BrettYoung™
DISTINCT BY DESIGN

2026

Product Guide

CANOLA | INOCULANTS

This is your farm, your livelihood, and your legacy. And we're here to help you grow it.

At BrettYoung, we focus on what truly matters — real farms, real challenges, and real results. That means top-quality genetics and seed, agronomic expertise, and choices that fit the way you farm. As the Largest Independent Seed Company within your neighbor to the north, we're committed to delivering the performance you need with the service you deserve.

Read on to discover how our seed solutions can help maximize your success this season and beyond.

BrettYoung™ DISTINCT BY DESIGN

CANADA BEST MANAGED COMPANIES Platinum member

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CANOLA

INOCULANTS

US Regional Account Managers (RAMs)

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Regional Account Manager
West of Hwy 83 in North Dakota and Montana

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Regional Account Manager
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Canola

Our newest LibertyLink® hybrids have arrived. Introducing BY 7206LL and BY 7202LL, two high-performing LibertyLink hybrids built for strong yield potential, excellent standability, and superior disease resistance.

Both feature Pod DefendR, our shatter reduction trait, and Clubroot DefendR for next-generation clubroot resistance. Additionally, BY 7206LL carries Blackleg DefendR, providing enhanced protection against blackleg disease. BY 7206LL is slightly later-maturing than BY 7204LL, while BY 7202LL is slightly earlier – both are strong choices for growers looking for top-end performance.

For those looking for a TruFlex® option, BY 6223TF is our newest addition to this segment. This earlier-maturing hybrid is equipped with Pod DefendR and Clubroot DefendR traits, delivering strong yield potential and adaptability across different growing zones.

With these new hybrids, you can count on the latest advancements in disease resistance, pod shatter protection, and high-performance genetics to maximize your canola crop's success.

DL Seeds BrettYoung Canola: Built for Performance

BrettYoung, together with our canola breeding partner, DL Seeds, supplies top-tier canola genetics, focused on maximizing farmer returns through innovation and field-proven performance.

- DL Seeds delivers 30+ years of focused canola breeding
- DL Seeds and BrettYoung's DefendR-rated canola hybrids deliver:
  - Proven yield performance
  - Pod shatter protection and strong disease resistance
  - Exceptional standability

Focused Efforts Will Deliver New Key Benefits

- DL Seeds has prioritized verticillium stripe research
- DL Seeds collaborates with university and other public research programs to advance resistance screening on several key diseases
- Access to elite European canola germplasm via DL Seed's global partnerships rapidly boosts hybrid development

Every acre matters. BrettYoung, with DL Seeds, delivers where it counts.

Keeping Clubroot Under Control

Clubroot has been ravaging fields in parts of Western Canada and North Dakota for almost two decades now. The soil-borne disease causes galls to form on the roots of canola plants, eventually killing them prematurely. Over 55 clubroot pathotypes have been identified in North America's canola growing regions, of which many are able to overcome some sources of clubroot resistance. Even though clubroot pathotypes are diverse, three predominant pathotypes (3A, 3D, & 3H) account for over 60% of the clubroot isolates detected, while the bulk of the pathotypes have only been detected a couple of times.

Type of Detection (Range of Reported Isolates)	Number of Pathotypes	Isolates Phenotyped	Isolate Frequency (%)	Pathotypes
Prevalent (113-217)	3	455	63	3A, 3D, 3H
Common (26-41)	4	136	19	8E, 8N, 8P, 9E
Frequent (8-15)	5	57	8	5C, 5G, 5L, 8A, 8D
Infrequent (2-5)	15	46	6	2C, 3C, 3J, 3O, 5I, 5X, 6F, 8B, 8C, 8I, 8J, 9A, 9B, 9D, 13A
Rare (0-2)	16	15	2	2A, 2B, 2F, 3B, 4A, 5A, 5K, 6C, 6D, 6M, 7A, 8G, 9C, 9G, 11A, 13B
New* (1)	12	12	2	1D, 1E, 1G, 1H, 3F, 3G, 3I, 5D, 6A, 6B, 8K, 9G
Totals	**55**	**721**	**100**	

*New detections only identified once, based on publication by Storfie et al. (2025)
References: Storfie et al. (2025), Hollman et al. (2023), Hollman et al. (2021), Strelkov et al. (2021), Strelkov et al. (2018), and Askarian et al. (2021)

Brett Young's Clubroot DefendR: Now labelled against specific pathotypes

Selection of a Clubroot DefendR hybrid is a strong step in the fight against clubroot. Along with the identification of new pathotypes, plant breeders have been identifying and incorporating new sources of resistance into their newest canola hybrids. This includes the stacking of multiple sources of clubroot resistance in hybrids like the new BY 7202LL, BY 7206LL, and BY 6223TF, plus in other key hybrids within BrettYoung's lineup. BrettYoung has added in relevant pathotype resistance information to help you in selecting your next hybrid.

