PREMIER TECH

2023

AGTIV®

EFFICACY REPORT 2023

RELIABLE INOCULANTS

AGTIV FUEL

Single action rhizobium products FUEL legumes by fixing nitrogen for better growth.

AGTIV THRIVE

Dual action mycorrhizae and **rhizobium** products make plants THRIVE by increasing nutrient uptake.

AGTIV ENRICH

Dual action rhizobium and ***Bacillus*** collaborate to ENRICH the plant's nitrogen fixation with a healthy root system.

AGTIV STIMULATE

Single action *Bacillus* products STIMULATE the plant to grow more efficiently with a healthy root zone.

AGTIV IGNITE

Single action Serendipita products IGNITE plant growth and chlorophyll content for better yields.

AGTIV REACH

Single action mycorrhizae products REACH into the soil and help uptake more nutrients and water.

AGTIV®

DESIGNED BY NATURE. PERFECTED BY SCIENCE.

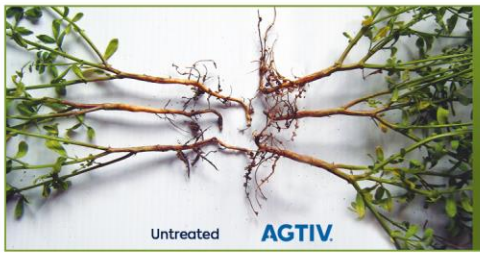
AGTIV® is an innovative technology brand made of high-quality and proven natural active ingredients that deliver superior performance for agricultural producers. We are introducing new product names reflecting the actions of our inoculants for plants.Ask your local AGTIV® rep or retailer to learn more about the 2023 season offer.

PREMIER TECH

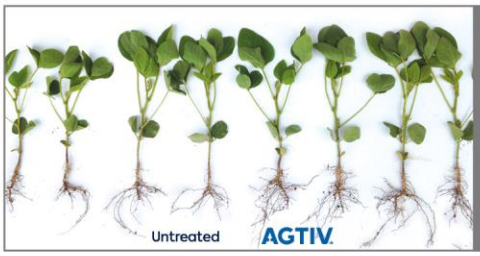
info@ptagtiv.com 1 866 454-5867

PTAGTIV.COM

AGTIV® AVERAGE YIELD INCREASE BY CROP



10%
2.6 bu/ac
Average yield increase
65 sites over 12 years, Canada
LENTILS



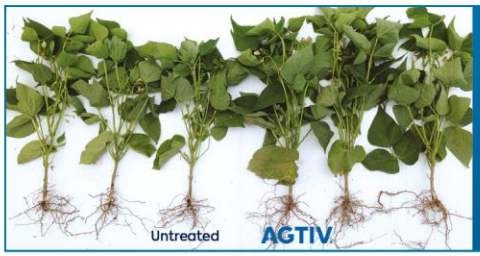
7.5%
3.4 bu/ac
Average yield increase
93 sites over 8 years, Canada and Europe
SOYBEAN

6.7%
3.6 bu/ac
Average yield increase
24 sites over 10 years, Canada
PEAS

6.7%
2.5 bu/ac
Average yield increase
27 sites over 4 years, Canada
CANOLA

6.5%
3.8 bu/ac
Average yield increase
12 sites over 7 years, North America
DURUM WHEAT

9.8%
3.4 bu/ac
Average yield increase
4 sites over 4 year, Canada
CHICKPEA



9%
252 lb/ac
Average yield increase
12 sites over 5 years, Canada
DRY BEANS

10.5%
7.3 bu/ac
Average yield increase
28 sites over 6 years, Canada and Europe
BARLEY

9%
Average yield increase
17 sites over 9 years, Canada and Europe
ONIONS

10%
31.6 cwt/ac
Average yield increase
1184 sites over 11 years, North America and Europe
POTATO

AGTIV® RELIABLE INOCULANTS

		ACTIVE INGREDIENT(S)	ORGANIC	APPLICATION MODE: GRANULAR IN-FURROW	APPLICATION MODE: MIXING WITH SEEDS	APPLICATION MODE: LIQUID IN-FURROW	APPLICATION MODE: LIQUID ON SEED	FORMULATION
PEA, LENTIL & FABA BEAN	**AGTIV® THRIVE™ P** PEA & LENTIL (previously named AGTIV® PULSES • Powder) **F:** Powder (peat) **S:** 4.7 kg (10.3 lb) pail – 2.4 kg (5.3 lb) pail **C: Peas & faba beans:** Pail 4.7 kg: **16 ha (40 acres)** – Pail 2.4 kg: **8 ha (20 acres)** **Lentils:** Pail 4.7 kg: **24 ha (60 acres)**	M R	✓		●			
	AGTIV® THRIVE™ G PEA & LENTIL (previously named AGTIV® PULSES • Granular) **F:** Granules (peat) **S:** 18.2 kg (40 lb) bag – 364 kg (800 lb) tote bag **C: Peas, lentils & faba beans:** Bag: **4 ha (10 acres)** – Tote bag: **80 ha (200 acres)**	M R	✓	●				
	AGTIV® THRIVE™ PEA & LENTIL (previously named AGTIV® COMBO • Liquid for PULSES) **F:** Liquid **S:** Combo box: 8 L (8 kg) bag-in-box + 4 x 950 ml (4 x 32 fl. oz) bottles **C: Peas, lentils & faba beans: 32 ha (80 acres)**	M R	✓			●		
	AGTIV® FUEL™ P PEA & LENTIL (previously named AGTIV® ON SEED™ RHIZO • Powder) **F:** Powder (peat) **S:** 4.7 kg (10.3 lb) pail **C: Peas & faba beans: 16 ha (40 acres)** – Lentils: **24 ha (60 acres)**	R	✓		●			
	AGTIV® FUEL™ G PEA & LENTIL (previously named AGTIV® RHIZO • Granular for PULSES) **F:** Granules (peat) **S:** 18.2 kg (40 lb) bag – 364 kg (800 lb) tote bag **C: Peas, lentils & faba beans:** Bag: **4 ha (10 acres)** – Tote bag: **80 ha (200 acres)**	R	✓	●				
	AGTIV® FUEL™ L PEA & LENTIL ✪ (previously named AGTIV® RHIZO • Liquid for PULSES) **F:** Liquid **S:** 8 L (8 kg) bag-in-box **C: Peas, lentils & faba beans: 32 ha (80 acres)** or **6530 kg of seeds (240 bu)**	R	✓			●	●	
SOYBEAN	**AGTIV® THRIVE™ P** SOYBEAN (previously named AGTIV® SOYBEAN • Powder) **F:** Powder (peat) **S:** 4.7 kg (10.3 lb) pail **C: Soybean: 16 ha (40 acres)**	M R	✓		●			
	AGTIV® THRIVE™ G SOYBEAN (previously named AGTIV® SOYBEAN • Granular) **F:** Granules (peat) **S:** 18.2 kg (40 lb) bag – 364 kg (800 lb) tote bag **C: Soybean:** Bag: **4 ha (10 acres)** – Tote bag: **80 ha (200 acres)**	M R	*	●				
	AGTIV® THRIVE™ SOYBEAN (previously named AGTIV® COMBO • Liquid for SOYBEAN) **F:** Liquid **S:** Combo box: 8 L (8 kg) bag-in-box + 2 x 950 ml (2 x 32 fl. oz) bottles **C: Soybean: 16 ha (40 acres)**	M R	✓			●		
	AGTIV® FUEL™ G SOYBEAN (previously named AGTIV® BRADY • Granular for SOYBEAN) **F:** Granules (peat) **S:** 18.2 kg (40 lb) bag – 364 kg (800 lb) tote bag **C: Soybean:** Bag: **4 ha (10 acres)** – Tote bag: **80 ha (200 acres)**	R	*	●				
	AGTIV® FUEL™ L SOYBEAN ✪ (previously named AGTIV® BRADY • Liquid for SOYBEAN) **F:** Liquid **S:** 8 L (8 kg) bag-in-box **C: Soybean: 16 ha (40 acres)** or **5680 kg of seeds (250 units)**	R	✓			●	●	
	AGTIV® ENRICH™ SOYBEAN ✪ (previously named AGTIV® BB COMBO • Liquid for SOYBEAN) **F:** Liquid **S:** Combo box: 8 L (8 kg) (*Bradyrhizobium*) bag-in-box + 300 ml (*Bacillus*) bottle **C: Soybean: 16 ha (40 acres)** or **5680 kg of seeds (250 units)**	R B	✓			●	●	

