PREMIER TECH

AGTIV®

EFFICACY REPORT

2026

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LENTIL

AVERAGE YIELD INCREASE

AGTIV THRIVE

2.7 bu/ac

8.6%

182 kg/ha

68 sites over 16 years

Canada

EFFICACY REPORT

TRIALS PICTURES

LENTIL

AGTIV THRIVE

Lentil split field with AGTIV THRIVE® PULSES vs competitor inoculant.
Plant growth and health is enhanced on the right,
and row closure occurs sooner in AGTIV® lentil fields.

Enhanced root development leads to thicker stems,
which help lentils stand better and increases ease of harvest.

EFFICACY REPORT

SUMMARY – MYCORRHIZAL & RHIZOBIAL INOCULANT

LENTIL AGTIV THRIVE

► PLOT & STRIP TRIALS

Research partners:
- Ag-Quest;
- G-MAC's AgTeam;
- Palliser Triangle Research Inc.;
- Prairie Ag Research Inc.;
- Small Plot Inc.;
- Wheatland Conservation Area Inc.

Research sites:
- Saskatchewan;
- Alberta.

Treatments*:
a) AGTIV THRIVE® PEA & LENTIL;
b) Competitor inoculant A;
c) Competitor inoculant B;
d) Competitor inoculant C;
e) Competitor inoculant D.

*Products applied according to the manufacturer's recommended rate.

Experimental design:
- Randomized Complete Block Design: 11 trials (6-8 repetitions each)
- Strip trial: 1 trial (2 repetitions)

► GROWER DEMONSTRATIONS

Experimental design: Split field: 56 demos

Table 1. **Summary of yields (bu/ac) per trial**

Year	Location	Seed variety	AGTIV THRIVE® PEA & LENTIL	Competitor inoculant			
				A	B	C	D
2015	Brock	N.A.	18.4	13.4	11.4		
2016	Swift Current	Small Red Lentils, Imax CL	50.1	43.3	41.1	37.7	
2017	Coalhurst	N.A.	19.5	19.1	19.2	18.5	
2019	Vulcan	Pedigree CDC Proclaim	32.6	28.8			28.4
2021	Lethbridge	Proclaim	46.8		46.4		
	Vulcan	Impulse	10		8.4		
2022	Lethbridge	Impulse	32		31.9		
	Vulcan	Impulse	38.7		38.3		
	Swift Current	Impulse	35		32.6		
2023	Taber	Impulse	30.1		25.7		27.7
2025	Avonlea	CDC Nimble CL	49.0				47.0
	Vulcan	CDC Nimble	58.9				58.0

EFFICACY REPORT

2025 – MYCORRHIZAL & RHIZOBIAL INOCULANT

LENTIL AGTIV THRIVE

► PLOT TRIAL

Research partner: Palliser Triangle Research Inc.

Research site: Avonlea, SK

Treatments*:
a) Untreated check;
b) AGTIV THRIVE® PEA & LENTIL;
c) Competitor inoculant D.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 8 repetitions, 7.2 m^2 plots

Variety: CDC Nimble CL treated with Vibrance Maxx

Previous crop: Canola

Seeding details: Seeded on May 13 with a custom-built R-tech seeder at a rate of 73 kg/ha in a loam soil (pH: 8.1, OM: 2.4%). Emergence on May 27.

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated check	47.3	-
AGTIV THRIVE® PEA & LENTIL	49.0	1.7
Competitor inoculant D	47.0	-

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 11-52-0 (50 kg/ha): May 13

Pesticides:
- Voraxor (19.5 mL/ac): May 3
- Zidua SC (49.0 mL/ac): May 3
- RT 540 (1.0 L/ac): May 3
- Merge (400 mL/ac) : May 3
- Interlock (100 mL/ac): May 3
- Solo ADV (325 mL/ac): May 31
- Delaro Complete (362 mL/ac): July 6
- Reglone Ion (0.83 L/ac): August 8
- Excel 70 (0.2% v/v): August 8

Harvesting: August 17, 2025

Month	Precipitation (mm)
May	83.1
June	47.7
July	73.7
August	16.0
TOTAL	**220.5**

EFFICACY REPORT

2025 – MYCORRHIZAL & RHIZOBIAL INOCULANT

LENTIL

AGTIV THRIVE

► PLOT TRIAL

Research partner: Small Plot Inc.

Research site: Vulcan, AB

Treatments*: a) Untreated check;
b) AGTIV THRIVE® PEA & LENTIL;
c) Competitor inoculant D.

*Products applied according to the manufacturer's recommended rate.