Hybrid	Prevalent Pathotypes*			Common and Frequent Pathotypes*								
	3A	3D	3H	8E	8N	8P	9E	8A	5L	5G	8D	5C
BY 7206LL	R	R	R	R	R	R	TBD	R	R	R	R	R
BY 7204LL	R	R	R	R	R	R	TBD	R	R	R	R	R
BY 7202LL	R	R	R	R	R	R	TBD	R	R	R	R	R
BY 6223TF	R	R	R	R	R	R	R	R	R	R	R	R
BY 6217TF	R	R	R	R	R	R	TBD	R	R	R	R	R
BY 6216TF	R	R	R	R	R	R	TBD	R	R	R	R	**R**
BY 6214TF	R	R	R	R	R	R	R	R	R	S	R	R

*Pathotypes listed in order of frequency detected from 2014-2023 through published clubroot surveys.
BrettYound hybrids are also resistant to many Infrequent, Rare, and New pathotypes identified but not listed in the table.
R: Resistant, S: Susceptible, TBD: To be determined, currently being screened

DEFENDR™ Genetic Traits

DefendR is an easy-to-understand approach that highlights the superior harvest management and disease resistance genetics developed by our primary canola breeding partner, DL Seeds. The DefendR trait platform is gene-driven and can be an important piece of your overall canola management and production strategy. BrettYoung uses the DefendR designation to signal genetic tolerance to pod shatter and durable resistance to two prominent disease complexes affecting canola: clubroot and blackleg.

DefendR Traits

Trait	Minimum Resistance Level	Hybrids	
POD DEFENDR	A dependable level of shatter tolerance, well suited to straight-cut or delayed swathing harvest systems. Pod DefendR-rated hybrids score a minimum of 7.0 on the Canola Council of Canada's canola shatter rating scale.	BY 7206LL BY 7204LL BY 7202LL	BY 6223TF BY 6217TF BY 6211TF
BLACKLEG DEFENDR™	Contains one or more major blackleg resistance genes that align with predominant blackleg race(s), combined with a strong R-rating for adult plant (quantitative) blackleg resistance.	BY 7206LL BY 6217TF BY 6211TF	
CLUBROOT DEFENDR™	Stacked 1st and next-generation clubroot resistance genes that provide protection against the predominant pathotypes 3A, 3D, and 3H. They also protect against other less common pathotypes such as 8E, 8N, 8P, 9E, 8A, 5L, 5G, 8D, and 5C, and against many other rarely found pathotypes.	BY 7206LL BY 7204LL BY 7202LL	BY 6223TF BY 6217TF

POD DEFENDR

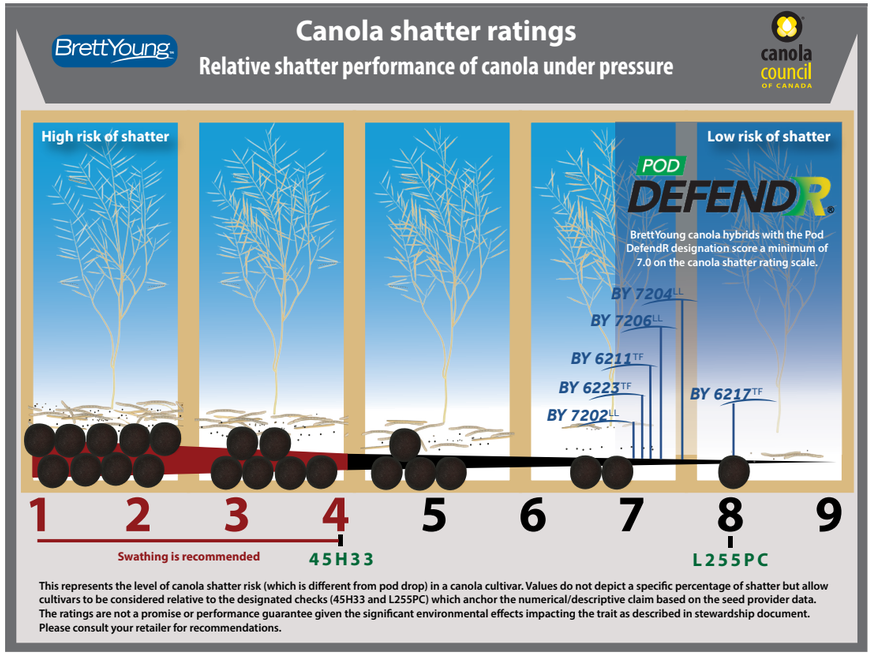
The introduction of pod shatter-resistant hybrids to canola growers several years ago led to a significant increase in adoption of both direct harvesting and delayed swathing of canola crops. BrettYoung canola growers are enjoying this same flexibility because of our pod shatter resistance trait, which delivers the dependable levels of shatter tolerance expected by growers.