The newly named products will be on the market in 2023.

		ACTIVE INGREDIENT(S)	ORGANIC	APPLICATION MODE: GRANULAR IN-FURROW	APPLICATION MODE: MIXING WITH SEEDS	APPLICATION MODE: LIQUID IN-FURROW	APPLICATION MODE: LIQUID ON SEED	FORMULATION
CANOLA & CEREAL	**AGTIV® IGNITE™ L** (previously named AGTIV® IGNITE • L for Brassicaceae) **F:** Liquid **S:** 11 L (11 kg) bag-in-box **C:** Canola: **454 kg (1000 lb) or 81 ha (200 acres) of seeds** Cereals: **9165 kg (20 205 lb) or 81 ha (200 acres) of seeds**	S	*				●	Liquid
CHICKPEA	**AGTIV® THRIVE™ P** CHICKPEA (previously named AGTIV® CHICKPEA • Powder) **F:** Powder (peat) **S:** 4.7 kg (10.3 lb) pail **C:** Chickpea: **16 ha (40 acres)**	M R	✓		●			Powder
	AGTIV® THRIVE™ G CHICKPEA (previously named AGTIV® CHICKPEA • Granular) **F:** Granules (peat) **S:** 18.2 kg (40 lb) bag – 364 kg (800 lb) tote bag **C:** Chickpea: Bag: **4 ha (10 acres)** – Tote bag: **80 ha (200 acres)**	M R	✓	●				Granular
FIELD & SPECIALTY CROPS	**AGTIV® REACH™ P** (previously named AGTIV® FIELD CROPS – O • Powder, AGTIV® FIELD CROPS• Powder, AGTIV® FORAGES • Powder & AGTIV® SPECIALTY CROPS • Powder) **F:** Powder (peat) **S:** Case of 4 x 800 g (4 x 1.75 lb) pails **C:** Cereals, flax & dry beans: **32 ha (80 acres)** per case Alfalfa, mix forages & grass: **16 ha (40 acres)** per case Vegetables, berries & garlic: see page "Specialty Crops" for details.	M	✓		●			Powder
	AGTIV® REACH™ G (previously named AGTIV® FIELD CROPS • Granular & AGTIV® SPECIALTY CROPS • Granular) **F:** Granules (peat) **S:** 6 kg (13.2 lb) pail – 18.2 kg (40 lb) bag – 364 kg (800 lb) tote bag **C:** Cereals, flax & dry beans: Bag: **4 ha (10 acres)** – Tote bag: **80 ha (200 acres)** Alfalfa, mix forages & grass: Bag: **45 kg of seeds (99 lb)** – Tote bag: **720 kg of seeds (1584 lb)** Vegetables, herbs, berries & fruit trees: see page "Specialty Crops" for details.	M	*	●				Granular
	AGTIV® REACH™ L (previously named AGTIV® FIELD CROPS • Liquid) **F:** Liquid (spores in suspension) **S:** Case of 2 x 950 ml (2 x 32 fl. oz) bottles **C:** Cereals, flax & beans: **16 ha (40 acres)** per case	M	✓			●		Liquid
POTATO	**AGTIV® REACH™ L** POTATO (previously named AGTIV® POTATO • Liquid) **F:** Liquid (spores in suspension) **S:** Case of 2 x 950 ml (2 x 32 fl. oz) bottles **C:** Potato: **8 ha (20 acres)** per case	M	✓			●	●	Liquid

See last page for complete product recommendations.

ACTIVE INGREDIENTS

M **MYCORRHIZAE**
PTB297 Technology

R **RHIZOBIUM**
PTB160 Technology (pea & lentil)
PTB162 Technology (soybean)
Mesorhizobium ciceri (chickpea)