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

Variety: CDC Nimble

Previous crop: Durum wheat

Seeding details: Seeded on May 7 with a plot drilling machine at a rate of 71 kg/ha in a clay loam soil (pH: 8.1, OM: 2.1%). Emergence on May 20.

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated check	57.8	-
AGTIV THRIVE® PEA & LENTIL	58.9	1.1
Competitor inoculant D	58.0	0.2

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 11-52-0 (90 kg/ha): May 7

Pesticides: Odyssey NXT (17 g/ac): June 6

Harvesting: August 25, 2025

Month	Precipitation (mm)
May	29.0
June	96.5
July	92.2
August	25.7
TOTAL	**243.4**

EFFICACY REPORT

2023 – MYCORRHIZAL & RHIZOBIAL INOCULANT

LENTIL AGTIV THRIVE

► PLOT TRIAL

Research partner: Ag-Quest Inc

Research site: Taber, AB

Treatments:
a) Untreated check;
b) AGTIV THRIVE® PEA & LENTIL;
c) Competitor inoculant B;
d) Competitor inoculant D.

*Products applied according to the manufacturer's recommended rate.

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

Variety: CDC Impulse

Previous crop: Winter rye

Seeding details: Seeded on May 26 with a cone seeder at a rate of 50 kg/ha in a clay loam soil (pH: 7.5, OM: 3%). Emergence on June 9.

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: None

Pesticides:
- Rival EC (1.73 L/ha): May 25
- Solo ADV (0.80 L/ha): June 17
- Reglone Ion (2.47 L/ha): September 12 and 18
- Agral 90 (0.5% v/v): September 12 and 18

Harvesting: September 21, 2023

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated check	26.3	-
AGTIV THRIVE® PEA & LENTIL	30.1	3.8
Competitor inoculant B	25.7	-
Competitor inoculant D	27.7	1.4

Month	Precipitation (mm)	Irrigation (mm)
May	18.2	
June	54.8	127.0
July	8.7	279.4
August	18.8	152.4
TOTAL	**100.5**	**558.8**

EFFICACY REPORT

2022 – MYCORRHIZAL & RHIZOBIAL INOCULANT

LENTIL AGTIV THRIVE

► PLOT TRIAL

Research partner: Prairie Ag Research Inc.

Research site: Lethbridge, AB

Treatments:
a) Untreated check;
b) AGTIV THRIVE® PEA & LENTIL*;
c) Competitor inoculant B*.

*Products applied according to the manufacturer's recommended rate.

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

Variety: Impulse

Previous crop: Fallow

Seeding details: Seeded on May 23, with a cone seeder at a rate of 50 kg/ha in a clay loam soil (pH: 7.4, OM: 4%). Emergence on May 30.

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: None

Pesticides:
- Glyphosate: May 20
- Odyssey and Merge: June 30

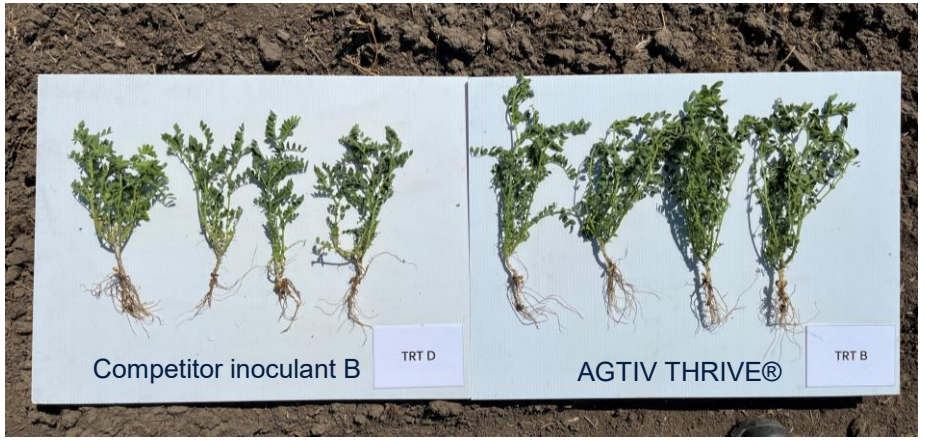
Harvesting: September 7, 2022

Month	Precipitation (mm)
May	35.8
June	114.5 *
July	57.4
August	31.7 *
TOTAL	**239.4**

* Plots were irrigated during those months

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated check	30.1	-
AGTIV THRIVE® PEA & LENTIL	32.0	1.9
Competitor inoculant B	31.9	1.8



EFFICACY REPORT

2022 – MYCORRHIZAL & RHIZOBIAL INOCULANT

LENTIL AGTIV THRIVE

► PLOT TRIAL

Research partner: Small Plot Inc.