Pod shattering, and the seed dispersion associated with it, is a survival mechanism found in nature and, despite decades of breeding and domestication, canola pods still have a natural tendency to split and open at maturity, with the goal of scattering seeds. Plant breeders and trait developers have been working to understand the physiology of canola pod ripening and pod shatter mechanisms.

DL Seeds, and its parent companies, have researched their own solutions, and what has emerged is an understanding of a complex pathway of gene interaction that controls pod valve function.

Much of this work has meant isolating specific genes from other brassica species and breeding them into canola to interrupt these shatter-inducing pathways. If you've ever grown mustard, you're aware of the substantial pod shatter resistance in that crop.

The result is Pod DefendR, a specific genetic trait that reduces pod tension built up at maturity and ultimately, the tendency for canola pods to split at the pod dehiscence zone (pod seam) that holds both sides (valves) of the pod together.



BrettYoung canola hybrid pod shatter resistance scores are developed through internal and breeder trial data.

BLACKLEG DEFENDR™

Blackleg is a disease that has made a resurgence in intensive canola production areas. Most agree that a combination of crop rotation, crop management (including regular field scouting), and proper hybrid selection are important factors to reducing the impact of this disease.

The Blackleg DefendR trait means the BrettYoung canola hybrid is rated as strongly resistant (R) to blackleg. It also means the hybrid incorporates one or more major genes that align with predominant blackleg races. Blackleg DefendR hybrids achieve an enhanced level of resistance compared to competitor's R-rated hybrids.

CLUBROOT DEFENDR™

Clubroot is now well established in parts of North Dakota. Since 2013, when the first resistance-breaking pathotype was identified in Alberta, several new and more virulent pathotypes have evolved that can evade the original source of clubroot resistance. The Clubroot DefendR trait indicates the canola hybrid has stacked sources of clubroot resistance. This approach signifies resistance to the older, first-identified pathotypes like 3H, but also resistance to other predominant pathotypes like 3A and 3D. DL Seeds has a robust pipeline coupled to high performance hybrids that BrettYoung will continue to commercialize to support you in keeping one step ahead of this impactful disease.

For the latest around the conversation on clubroot see the article on page three of this guide.

Managing Blackleg with Stubble Tests

Crop scouting is always the first step when managing blackleg (*Leptosphaeria maculans*). Assessing the level of incidence and severity of blackleg in the field will help growers to develop an estimate of blackleg risk for the future.

There are two main management strategies once growers know what they're dealing with, one being crop rotation. A minimum two-year break between canola crops allows for crop residue housing the blackleg-causing pathogen to break down.

Fortunately, as blackleg advances, so do we. One of the biggest steps some of the industry has taken recently is labelling the major blackleg resistance genes found in canola hybrids, something BrettYoung has been doing for several years. This is important information as it can be used to rethink the approach towards effective blackleg management. Canola hybrids use two sources of resistance — quantitative and qualitative (major gene).

Quantitative resistance is a sort of "catch-all", meaning it has numerous genes working together to slow the infection of blackleg in your canola plants. Because quantitative resistance has so many genes working within it, it's more difficult to classify and harder to screen for. Qualitative resistance, on the other hand, are major genes that stop the pathogen at the site of infection. BrettYoung Regulatory & Agronomic Services Manager Justine Cornelsen said the industry's shift to labelling major genes, paired with quantitative resistance, is really helpful as it provides more information to growers to assist in hybrid selections.

"With quantitative resistance, you have multiple genes working together to slow the pathogen down as it moves through the plant," said Cornelsen. "This minimizes the overall severity of the disease but doesn't eliminate it. Qualitative resistance is when a major resistance gene matches an avirulence gene within the blackleg population to initiate a defense response within the plant that stops the pathogen at the site of infection."

Blackleg stubble tests determine the pathogen genotype and phenotype, the phenotype being the important information for growers with blackleg concerns as it shows growers the blackleg races present in their field.