B **BACILLUS**
PTB180 Technology

S **SERENDIPITA**
PTB299 Technology

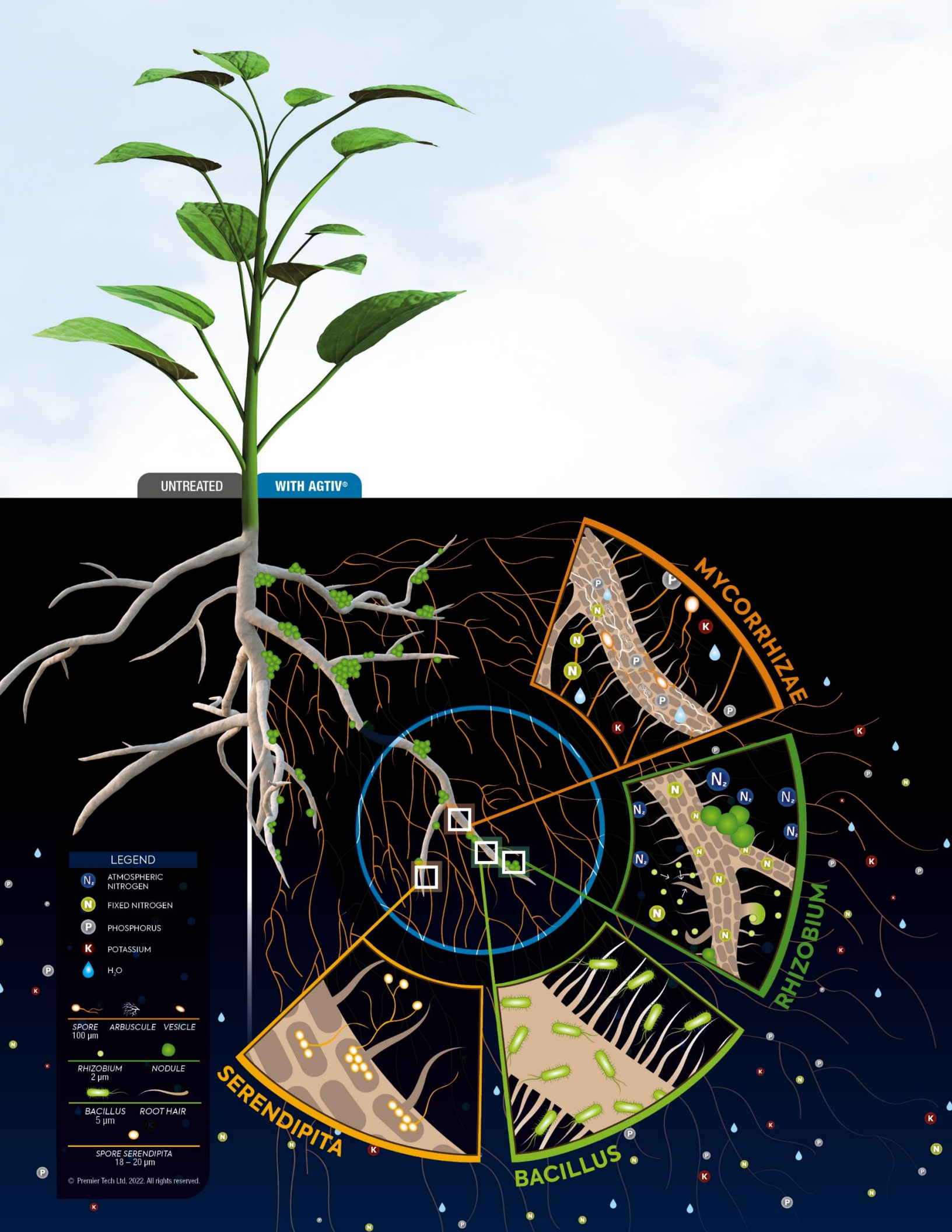
LEGEND

F: Formulation
S: Size
C: Crop/Coverage

● Eligible with EXTENDER™ L for AGTIV® inoculants
✓ For organic use
* Non eligible for organic use. Contact us for more details.

FORMULATIONS

Liquid | Granular | Powder


UNTREATED
WITH AGTIV®
MYCORRHIZAE
RHIZOBIUM
BACILLUS
SERENDIPITA
LEGEND
ATMOSPHERIC NITROGEN
FIXED NITROGEN
PHOSPHORUS
POTASSIUM
H2O
SPORE
100 µm
ARBUSCULE
VESICLE
RHIZOBIUM
2 µm
NODULE
BACILLUS
5 µm
ROOT HAIR
SPORE SERENDIPITA
18 – 20 µm
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AGTIV® BIOLOGICAL ACTIVE INGREDIENTS

For nearly 100 years, Premier Tech has been growing along with producers. Being a world leader in the industrial production of mycorrhizal inoculants has inspired us to go further in our search for natural technologies. Since then, we have introduced the benefits of B*acillus*, rhizobium, and Serendipita to the agricultural market. Furthermore, we have combined these powerful technologies to improve the quality and the yield of crops for the benefit of our clients.

Learn more at

PTAGTIV.COM/**en/technologies**

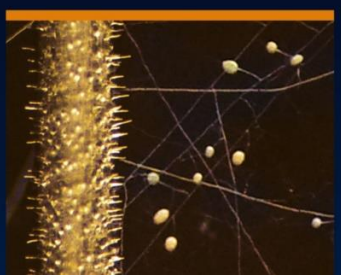
M

MYCORRHIZAE

PTB297 Technology, *Rhizophagus irregularis* (formerly known as *Glomus intraradices)*

Mycorrhizae are beneficial associations between a mycorrhizal fungus and roots. The mycorrhizal spores germinate in the soil and produce filaments (hyphae) which enter into root cells. This association allows the formation of an intra and extra-radical network of filaments that explore the soil and access more nutrients and water, and transfer them to the plant.

- EXPAND ROOT SYSTEM GROWTH
- ENHANCE NUTRIENT & WATER UPTAKE
- INCREASE TOLERANCE TO STRESSES
- IMPROVE SOIL STRUCTURE



R

RHIZOBIUM

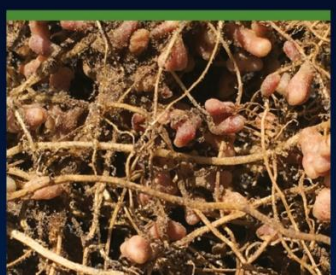
PTB160 Technology (pulses), *Rhizobium leguminosarum* biovar *viciae*

PTB162 Technology (soybean), *Bradyrhizobium japonicum*

Mesorhizobium ciceri (chickpea)

Rhizobium bacteria live and thrive in symbiosis in root nodules produced by the plant. They are responsible for fixing the atmospheric nitrogen and making it available for the plant.

- FIX NITROGEN & MAKE IT AVAILABLE TO THE PLANT



B

BACILLUS

PTB180 Technology, *Bacillus pumilus*

B*acillus* is a bacteria that provides a healthy root zone which leads to better yields. As a root colonizer, it stimulates the plant to grow more efficiently. Selected for its beneficial action of growth stimulation.

- IMPROVES ROOTING ENVIRONMENT & PLANT ESTABLISHMENT
- INCREASES PLANT VIGOR & PERFORMANCE

S

SERENDIPITA

PTB299 Technology, *Serendipita indica* (formerly known as *Piriformospora indica)*

The beneficial fungus *Serendipita indica*, a natural microorganism, forms an association with roots of many plants such as canola and cereals. It induces some of the plant gene expression and promotes phytohormone production.

