 ml/ac	Post-emergence application up to 9 node.
Solo® ADV herbicide	Early post-emergence, 1 to 6 node of chickpea.	324 ml/ac	Solo ADV should only be applied on the following varieties: **CDC Alma (Kabuli)** **CDC Cory (Desi)**
Cotegra® fungicide	Beginning of flowering or at first sign of disease.	280 ml/ac	Follow the BASF recommended sequence every 10 to 14 days (as disease conditions dictate): 1st pass: Dyax fungicide at early flower. 2nd pass: RevyPro fungicide or Cotegra fungicide. 3rd pass: Cotegra or RevyPro (use the fungicide not yet applied).
Dyax® fungicide	At the onset of symptoms or beginning of flowering.	160 ml/ac	
RevyPro® fungicide	At the onset of symptoms or beginning of flowering.	405 ml/ac	
Heat® LQ pre-harvest herbicide	Apply when majority of plants are mature with only the upper part remaining green. Seed moisture is 30% or less. Majority of Desi type seeds are yellow/brown, and Kabuli type seeds are tan/white.	43 ml/ac	

Faba bean solutions.

Faba beans

Brand	Timing	Rate	Notes
Insure® Pulse seed treatment	Apply prior to seeding.	300 ml/100 kg of seed	Thorough seed coverage helps to optimize protection from seed- and soil-borne diseases. Seed should be tested for germination, vigour and disease and well-cleaned prior to treatment to provide maximum coverage.
Voraxor® Complete herbicide	Apply pre-seed or pre-emergence.	Voraxor 19.5 to 40.5 ml/ac + Zidua® SC herbicide 49 to 97 ml/ac	
Voraxor herbicide	Apply pre-seed or pre-emergence.	19.5 to 58 ml/ac	
Basagran® Forte herbicide	After 2 leaf.	700 to 900 ml/ac	Use larger water volumes for weeds at the upper limit of their recommended stage for treatment.
Odyssey® NXT herbicide	1 to 6 leaf.	17 g/ac	For flushing control on broadleaf weeds.
Viper® ADV herbicide	1 to 2 trifoliate leaf.	404 ml/ac	For multiple modes of action (MMOA) on broadleaf weeds.
Centurion® herbicide	Post-emergence – apply to actively growing weeds.	50 to 77 ml/ac	
Lance® fungicide	20-50% flowering.	227 to 312 g/ac	To manage disease in faba beans, apply a fungicide at early- to mid-flower. BASF recommendations include Dyax, RevyPro, Lance and Cotegra fungicides. Apply RevyPro for control of ascochyta blight and suppression of gray mold/chocolate spot and white mold. Apply Dyax for control of Asian soybean rust and suppression of ascochyta blight with added **Plant Health Benefits**[1]. Apply RevyPro/Lance/Cotegra for late-season white mold management.
Cotegra® fungicide	20-50% flowering.	400 ml/ac	
Dyax® fungicide	Start of flowering or at onset of symptoms.	160 ml/ac	
RevyPro® fungicide	Start of flowering or at onset of symptoms.	405 ml/ac	
Heat® LQ pre-harvest herbicide	Apply when 80% of lower pods have turned black, middle pods have turned yellow/tan and top green pods have firm seed.	43 ml/ac	

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

Flax solutions.

Brand	Timing	Rate	Notes
			Flax
Insure® Pulse seed treatment	Apply prior to seeding.	300 to 600 ml/100 kg of seed	Use a higher rate of 600 ml/100 kg seed if: a) there is a history of high disease pressures in the field or b) where field conditions favour seed- and soil-borne pathogens. If using the 600 ml/100 kg rate, it is highly recommended that the seed be treated into a bin or truck box to allow the treated seed to dry prior to placing into the seeder hopper. This will prevent clumping and bridging in the seeder.
Basagran® Forte herbicide[1]	After 5 cm height.	700 to 900 ml/ac	The best option for in-crop management of cleavers.
Centurion® herbicide	Post-emergence – apply to actively growing weeds.	50 to 154 ml/ac	
Dyax® fungicide	20 to 50% flowering.	120 to 160 ml/ac	If disease persists or weather conditions are favourable for disease development, make a second application 10 to 14 days later with a fungicide that contains an alternative mode of action. Apply Dyax for control of pasmo and suppression of sclerotinia stem rot.
Heat® LQ pre-harvest herbicide	Apply when 75% of bolls have turned colour.	43 ml/ac	Do not apply at more than 30% crop moisture.[2]

[1] Excluding low linolenic acid varieties.
[2] It is recommended to only apply Heat LQ as a standalone product not tank mixed with glyphosate.