Identifying the Avirulence Profile

Leptosphaeria maculans races

Phenotype: AvrLm2-**4**-5-6-**7**-11 (25%)
AvrLm**4**-5-6-**7**-11 (50%)
AvrLm1-**4**-5-6-**7** (25%)

Corresponding R-genes to initiate defense response: **Rlm4**, Rlm5, Rlm6, & **Rlm7**

Figure 1. An example of stubble test results showing the identified races. Note Rlm5 and Rlm6 aren't yet in Canadian germplasm.

One of the most predominant blackleg avirulence genes in Western Canada is AvrLm7. With the addition of the Rlm7 resistance gene to canola hybrids, Cornelsen said there's a good chance most growers with blackleg issues will have much stronger success in minimizing disease pressure if they're growing a hybrid with that major gene as it matches 90% of L. *maculans* races detected in the region.

Verticillium Stripe on the Rise

First identified in North Dakota in 2021, *Verticillium longisporum* has spread to other parts of the state like wildfire. This soil-borne fungal pathogen causes verticillium stripe in canola, which is a stem striping disease that causes canola plants to ripen early, leading to lodging and eventual yield losses.

As soil temperatures warm in the spring, the microsclerotia in the soil seek growing canola roots, which then enter the plant and move in the xylem to the plant stem where the true damage happens. The impact of damage typically isn't seen until maturity and harvest, but hot, dry conditions help to express the plant damage earlier on. Canola stems will show half stem senescence, then become extremely fragile and shred to reveal the microsclerotia growing beneath the stem wall.

In 2024, North Dakota State University (NDSU) surveyed 18 canola growing counties across North Dakota to find the presence of verticillium stripe in all counties surveyed. The number of plants expressing symptoms in the fields surveyed ranged from 11% to 58%.

How to properly identify this disease from other common canola diseases, like blackleg and sclerotinia, has been the priority. Integrated management tactics like the basics of crop rotation, weed management, and scouting, don't seem to be keeping verticillium stripe at bay. Many growers have reported significant yield losses from the disease and are in search of other management practices to try. Currently, there are no clear management recommendations for this disease.

With not much known about verticillium stripe, researchers are now focusing their efforts on trying to find solutions. Plant breeders have been finding ways to work with the disease within plant breeding programs to screen hybrids for tolerance towards verticillium stripe. The mechanism for resistance within hybrids is still not known and the industry struggles to find a resistant and susceptible check to use as an industry standard when screening for verticillium stripe tolerance. However, many plant breeders note susceptibility differences among hybrids infected by verticillium stripe, which can be used to help promote hybrids that should handle the stress from the disease better than others. This is one small step in the direction of managing verticillium stripe in canola and highlights the hope there already exists some background tolerance within Canadian canola germplasm.

Verticillium stripe is widespread and here to stay, so learn how to properly identify it in the field against other canola diseases. Industry collaboration will be key to better understand and develop management practices against this disease.

Symptoms of verticillium stripe disease spotted in canola plants:
(A) microsclerotia, (B) half stem senescence (unilateral streaking), and (C) striping of the stem tissue.
Images: Canola Council of Canada

Canola Portfolio

Realize your yield potential with BrettYoung canola. BrettYoung has industry-leading hybrids in the TruFlex, LibertyLink, and Clearfield® systems, sourcing the best technology and genetics to keep your operation profitable.

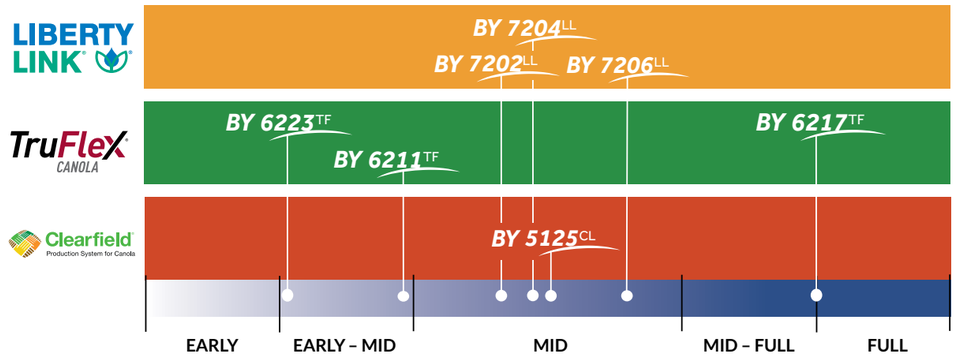
BrettYoung's premium canola genetics also carry the DefendR trait platform as part of an active disease and harvest management strategy. A variety of maturity and DefendR trait combinations will help you find the best canola hybrid fit for your farm.