- MITIGATES ABIOTIC STRESSES
- INCREASES CHLOROPHYLL CONTENT
- BETTER PLANT ESTABLISHMENT, GROWTH AND YIELD

SUMMARY – SERENDIPITA ON SEED INOCULANT

► GROWER SPLIT FIELDS AND PLOT TRIALS

Table 1. **Average increase of canola yield with AGTIV® IGNITE™ L for different years (2018-2022).**

Year	Number of sites	Untreated check (bu/ac)	AGTIV® IGNITE • L yield (bu/ac)	Yield increase (bu/ac)
2018	1	63.5	68.0	4.5
2019	6	44.6	47.1	2.5
2020	5	37.2	39.6	2.4
2021	8	32.5	35.0	2.5
2022	7	33.6	36.2	2.6
Total	**27 sites**	**37.2[a]**	**39.7[b]**	**2.5 bu/ac ***

*Summary of means for **AGTIV® IGNITE™** are significantly different following a combined site ANOVA and a Tukey test ($p<0.05$) $p < 0.001$

Table 2. **Average increase of canola oil content with AGTIV® IGNITE™ L for different years (2019-2022).**

Year	Number of sites	Untreated check (oil %)	AGTIV® IGNITE • L (oil %)	Oil increase (%)
2019	3	41.2	42.1	1.0
2020	4	39.2	40.6	1.4
2021	5	38.1	38.5	0.5
2022	7	35.3	36.1	0.8
Total	**19 sites**	**37.8[a]**	**38.7[b]**	**0.9%***

*Summary of means for **AGTIV® IGNITE™** are significantly different following a combined site ANOVA and a Tukey test ($p<0.1$) $p=0.05$

EFFICACY REPORT

SUMMARY – SERENDIPITA ON SEED INOCULANT

► GROWER SPLIT FIELDS AND PLOT TRIALS

CANOLA

Table 1. **Summary of canola yield trials for different sites (2018-2022).**

Year	site	Untreated check yield (bu/ac)	AGTIV® IGNITE™ L yield (bu/ac)	Yield increase (bu/ac)
2018	**Swan River**	63.5	68	4.5
2019	**Josephburg**	46.8	53.2	6.4
2019	**Portage la Prairie**	78	78	0
2019	**Saskatoon**	38.8	41.8	3
2019	**Swan River**	53.7	55.4	1.7
2019	**Taber**	25.4	27	1.6
2019	**Swift Current**	25	27.1	2.1
2020	**Josephburg**	47.2	49.5	2.3
2020	**Moon Lake**	16.3	18.2	1.9
2020	**Farm Beechy**	24.2	27.8	3.6
2020	**Swan River**	61.2	64	2.8
2020	**Taber**	37.3	38.5	1.2
2021	**Josephburg**	23.9	25.0	1.1
2021	**Saskatoon**	10.3	12.5	2.2
2021	**Elm Creek**	36.2	37.2	1
2021	**Swan River**	46.9	48.2	1.3
2021	**Portage la Prairie**	36.3	38.9	2.6
2021	**Westline Farms**	29.7	32.5	2.8
2021	**Lillico Farms**	26.4	31.5	5.1
2021	**Sandy Ridge Farms**	41.8	44.1	2.3
2022	**Saskatoon**	19.6	21.0	1.4
2022	**Portage la Prairie**	29.3	32.8	3.5
2022	**Taber**	28.2	32.7	4.5
2022	**Elm Creek**	46.1	48	1.9
2022	**Alma**	20.0	21.4	1.4
2022	**Redvers**	32.2	34.1	1.9
2022	**Swan River**	60.0	62.2	2.2
Total	**27 sites**	37.2[a]	39.7[b]	**2.5 bu/ac ***

*Summary of means for **AGTIV® IGNITE™** are significantly different following a combined site ANOVA and a Tukey test ($p<0.05$) $p=0.001$

PREMIER TECH

SUMMARY – SERENDIPITA ON SEED INOCULANT

► PLOT TRIALS

Table 1. **Summary of canola oil content trials for different sites (2019-2022).**

Year	Site	Untreated check oil (%)	AGTIV® IGNITE™ L oil (%)	oil increase (%)
2019	**Josephburg**	28.1	28.6	0.6
2019	**Portage la Prairie**	45.5	45.7	0.2
2019	**Swan River**	49.9	52.1	2.1
2020	**Moon Lake**	41.60	43.19	1.6
2020	**Taber**	41.70	42.13	0.4
2020	**Jospehburg**	34.70	36.60	1.9
2020	**Swan River**	38.70	40.50	1.8
2021	**Josephburg**	39.1	39.7	0.6
2021	**Saskatoon**	41.8	42.1	0.3
2021	**Elm Creek**	35.1	37.1	2.0
2021	**Swan River**	37.8	37.8	0.0
2021	**Portage la Prairie**	36.6	36	-0.6
2022	**Saskatoon**	36.6	36.3	-0.3
2022	**Taber**	32.1	32.9	0.8
2022	**Redvers**	36.6	36.5	-0.1
2022	**Swan River**	37.3	37.7	0.4
2022	**Portage la Prairie**	30.6	35.2	4.6
2022	**Elm Creek**	37.7	37.3	-0.4
2022	**Alma**	36.3	36.9	0.6
Total	**19 sites**	37.8 [a]	38.7 [b]	**0.9 %***

*Summary of means for **AGTIV® IGNITE™** are significantly different following a combined site ANOVA and a Tukey test (p<0.1) p=0.05

SUMMARY – SERENDIPITA ON SEED INOCULANT

► PLOT TRIALS

Table 1. **Summary of canola yield, competitor trials, 4 years (n=20).**

	Untreated check (bu/ac)	AGTIV® IGNITE™ L (bu/ac)	Competitor B (bu/ac)
Average Yield	**37.6[a]**	**39.9[b]**	**38.9[a,b]**
Difference vs untreated		**2.3**	**1.3**

*Summary of means for **AGTIV® IGNITE™** are significantly different following a combined site ANOVA and a Tukey test (p<0.01) p=0.00238

Table 2. **Summary of canola seed oil content (%), competitor trials, 3 years (n=14).**

	Untreated check (%)	AGTIV® IGNITE™ L (%)	Competitor B (%)
Average Oil content	**37.2[a]**	**38.1[b]**	**37.2[a]**
Difference vs untreated		**0.9**	**0**

*Summary of means for **AGTIV® IGNITE™** are significantly different following a combined site ANOVA and a Tukey test (p<0.1) p=0.023

EFFICACY REPORT

SUMMARY – SERENDIPITA ON SEED INOCULANT

CANOLA

► PLOT TRIALS

Table 1. **Summary of canola yield competitor trials for different sites (2019-2022).**