Dry beans solutions.

Dry beans

Brand	Timing	Rate	Notes
Insure® Pulse seed treatment	Apply prior to seeding.	300 ml/100 kg of seed	Thorough seed coverage helps to optimize protection from seed- and soil-borne diseases. Seed should be tested for germination, vigour and disease and well-cleaned prior to treatment to provide maximum coverage.
Basagran® Forte herbicide	After 1st trifoliate.[1]	700 to 900 ml/ac	
Viper® ADV herbicide	1 to 2 trifoliate leaf.	404 ml/ac[1]	Viper ADV requires the addition of Basagran Forte in higher weed pressure situations (145 ml/ac or 360 ml/ha). Initial transient crop yellowing may be observed after application, but this is outgrown and should not affect yield. Refer to label for specific variety information. Addition of a nitrogen source (28% UAN) is also recommended.
Centurion® herbicide	Post-emergence – apply to actively growing weeds.	50 to 77 ml/ac	
Lance® fungicide	20 to 50% flowering.	227 to 312 g/ac	Use Lance or Cotegra for management of white mold. A second application can be made 7 to 14 days later if disease persists. BASF recommends a rotation of fungicides for resistance management. Use Dyax for leaf diseases such as anthracnose, rust, powdery mildew and Asian soybean rust. For suppression of white mold, apply at a higher rate of 242 to 323 ml/ac. Use RevyPro for management of white mold and leaf diseases such as anthracnose.
Cotegra® fungicide	20 to 50% flowering.	400 ml/ac	
Dyax® fungicide	Start of flowering or at onset of symptoms.	160 ml/ac	
RevyPro® fungicide	Start of flowering or at onset of symptoms.	405 ml/ac	
Heat® LQ pre-harvest herbicide	Apply when stems are green to brown, pods are mature (yellow, brown) and 80 to 90% of leaves have dropped.	43 ml/ac	Consult glyphosate label or your BASF **AgSolutions®** Grower or Retail Representative for information regarding use on specific varieties of dry common beans.

[1] Dry edible beans may vary in their tolerance to herbicides. See label for important notes specific to Basagran Forte and Viper ADV.

Alfalfa solutions.

Alfalfa

Brand	Timing	Rate	Notes
Basagran® Forte herbicide[1]	Seeding alfalfa: Tolerant after third trifoliate stage. Established alfalfa: Tolerant before crop canopy closes, prior to flowering.	700 to 900 ml/ac	
Viper® ADV herbicide	Early post-emergence. Seedling alfalfa: Tolerant after third trifoliate stage. For seedling alfalfa grown for seed, apply prior to bud formation. Established alfalfa: Tolerant before canopy closes, prior to flowering.	Viper ADV 40 ac/case + Basagran Forte 146 ml/ac (required for broad-spectrum control)	Do not graze treated alfalfa or cut for hay within 20 days of application.
Odyssey® NXT herbicide	Early post-emergence.	40 ac/case	For seed production only.
Sefina® insecticide	Emergence to harvest.	80 ac/case (81 ml/ac)	Control of labeled aphids throughout all life stages. Provides quick activity and extended control while also being low impact on beneficial insects, including predatory and parasitic insects.
Dyax® fungicide	10 to 30% bloom or at the onset of disease.	120 to 160 ml/ac[2]	For seed production only. For management of common leaf spot and blossom blight.

[1] Do not graze treated alfalfa or cut for hay within 20 days of application.
[2] No more than one application per year.

Notes

Always read and follow label directions.

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ALWAYS READ AND FOLLOW PESTICIDE LABEL DIRECTIONS. It is a 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.

Roundup Ready® Technology contains genes that confer tolerance to glyphosate. Roundup Ready® 2 Technology contains genes that confer tolerance to glyphosate. **Products with XtendFlex® Technology contains genes that confer tolerance to glyphosate, glufosinate and dicamba.** LibertyLink® Technology contains genes that confer tolerance to glufosinate. **Roundup Ready 2 Xtend® soybeans contain genes that confer tolerance to glyphosate 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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