Variety	Herbicide System	Blackleg Rating	Blackleg Major Gene	Clubroot Rating	DefendR Disease Designation	Standability	Pod DefendR Rating	Maturity[1]
NEW BY 7206LL	LIBERTY LINK	R - AE_2G	LepR2 Rlm1 Rlm7	R (Next-generation* resistance)	DOUBLE LAYERED DEFENDR BLACKLEG + CLUBROOT	Excellent	7.3[2]	Mid
BY 7204LL	LIBERTY LINK	R – E_2	Rlm7	R (Next-generation* resistance)	CLUBROOT DEFENDR	Excellent	7.5[2]	Mid
NEW BY 7202LL	LIBERTY LINK	R – C	Rlm3	R (Next-generation* resistance)	CLUBROOT DEFENDR	Excellent	7.0[2]	Mid
NEW BY 6223TF	TruFlex CANOLA	R - E_2G	Rlm7 RlmS	R (Next-generation* resistance)	CLUBROOT DEFENDR	Excellent	7.1[2]	Early – Mid
BY 6217TF	TruFlex CANOLA	R – CE_2	Rlm3 Rlm7	R (Next-generation* resistance)	DOUBLE LAYERED DEFENDR BLACKLEG + CLUBROOT	Excellent	8.0	Mid - Full
BY 6211TF	TruFlex CANOLA	R – C	Rlm3 RlmS	–	BLACKLEG DEFENDR	Very Good	7.2[2]	Early - Mid
BY 5125CL	Clearfield Production System for Canola	R – C	Rlm3	R (1st generation** resistance)	–	Excellent	–	Mid

Disease Management Rating: R = Resistant
[1] Maturity ratings based on relative to check performance in co-op registration trials.
[2] Pod shatter tolerance rating. This is based on the Canola Council of Canada's shatter tolerance scale of 1 – 9. 1 = poor, 9 = excellent. Results may vary slightly on your farm due to environmental factors and management practices.
* Next-generation resistance includes pathotypes covered by 1st generation resistance plus resistance to newer pathotypes such as 3A, 3D, 3H, and other prevalent pathotypes.
** 1st generation resistance means resistant to pathotypes 2F, 3H, 5I, 6M, and 8N (these are equivalent to pathotypes 2, 3, 5, 6, 8 on the Williams' Differential set).

For product performance information scan this QR code or visit brettyoung.com/product-performance.

Canola Hybrid Maturities



Canola Seed Treatments

BrettYoung canola hybrids have a base treatment of Helix® Saltro® with the add-on seed treatment BUTEO® start.

Pests Controlled by Seed Treatments	Base Treatment	Additional Pests Controlled With Add-on Seed Treatment
	Helix Saltro	BUTEO start
Pythium spp.	✓	
Fusarium spp.	✓	
Rhizoctonia spp.	✓	
Seed-borne Blackleg	✓	
Airborne Blackleg	✓	
Flea Beetles	✓	
Enhanced Flea Beetle Control		✓

Canola Hybrids

NEW BY 7206LL

Unlock the Full Potential of Your Canola Crop with This Hybrid — Engineered for Pod Shatter Control, Advanced Clubroot Defense, and Unbeatable Blackleg Resistance

- Pod DefendR — durable shatter resistance technology
- DefendR-rated blackleg resistance and next-generation clubroot protection
- Strong early season vigour and excellent standability

Blackleg	Blackleg Major Gene	Clubroot	Standability	Maturity	Pod Shatter Tolerance Rating
R - AE_2G	LepR2, Rlm1, Rlm7	R (Next-generation* resistance)	Excellent	Mid	7.3

BY 7204LL

The Future of Canola Hybrid Technology is Here: Consistent, High-Yield Performance in a Mid-Maturity Hybrid with Pod and Clubroot DefendR Genetic Traits

- Pod DefendR — durable shatter resistance technology
- DefendR-rated next-generation clubroot protection
- Strong early season vigour and excellent standability

Blackleg	Blackleg Major Gene	Clubroot	Standability	Maturity	Pod Shatter Tolerance Rating
R – E_2	Rlm7	R (Next-generation* resistance)	Excellent	Mid	7.5

NEW BY 7202LL

Boost Your Canola Harvest. This Product Features Pod DefendR Shatter Reduction and Cutting-Edge Clubroot Protection

- Pod DefendR — durable shatter resistance technology
- DefendR-rated next-generation clubroot protection
- Strong early season vigour and excellent standability

Blackleg	Blackleg Major Gene	Clubroot	Standability	Maturity	Pod Shatter Tolerance Rating
R – C	Rlm3	R (Next-generation* resistance)	Excellent	Mid	7.0

NEW BY 6223TF

A TruFlex Canola Hybrid Featuring Pod Shatter Tolerance and Next-Generation Clubroot Resistance that Delivers Stronger Yields and Superior Harvest Security in an Early to Mid-Maturity Package