Year	Site	Variety	pH	Untreated check yield (bu/ac)	AGTIV® IGNITE™ L yield (bu/ac)	Cpmpetitor B yield (bu/ac)
2019	Josephburg (AB)	75-42BL	7.7	46.8	53.2	45.1
2019	Portage la Prairie (MB)	74-44 BL	8.1	78	78	79.1
2019	Saskatoon (SK)	InVigor L252	8	38.8	41.8	41.4
2019	Swan River (MB)	InVigor L255PC	N/A	53.7	55.4	53.7
2019	Taber (AB)	Pioneer 45M35	6.9	25.4	27	26.2
2019	Swift Current (SK)	InVigor L233P	6.3	25	27.1	26.1
2020	Josephburg (AB)	Pionner 45CS40	6.2	47.2	49.5	49.9
2020	Moon Lake (SK)	Pionner 45CS40	7.9	16.3	18.2	19.5
2020	Swan River (MB)	Pionner 45CS40	N/A	61.2	64	65.7
2020	Taber (AB)	Pionner 45CS40	7.3	37.3	38.5	39.2
2021	Josephburg (AB)	6086 CR	5.8	23.9	25	24.4
2021	Saskatoon (SK)	LL canola P501L	7.9	10.3	12.5	10.1
2021	Elm Creek (MB)	Dekalb dktf 96 sc	8.1	36.2	37.2	38.2
2021	Swan River (MB)	InVigor LL234PC	N/A	46.9	48.2	44.8
2021	Portage-La-Prairie (MB)	RR Canola CS2100	8	36.3	38.9	37.4
2022	Saskatoon (SK)	Pioneer P509-L	8	19.6	21	18.3
2022	Taber (AB)	Dekalb dktf 96 sc	7.8	28.2	32.7	31
2022	Redvers (SK)	InVigor 340 PC	7.6	32.2	35.2	34.4
2022	Swan River (MB)	InVigor LL 234 PC	7.1	60	62.2	61
2022	Portage la Prairie (MB)	Dekalb 75-65 RR	7.7	29.3	32.8	32.8

EFFICACY REPORT

SUMMARY – SERENDIPITA ON SEED INOCULANT

CANOLA

► PLOT TRIALS

Table 1. **Summary of canola seed oil content (%) competitor trials for different sites (2020-2022).**

Year	Site	Variety	pH	Untreated check Oil (%)	AGTIV® IGNITE™ L Oil (%)	Cpmpetitor B Oil (%)
2020	Moon Lake (SK)	Pionner 45CS40	7.9	41.6	43.2	42.7
2020	Taber (AB)	Pionner 45CS40	7.3	41.7	42.1	42.9
2020	Josephburg (AB)	Pionner 45CS40	6.2	34.7	36.6	36.0
2020	Swan River (MB)	Pionner 45CS40	N/A	38.7	40.5	40.7
2021	Josephburg (AB)	6086 CR	5.8	39.1	39.7	39.4
2021	Saskatoon (SK)	LL canola P501L	7.9	41.8	42.1	37.6
2021	Elm Creek (MB)	Dekalb dktf 96 sc	8.1	35.1	37.1	35.8
2021	Swan River (MB)	InVigor LL234PC	N/A	37.8	37.8	37.3
2021	Portage-La-Prairie (MB)	RR Canola CS2100	8	36.6	36.0	31.7
2022	Saskatoon (SK)	Pioneer P509-L	8	36.6	36.3	35.9
2022	Taber (AB)	Dekalb dktf 96 sc	7.8	32.1	32.9	34.5
2022	Redvers (SK)	InVigor 340 PC	7.6	36.6	36.5	35.4
2022	Swan River (MB)	InVigor LL 234 PC	7.1	37.3	37.7	38.1
2022	Portage la Prairie (MB)	Dekalb 75-65 RR	7.7	30.6	35.2	32.6

EFFICACY REPORT
2022 – SERENDIPITA ON SEED INOCULANT

CANOLA

► PLOT TRIAL

Research partner: Integrated Crop Management Services (ICMS)

Research site: Saskatoon, SK

Treatments: a) Untreated Check
b) AGTIV® IGNITE™ L*

* Liquid inoculant applied according to manufacturer's recommended rate

Experimental design: Complete Randomized Block Design, 6 repetitions, 30 m^2 plots

Variety: PIONEER P509-L Treated with Lumiderm, LumiGen and Helix vibrance

Previous crop: Wheat

Seeding details: Seeded on May 26, 2022, with a cone seeder at a rate of 7 kg/ha in a clay soil (pH: 8.0, OM: 8.8 %). Emergence on June 21.

Table 1. **Summary of yields per treatment.**

Treatment	Yield (bu/ac)	Yield increase (bu/ac)	Oil content (%)
Untreated Check	19.6	-	36.6
AGTIV® IGNITE™ L	21.0	1.4	36.3

Plot operational notes and rain fall.

- Fertilizer blend of 80-30-10-20 incorporated in tillage prior to seeding
- Pesticides:
  - July 4, Liberty 150 herbicide (post emergence weeds)
  - August 18, Decis 5EC (flea beetle and grasshopper control)
  - September 6, Reglone Ion (desiccant)
- Harvested on September 16, 2022

Month	Precipitation (mm)
May	25.8
June	38.0
July	46.5
August	25.6
September	6.8
TOTAL	**142.7**

PREMIER TECH

EFFICACY REPORT
2022 – SERENDIPITA ON SEED INOCULANT

CANOLA

► PLOT TRIAL

Research partner: Integrated Crop Management Services (ICMS)

Research site: Portage la Prairie, MB

Treatments: a) Untreated Check
b) AGTIV® IGNITE™ L*

* Liquid inoculant applied according to manufacturer's recommended rate

Experimental design: Complete Randomized Block Design, 6 repetitions, 30 m^2 plots

Variety: DEKALB 75-65 RR Treated with Prosper Evergol

Previous crop: Carrots

Seeding details: Seeded on June 17, 2022, with a cone planter at a rate of 8.2 kg/ha in a clay soil (pH: 7.7, OM: 6.9 %). Emergence on June 23.

Table 1. **Summary of yields per treatment.**

Treatment	Yield (bu/ac)	Yield increase (bu/ac)	Oil content (%)
Untreated Check	29.3	-	30.6
AGTIV® IGNITE™ L	32.8	3.5	35.2

Plot operational notes and rain fall.

- No fertilization
- Pesticides:
  - June 24, Roundup WeatherMAX (volunteer canola control) & Sevin XLR (flea beetle control)con
  - July 14, Roundup WeatherMAX (post emergence weeds control)
  - Harvested on September 26, 2022

Month	Precipitation (mm)
May	140.7
June	70.3
July	96.3
August	89.0
September	50.3
TOTAL	**446.6**

PREMIER TECH

EFFICACY REPORT
2022 – SERENDIPITA ON SEED INOCULANT

CANOLA

► PLOT TRIAL

Research partner: Ag-Quest Inc.

Research site: Taber, AB

Treatments: a) Untreated Check
b) AGTIV® IGNITE™ L*

* Liquid inoculant applied according to manufacturer's recommended rate

Experimental design: Complete Randomized Block Design, 6 repetitions, 30 m^2 plots

Variety: DEKALB DKTF96 SC Treated with Buteo, Prosper EverGol and Fortenza

Previous crop: Rye

Seeding details: Seeded on May 24, 2022, with a cone seeder at a rate of 8 kg/ha in a loam soil (pH: 7.8, OM: 2.6 %). Emergence on June 6.

Table 1. **Summary of yields per treatment.**

Treatment	Yield (bu/ac)	Yield increase (bu/ac)	Oil content (%)
Untreated Check	28.8	-	32.1
AGTIV® IGNITE™ L	32.7	3.9	32.9

Plot operational notes and rain fall.

- Fertilizer blend of 0-58-17 harrowed on May 16, prior to seeding
- Pesticides:
  - May 18, June 9, 17 & 29, Roundup Transorb (Pre and post seeding herbicide)
  - June 22, July 6 & 15, Sevin XLR Plus & Decis (flea beetle control)
- Harvested on August 31, 2022

Month	Precipitation (mm)
May	55.1
June	78.2
July	204.3*
August	89.3*
TOTAL	**426.9**

* Plots were irrigated during those months

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EFFICACY REPORT

2022 – SERENDIPITA ON SEED INOCULANT

CANOLA

► PLOT TRIAL

Research partner: Ag-Quest Inc.

Research site: Elm Creek, MB

Treatments: a) Untreated Check
b) AGTIV® IGNITE™ L*

* Liquid inoculant applied according to manufacturer's recommended rate

Experimental design: Complete Randomized Block Design, 6 repetitions, 34 m^2 plots

Variety: In Vigor L233P Treated with Lumiderm

Previous crop: Rye

Seeding details: Seeded on June 5, 2022, with a cone seeder at a rate of 5.5 kg/ha in a sandy loam soil (pH: 8.3, OM: 2.2 %). Emergence on June 10.

Table 1. **Summary of yields per treatment.**

Treatment	Yield (bu/ac)	Yield increase (bu/ac)	Oil content (%)
Untreated Check	46.1	-	37.7
AGTIV® IGNITE™ L	48.0	1.9	37.3

Plot operational notes and rain fall.

- Broadcast fertilizer blend of 137-36-22-28 prior to seeding
- Pesticides:
  - June 17, Liberty (emerged weeds control)
  - July 1, Centurion + AMIGO (grassy weeds control)
  - July 1, Coragen (grasshopper control)
  - September 8, Reglone Ion (Desiccant)
- Harvested on September 13, 2022

Month	Precipitation (mm)
May	131.0
June	65.6
July	92.6
August	57.6
September	30.8
TOTAL	**377.6**

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EFFICACY REPORT
2022 – SERENDIPITA ON SEED INOCULANT

CANOLA

► PLOT TRIAL

Research partner: Wellington Agricultural Research

Research site: Alma, ON

Treatments: a) Untreated Check
b) AGTIV® IGNITE™ L*

* Liquid inoculant applied according to manufacturer's recommended rate

Experimental design: Complete Randomized Block Design, 6 repetitions, 10 m^2 plots

Variety: In Vigor L233P treated with Prosper Evergol

Previous crop: Soybean

Seeding details: Seeded on May 30, 2022, with a cone seeder at a rate of 5.5 kg/ha in a loam soil (pH: 7.5, OM: 3.7 %). Emergence on June 6.

Table 1. **Summary of yields per treatment.**

Treatment	Yield (bu/ac)	Yield increase (bu/ac)	Oil content (%)
Untreated Check	20.0	-	36.3
AGTIV® IGNITE™ L	21.4	1.4	36.9

Plot operational notes and rain fall.

- Fertilization blend of 51-27-27 prior to seeding on May 10
- Pesticides:
  - June 21, Liberty (emerged weeds control) + Matador (flea beetle control)
- Harvested on September 17, 2022

Month	Precipitation (mm)
May	76.4
June	46.2
July	29.8
August	69.6
TOTAL	**222.0**

PREMIER TECH

EFFICACY REPORT
2022 – SERENDIPITA ON SEED INOCULANT

CANOLA

► PLOT TRIAL

Research partner: South East Research Farm (SERF)

Research site: Redvers, SK

Treatments: a) Untreated Check
b) AGTIV® IGNITE™ L*

* Liquid inoculant applied according to manufacturer's recommended rate

Experimental design: Complete Randomized Block Design, 6 repetitions, 12 m^2 plots

Variety: InVigor L340 PC treated with Vercoras & Poncho

Previous crop: Peas

Seeding details: Seeded on June 1, 2022, with a cone seeder at a rate of 9 kg/ha in a loam soil (pH: 7.6, OM: 4.2 %).

Table 1. **Summary of yields per treatment.**

Treatment	Yield (bu/ac)	Yield increase (bu/ac)	Oil content (%)
Untreated Check	32.2	-	36.6
AGTIV® IGNITE™ L	34.1	1.9	36.5

Plot operational notes and rain fall.

- Fertilization of 100-25-0-6 at seeding
- Pesticides:
  - June 6, Roundup (pre burn off herbicide)
  - June 23, Voliam (flea beetle control)
  - June 23, Liberty (post emerged weeds control)
- Harvested on September 16, 2022

Month	Precipitation (mm)
May	121.0
June	75.0
July	259.0
August	25.2
September	15.0
TOTAL	**495.2**

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EFFICACY REPORT
2022 – SERENDIPITA ON SEED INOCULANT

CANOLA

► PLOT TRIAL

Research partner: New Era Ag Research and Technologies

Research site: Swan River, MB

Treatments: a) Untreated Check
b) AGTIV® IGNITE™ L*

* Liquid inoculant applied according to manufacturer's recommended rate

Experimental design: Complete Randomized Block Design, 6 repetitions, 30 m^2 plots

Variety: InVigor LL 234 PC treated with Lumiderm & Helix Vibrance

Previous crop: Carrots

Seeding details: Seeded on June 5, 2022, with a cone seeder at a rate of 6 kg/ha in a clay loam soil (pH: 7.1, OM: 6.2 %).