- Another BrettYoung canola hybrid with Pod DefendR — a shatter reduction trait
- DefendR-rated clubroot resistance
- Early-mid maturity suitable for mid- and full-season zones
- TruFlex canola hybrid equipped with the latest in herbicide trait technology

Blackleg	Blackleg Major Gene	Clubroot	Standability	Maturity	Pod Shatter Tolerance Rating
R - E_2G	Rlm7, RlmS	R (Next-generation* resistance)	Excellent	Early – Mid	7.1

BY 6217TF

Pod, Clubroot, and Blackleg DefendR Protection and Flexibility of the TruFlex Canola System

- Another BrettYoung canola hybrid with Pod DefendR — a shatter reduction trait
- DefendR-rated clubroot and blackleg resistance
- Mid to full maturity suitable for mid- and full-season zones
- TruFlex canola hybrid equipped with the latest in herbicide trait technology

Blackleg	Blackleg Major Gene	Clubroot	Standability	Maturity	Pod Shatter Tolerance Rating
R – CE_2	Rlm3, Rlm7	R (Next-generation* resistance)	Excellent	Mid - Full	8.0

BY 6211TF

New Level of Pod Shatter Resistance with Blackleg DefendR Protection

- Contains a genetic source of pod shatter resistance well suited to direct harvest and delayed swathing systems
- DefendR-rated multi-genic blackleg resistance
- Excellent yield potential with mid-season maturity

Blackleg	Blackleg Major Gene	Clubroot	Standability	Maturity	Pod Shatter Tolerance Rating
R – AG	Rlm3, RlmS	—	Very Good	Early - Mid	7.2

Disease Management Rating: R = Resistant
[1] Yield and maturity ratings based on relative to check performance in co-op registration trials.
* Next-generation resistance includes pathotypes covered by 1st generation resistance plus resistance to newer pathotypes such as 3A, 3D, 3H, and other prevalent pathotypes.
** 1st generation resistance means resistant to pathotypes 2F, 3H, 5I, 6M, and 8N (these are equivalent to pathotypes 2, 3, 5, 6, 8 on the Williams' Differential set).

BY 5125CL

Clearfield® Production System for Canola

DL Seeds

An Outstanding Yield Performer in the Clearfield® Segment

- 1st generation** clubroot protection
- Blackleg resistant
- Can be marketed under the Clearfield (non-GMO) canola premium programs

Blackleg	Blackleg Major Gene	Clubroot	Standability	Maturity	Pod Shatter Tolerance Rating
R – C	Rlm3	R (1st generation** resistance)	Excellent	Mid	—

Disease Management Rating: R = Resistant
[1] Yield and maturity ratings based on relative to check performance in co-op registration trials.
* Next-generation resistance includes pathotypes covered by 1st generation resistance plus resistance to newer pathotypes such as 3A, 3D, 3H, and other prevalent pathotypes.
** 1st generation resistance means resistant to pathotypes 2F, 3H, 5I, 6M, and 8N (these are equivalent to pathotypes 2, 3, 5, 6, 8 on the Williams' Differential set).

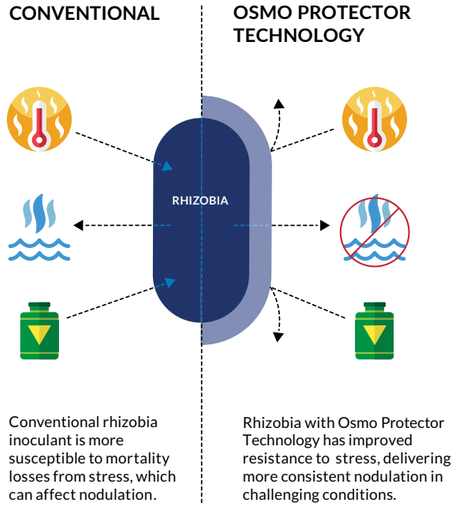
Inoculants

Our inoculant lineup sets the industry standard. With one-of-a-kind technology engineered to enhance performance in even the toughest conditions, our biologicals offer faster nodulation and optimal nitrogen fixation with lower application rates. When you choose BrettYoung biologicals, you choose the best.

Osmo Protector Technology

Many of BrettYoung's inoculants come equipped with Osmo Protector Technology, which features high-performance bacteria with longer on-seed survival. Rhizobia with Osmo Protector Technology are better equipped to withstand tough conditions and deliver excellent compatibility with many seed treatments.