Table 1. **Summary of yields and oil content per treatment.**

Treatment	Yield (bu/ac)	Yield increase (bu/ac)	Oil content (%)
Untreated Check	60.0	-	30.6
AGTIV® IGNITE™ L	62.2	2.2	35.2

Plot operational notes and rain fall.

- Fertilization of 147-115-66 in the fall of 2021
- Pesticides:
  - June 19 & 28, ARROW ALL IN (grassy weeds control post herbicide)
  - June 23 & 28, Pounce (flea beetle control)
  - July 22, Cotegra (sclerotinia stem rot control)
- Harvested on September 28, 2022

Month	Precipitation (mm)
May	114.0
June	59.4
July	40.6
August	41.8
September	34.7
TOTAL	**290.5**

PREMIER TECH

SUMMARY – SERENDIPITA ON SEED INOCULANT

► PLOT TRIALS

Table 1. **Summary of durum wheat yield trials for different sites (2021-2022).**

Year	Sites	Untreated check yield (bu/ac)	AGTIV® IGNITE™ L yield (bu/ac)	Yield increase (bu/ac)
2021	**Lethbridge**	66.7	73.3	6.6
2021	**Vulcan**	25.8	28.8	3
2021	**Taber**	39.0	40.6	1.6
2021	**Swift Current**	11.8	14.4	2.6
2022	**Lethbridge**	50.2	59.0	8.8
2022	**Swift Current**	54	55.8	1.8
2022	**Vulcan**	29.2	31.0	1.8
2022	**Taber**	27.3	31.8	4.5
Total	**8 sites**	**38.0[a]**	**41.8[b]**	**3.8 bu/ac ***

* Yields with same letter are not statistically different according to a Tukey HSD test ($p \leq 0.05$).

EFFICACY REPORT

SUMMARY – SERENDIPITA ON SEED INOCULANT

DURUM WHEAT

► PLOT TRIALS

Table 1. **Summary of durum wheat yield competitor trials for different sites (2021-2022).**

Year	Site	Variety	pH	Untreated check yield (bu/ac)	AGTIV® IGNITE™ L yield (bu/ac)	Cpmpetitor B yield (bu/ac)
2021	Swift Current(SK)	Transcend	6.5	11.8	14.4	13.4
2021	Vulcan (AB)	Spifire	7.5	25.8	28.8	24.7
2021	Taber (AB)	Strongfield	7.8	39	40.6	39.8
2021	Leftbridge (AB)	Grainland	7.4	66.7	73.3	74
2022	Leftbridge (AB)	Grainland	7.4	50.1	59	56
2022	Taber (AB)	Strongfield	7.8	27.3	31.8	28.4
2022	Swift Current(SK)	Alloy	6.1	54	55.8	56
2022	Vulcan (AB)	Spitfire	7.6	29.2	31	30.5

Table 2**. Summary of durum wheat yield, competitor trials, 2 years (n=8).**

	Untreated check (bu/ac)	AGTIV® IGNITE™ L (bu/ac)	Cpmpetitor B yield (bu/ac)
Average Yield	**38.0[a]**	**41.8[b]**	**40.4[a,b]**
Difference vs untreated		**3.8**	**2.4**

[1] Yields with same letter are not statistically different according to a Tukey HSD test (p<0.05), p=0.00227.

PREMIER TECH

EFFICACY REPORT
2022 – SERENDIPITA ON SEED INOCULANT

DURUM WHEAT

► PLOT TRIAL

Research partner: Prairie Ag Research

Research site: Lethbridge, AB

Treatments: a) Untreated Check
b) AGTIV® IGNITE™ L*

* Liquid inoculant applied according to manufacturer's recommended rate

Experimental design: Complete Randomized Block Design, 6 repetitions, 12 m^2 plots

Variety: Grainland

Previous crop: Fallow

Seeding details: Seeded on May 23, 2022, with a cone seeder at a rate of 100 kg/ha in a clay loam soil (pH: 7.4, OM: 4 %). Emergence on May 30.

Table 1. **Summary of yields per treatment.**

Treatment	Yield [1] (bu/ac)	Yield increase (bu/ac)
Untreated Check	50.2 [b]	-
AGTIV® IGNITE™ L	59.0 [a]	8.8

[1] Yields with same letter are not statistically different according to a Tukey HSD test (p≤0.05).

Plot operational notes and rain fall.

- No fertilization
- Pesticides:
  - May 20, Glyphosate (pre seeding burn off)
  - June 30, Infinity (broadleaf weeds control)
- Harvested on September 14, 2022

Month	Precipitation (mm)
May	17.5
June	140.5 *
July	204.3 *
August	84.9 *
September	9.7
TOTAL	**456.9**

* Plots were irrigated during those months

PREMIER TECH

EFFICACY REPORT
2022 – SERENDIPITA ON SEED INOCULANT

DURUM WHEAT

► PLOT TRIAL

Research partner: Wheatland Conservation Area

Research site: Swift Current, SK

Treatments: a) Untreated Check
b) AGTIV® IGNITE™ L*

* Liquid inoculant applied according to manufacturer's recommended rate

Experimental design: Complete Randomized Block Design, 8 repetitions, 17 m^2 plots

Variety: Alloy

Previous crop: Wheat

Seeding details: Seeded on May 18, 2022, with a cone seeder at a rate of 123 kg/ha in a sandy loam soil (pH: 6.1, OM: 2.7 %).

Table 1. **Summary of yields per treatment.**

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated Check	54.0	-
AGTIV® IGNITE™ L	55.8	1.8

Plot operational notes and rain fall.

- Fertilization of 30-15-0-6 (374 kg/ha) sidebanded on June 8
- Pesticides:
  - May 2, RT540 (pre burn off herbicide)
  - June 8 Achieve (post emergence weeds control)
- Harvested on August 16, 2022

Month	Precipitation (mm)
May	51.2
June	37.7
July	90.4
August	7.5
TOTAL	**186.8**

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EFFICACY REPORT
2022 – SERENDIPITA ON SEED INOCULANT

DURUM WHEAT

► PLOT TRIAL

Research partner: Small Plot

Research site: Vulcan, AB

Treatments: a) Untreated Check
b) AGTIV® IGNITE™ L*

* Liquid inoculant applied according to manufacturer's recommended rate

Experimental design: Complete Randomized Block Design, 8 repetitions, 16 m^2 plots

Variety: Spitfire

Previous crop: Rye

Seeding details: Seeded on May 16, 2022, with a plot drilling machine at a rate of 130 kg/ha in a clay loam soil (pH: 7.6, OM: 3 %). Emergence on May 28.

Table 1. **Summary of yields per treatment.**

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated Check	29.2	-
AGTIV® IGNITE™ L	31.0	1.8

Plot operational notes and rain fall.