Osmo Protector Technology strengthens the cell walls of rhizobial bacteria through a longer, stress-inducing manufacturing process. This enhances on-seed survival and performance in challenging environments including exposure to higher temperatures, low moisture soils, and chemical (seed treatment) stresses.



Making the Switch to a Liquid Inoculant: It's Time

A lot of growers have gotten comfortable with granular inoculants over the years but that doesn't mean there isn't a better way. Liquid inoculants are an option — and they're a better one in every way.

BrettYoung Regional Account Manager Clayton Hove has had various growers make the switch, and each of them has been thrilled with the results.

"As a rule, using a liquid inoculant is easier," said Hove. "You're applying it through an applicator kit, so you're drizzling it on or applying it through a seed treater when treating seed. Granular inoculants are bulky, so you have to auger it or lift it into the air seeder."

Liquid inoculants also cost less per acre than granular inoculants do, making them the more economical option. And because liquid inoculants are applied directly to the seed, they're more convenient to use with seed-applied products like seed treatments.

The on-seed life of our liquid inoculants is perhaps the biggest reason to make the switch. BrettYoung's Osmium liquid inoculant (available in pea & lentil or chickpea formulations), depending on what fungicidal seed treatment you are applying with it, can last anywhere from five to 15 days on seed, giving you maximum flexibility.

"When you put Osmium inoculant on seed, it should be able to deliver more consistent nodulation because of Osmo Protector Technology," said Hove. "It won't be as affected by challenging conditions."

Bio-Inducer Technology

To accomplish nodulation, plant roots and rhizobia bacteria communicate using chemical signals. In turn, rhizobia respond with additional chemical signals (called nodulation determinants) initiating the nodulation process.

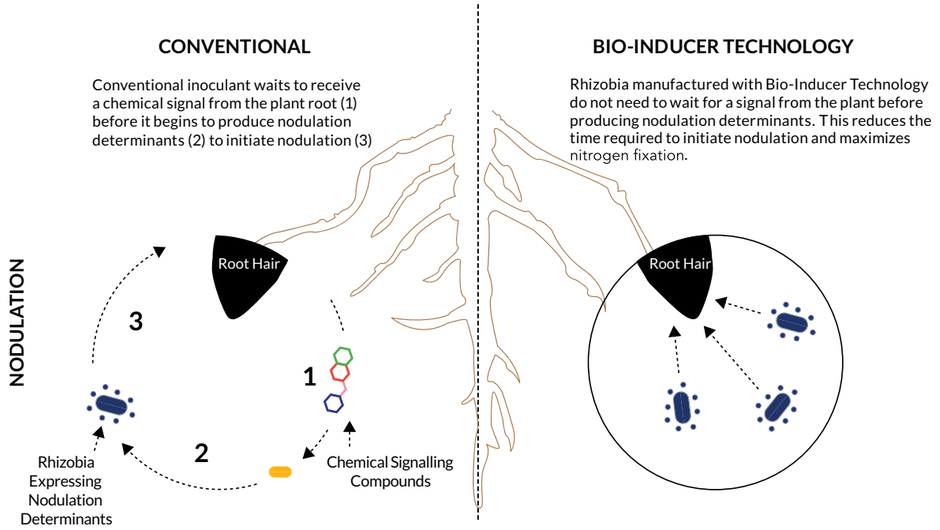
These nodulation determinants include:

- **Nod Factors** — Chemical compounds released by the rhizobia bacteria signaling the plant to initiate nodulation
- **Lipopolysaccharides (LPS)** — Long chain fatty acid molecules responsible for the development of the infection tube
- **Type Three Secretion System (T3SS)** — A protein structure used to transport substances between the cells of the rhizobia and the plant

Bio-Inducer Technology assists in the process by stimulating earlier production of specific nodulation determinants through introducing rhizobia to plant-based signaling compounds, called Bio-Inducer components, during the manufacturing process. These compounds mimic what plant roots release naturally in the soil, inducing the rhizobia to respond by releasing nodulation determinants, as if they were already in the presence of a receptive host.

The early presence of these nodulation determinants accelerates the nodulation process in the soil and improves nodulation on a plant's crown and primary roots, where nodules are most effective. This maximizes nitrogen fixation and yield potential, delivering more consistent performance under all conditions.

Signum Soybean inoculants come equipped with Bio-Inducer Technology, which accelerates and improves nodulation. This not only maximizes nitrogen fixation but improves yield potential for your crop.



Pea/Lentil Osmium® Osmo Protector

Osmium Pea/Lentil is a convenient liquid inoculant featuring Osmo Protector Technology to provide pea and lentil growers with longer on-seed survival and enhances performance in challenging environments.

- Enhanced performance in challenging environments
- Longer survival on-seed
- Convenient all-in-one liquid formulation

Formulation:	Liquid Suspension
Guaranteed Analysis:	*Rhizobium leguminosarum bv. viciae* 1 x 10^9 CFU/ml
Technology:	Osmo Protector Technology
Crops:	Pea, Lentil and Faba Bean
Application:	On-Seed
Application Rate:	3 fl. oz./100 lb, 200 ml/100 kg
On-Seed Life:	Up to 15 days[1]
Package Size:	2 x 184 fl. oz. L (2 x 5.45 L) – treats 12,000 lb (200 bu)

Chickpea Osmium® Osmo Protector

Osmium Chickpea is an inoculant featuring Osmo Protector Technology that provides chickpea growers with a liquid formulation that has on-seed survival that outperforms all other peat and liquid inoculants and enhance performance in challenging environments.

- Enhanced performance in challenging environments
- Longer survival on-seed
- Convenient all-in-one liquid formulation

Formulation:	Liquid Suspension
Guaranteed Analysis:	*Mesorhizobium ciceri* 1 x 10^9 CFU/ml
Technology:	Osmo Protector Technology
Crops:	Chickpea
Application:	On-Seed
Application Rate:	3 fl. oz./100 lb, 200 ml/100 kg
On-Seed Life:	Up to 15 days[1]
Package Size:	2 x 184 fl. oz. L (2 x 5.45 L) – treats 12,000 lb (200 bu)

[1] **Visit brettyoung.com/compatibility for seed treatment compatibility information**

Signum® Bio-Inducer

Signum Soybean is an effective and convenient inoculant equipped with both Osmo Protector and Bio-Inducer Technology to promote quicker biological fixation of nitrogen, allowing soybean growers to maximize yields even in stressful growing conditions.

- High concentration
- Bio-inducers
- Enhanced performance in challenging environments
- Longer survival on-seed
- Convenient all-in-one liquid formulation

Formulation:	Liquid Suspension
Guaranteed Analysis:	*Bradyrhizobium japonicum* 1 x 10^{10} CFU/ml
Technology:	Bio-Inducer Technology, Osmo Protector Technology
Crops:	Soybean
Application:	On-Seed
Application Rate:	2 fl. oz./100 lb, 130 ml/100 kg
On-Seed Life:	Up to 120 days[1]
Package Size:	400 fl. oz. (11.84 L) – treats 400 units (20,000 lb); 40 fl. oz. (1.18 L) – treats 40 units (2,000 lb)

Launcher™ Liquid Soybean Inoculant

Launcher Soybean is an economical liquid inoculant for effective biological fixation of nitrogen for on-seed or in-furrow use.

- High concentration
- All-in-one liquid formulation

Formulation:	Liquid Suspension
Guaranteed Analysis:	*Bradyrhizobium japonicum* 4 x 10^9
Crop:	Soybean
Application:	On-Seed or In-Furrow
On-Seed Application Rate:	2 fl. oz/100 lb, 130ml/100kg
In-Furrow Application Rate:	0.5 fl. oz/1,000 ft, 5ml/100m
On-Seed Life:	Up to 4 days[1]
Package Size:	400 fl. oz. (11.84 L) – treats 400 units (20,000 lb); 40 fl. oz. (1.18 L) –treats 40 units (2,000 lb)

[1] **Visit brettyoung.com/compatibility for seed treatment compatibility information**

Bio-Inducer Technology	*Included In Signum® Bio-Inducer	**Bio-Inducers** Accelerates initial, early communication between rhizobia and plant roots and triggers earlier nodulation for maximum nitrogen fixation.
Osmo Protector Technology	*Included In Signum® Bio-Inducer, Osmium® Osmo Protector	**Enhanced Performance in Challenging Environments** Osmo Protector Technology results in tougher bacteria that enhances performance in the field under adverse conditions. This includes high temperatures, low water availability, and chemical (seed treatment) stresses. **Longer Survival On-Seed** Osmo Protector Technology provides added protection for longer on-seed survival without requiring an extender. This allows growers much greater planting window flexibility compared to other seed-applied liquid and peat inoculants.

Seed containing a patented trait can only be used to plant a single commercial crop. It is unlawful to save and replant Roundup Ready® spring canola, Roundup Ready® winter canola, and TruFlex® canola with Roundup Ready® Technology. Additional information and limitations on the use of these products are provided in the Technology Stewardship Agreement and the Bayer Technology Use Guide: tug.bayer.com. U.S. patents for Bayer technologies can be found at the following webpage: cs.bayerpatents.bayer.com

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ALWAYS READ AND FOLLOW PESTICIDE LABEL DIRECTIONS.

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