- Fertilization of 60-15-15-6 sidebanded at seeding on May 16
- Pesticides:
  - June 25: Herbicide Epic and Stellar XL
  - ZIVATA for grasshoppers control
- Harvested on August 30, 2022

Month	Precipitation (mm)
May	9.8
June	136.8
July	86.0
August	18.1
TOTAL	**250.7**

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EFFICACY REPORT
2022 – SERENDIPITA ON SEED INOCULANT

DURUM WHEAT

► PLOT TRIAL

Research partner: Ag-Quest

Research site: Taber, AB

Treatments: a) Untreated Check
b) AGTIV® IGNITE™ L*

* Liquid inoculant applied according to manufacturer's recommended rate

Experimental design: Complete Randomized Block Design, 6 repetitions, 22.5 m^2 plots

Variety: Strongfield

Previous crop: Rye

Seeding details: Seeded on May 17, 2022, with a cone seeder at a rate of 117 kg/ha in a sandy loam soil (pH: 7.8, OM: 2.6 %). Emergence on May 20.

Table 1. **Summary of yields per treatment.**

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated Check	27.3	-
AGTIV® IGNITE™ L	31.8	4.5

Plot operational notes and rain fall.

- Fertilization of 5-20-5 prior to seeding
- Pesticides:
  - May 18, Roundup Transorb (pre emergence herbicide
  - June 19, Achieve liquid (emerged weeds)
  - July 6, Infinity and Achieve Liquid (annual grass control)
- Harvested on August 30, 2022

Month	Precipitation (mm)
May	16.1
June	78.2
July	204.3*
August	89.3*
TOTAL	**387.9**

* Plots were irrigated during those months

PREMIER TECH

EFFICACY REPORT

2021 – SERENDIPITA ON SEED INOCULANT

DURUM WHEAT

► PLOT TRIAL

Research partner: Prairie Ag Research

Research site: Lethbridge, AB

Treatments: a) Untreated Check
b) AGTIV® IGNITE™ L*

* Liquid inoculant applied according to manufacturer's recommended rate

Experimental design: Complete Randomized Block Design, 8 repetitions, 12 m^2 plots

Variety: Grainland

Previous crop: Barley

Seeding details: Seeded on May 31, 2021, with a cone seeder at a rate of 100 kg/ha in a clay loam soil (pH: 7.4, OM: 2.9 %). Emergence on June 7.

Table 1. **Summary of yields and protein content per treatment.**

Treatment	Yield [1] (bu/ac)	Yield increase (bu/ac)	Protein (%)
Untreated Check	66.7 [b]	-	19.2
AGTIV® IGNITE™ L	73.3 [a]	6.6	20.3

[1] Yields with same letter are not statistically different according to a Tukey HSD test ($p \leq 0.05$).

Plot operational notes and rain fall.

- No fertilization
- Pesticides:
  - May 31, Glyphosate (emerged weeds)
  - June 28, Achieve, Infinity and Turbocharge (broadleaf weeds)
- Harvested on September 14, 2021

Month	Precipitation (mm)
May	33.1
June	76.5
July	70.3
August	35.6
TOTAL	**215.5**

PREMIER TECH

EFFICACY REPORT
2021 – SERENDIPITA ON SEED INOCULANT

DURUM WHEAT

► PLOT TRIAL

Research partner: Small Plot

Research site: Vulcan, AB

Treatments: a) Untreated Check
b) AGTIV® IGNITE™ L*

* Liquid inoculant applied according to manufacturer's recommended rate

Experimental design: Complete Randomized Block Design, 8 repetitions, 32 m^2 plots

Variety: Spitfire

Previous crop: Oats

Seeding details: Seeded on May 16, 2021, with a plot drilling machine at a rate of 115 kg/ha in a loam soil (pH: 7.5, OM: 3 %). Emergence on May 20.

Table 1. **Summary of yields per treatment.**

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated Check	25.8	-
AGTIV® IGNITE™ L	28.8	3.0

Plot operational notes and rain fall.

- 70-20-20-20 sidebanded at seeding
- Pesticides:
  - July 25, sprayed for grasshoppers
- Harvested on August 30, 2021

Month	Precipitation (mm)
May	167
June	109
July	152
August	163
TOTAL	**591**

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EFFICACY REPORT

2021 – SERENDIPITA ON SEED INOCULANT

DURUM WHEAT

► PLOT TRIAL

Research partner: Ag-Quest

Research site: Taber, AB

Treatments: a) Untreated Check
b) AGTIV® IGNITE™ L*

* Liquid inoculant applied according to manufacturer's recommended rate

Experimental design: Complete Randomized Block Design, 8 repetitions, 22.5 m^2 plots

Variety: Strongfield

Previous crop: Rye

Seeding details: Seeded on June 6, 2021, with a cone seeder at a rate of 130 kg/ha in a loam soil (pH: 7.8, OM: 2.2 %). Emergence on June 20.

Table 1. **Summary of yields per treatment.**

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated Check	39	-
AGTIV® IGNITE™ L	40.6	1.6

Plot operational notes and rain fall.

- No fertilization
- Pesticides:
  - July 2, Infinity and Achieve Herbicide (broadleaf control)
  - July 16, Axial Herbicide (annual grass control)
- Harvested on September 3, 2021

Month	Precipitation (mm)
May	24.8
June	89.9
July	78.5
August	53.7
TOTAL	**246.9**

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EFFICACY REPORT

2021 – SERENDIPITA ON SEED INOCULANT

DURUM WHEAT

► PLOT TRIAL

Research partner: Wheatland Conservation Area

Research site: Swift Current, SK

Treatments: a) Untreated Check
b) AGTIV® IGNITE™ L*

* Liquid inoculant applied according to manufacturer's recommended rate

Experimental design: Complete Randomized Block Design, 8 repetitions, 18 m^2 plots

Variety: Transcend

Previous crop: Barley

Seeding details: Seeded on May 28, 2021, with a cone seeder at a rate of 130 kg/ha in a sandy loam soil (pH: 6.5, OM: 2.7 %). Emergence on June 11.

Table 1. **Summary of yields per treatment.**

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated Check	11.8	-
AGTIV® IGNITE™ L	14.4	2.6

Plot operational notes and rain fall.

- 30-15-06-6 sidebanded at seeding
- Pesticides:
  - May 4, RT540 + Aim EC (pre emergence herbicide)
  - June 17 Achieve + Buctril (Emerged weeds)
- Harvested on August 27, 2021

Month	Precipitation (mm)
May	44.1
June	74.5
July	51.9
August	43.2
TOTAL	**213.7**

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EFFICACY REPORT 2023

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