Research site: Vulcan, AB

Treatments:
a) Untreated check;
b) AGTIV THRIVE® PEA & LENTIL*;
c) Competitor inoculant B*.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 6 repetitions, 16 m^2 plots.

Variety: Impulse

Previous crop: Fallow

Seeding details: Seeded on May 12, 2022, with a plot drill machine at a rate of 89 kg/ha in a loam soil (pH: 7, OM: 3.5%). Emergence on May 30.

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated check	37.1	-
AGTIV THRIVE® PEA & LENTIL	38.7	1.6
Competitor inoculant B	38.3	1.2

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 11-51-0-0 sidebanded at seeding

Pesticides:
- Odyssey NXT: July 3
- ZIVATA: twice

Harvesting: August 30, 2022

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

EFFICACY REPORT

2022 – MYCORRHIZAL & RHIZOBIAL INOCULANT

LENTIL AGTIV THRIVE

► PLOT TRIAL

Research partner: Wheatland Conservation Area Inc.

Research site: Swift Current, SK

Treatments:
a) Untreated check;
b) AGTIV THRIVE® PEA & LENTIL*;
c) Competitor inoculant B*.

*Products applied according to the manufacturer's recommended rate.

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

Variety: Impulse

Previous crop: Wheat

Seeding details: Seeded on May 6, with a cone seeder at a rate of 67 kg/ha in a sandy loam soil (pH: 6.1, OM: 2.7%). Emergence on May 27.

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 11-52-0 (100 kg/ha): May 6

Pesticides:
- RT540: May 2
- Centurion: June 7
- AMIGO: June 7
- Solo ADV: June 16
- Proline GOLD: July 27
- Reglone: August 8

Harvesting: August 8, 2022

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

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated check	32.9	-
AGTIV THRIVE® PEA & LENTIL	35.0	2.1
Competitor inoculant B	32.6	-

EFFICACY REPORT

2021 – MYCORRHIZAL & RHIZOBIAL INOCULANT

LENTIL

AGTIV THRIVE

► PLOT TRIAL

Research partner: Prairie Ag Research Inc.

Research site: Lethbridge, AB

Treatments:
a) Untreated check;
b) AGTIV® PULSES • Granular*;
c) Competitor inoculant B*.

*Products applied according to the manufacturer's recommended rate.

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

Variety: Proclaim

Previous crop: Barley

Seeding details: Seeded on May 19, with a cone seeder at a rate of 50 kg/ha.

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: None

Pesticides:
- Glyphosate: May 19
- Odyssey: June 28
- Merge: June 28

Harvesting: September 14, 2021

Month	Precipitation (mm)
May	33.1
June	16.5
July	10.3
August	35.6
TOTAL	**95.5**

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)	Protein content (%)
Untreated check	42.7	-	27.5
AGTIV® PULSES • Granular	46.8	4.1	27.8
Competitor inoculant B	46.4	3.7	27.2

EFFICACY REPORT

2021 – MYCORRHIZAL & RHIZOBIAL INOCULANT

LENTIL

AGTIV THRIVE

► PLOT TRIAL

Research partner: Small Plot Inc.

Research site: Vulcan, AB

Treatments:
a) Untreated check;
b) AGTIV® PULSES • Granular*;
c) Competitor inoculant B*.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 6 repetitions, 16 m^2 plots.

Variety: Impulse

Previous crop: Wheat

Seeding details: Seeded on May 15, with a plot drilling machine at a rate of 72 kg/ha.

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated check	9.1	-
AGTIV® PULSES • Granular	10.0	0.9
Competitor inoculant B	8.4	-

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 11-51-0-0 sidebanded at seeding

Pesticides: Odyssey NTX: June 13

Harvesting: August 25, 2021

Month	Precipitation (mm)
May	3.8
June	42.4
July	27.6
August	38.6
September	41.1
TOTAL	**153.5**

EFFICACY REPORT

2019 – MYCORRHIZAL & RHIZOBIAL INOCULANT

LENTIL

AGTIV THRIVE

► PLOT TRIAL

Research partner: Small Plot Inc.

Research site: Vulcan, AB

Treatments:
a) ALPINE G22™ Liquid*;
b) ALPINE G22™ and AGTIV® COMBO • Liquid for PULSES*;
c) ALPINE G22™ and Competitor inoculant A*;
d) ALPINE G22™ and Competitor inoculant D*.

*Products applied according to manufacturers' recommended rate.

Experimental design: Randomized Complete Block Design, 6 repetitions.

Variety: Pedigree CDC Proclaim

Previous crop: Canola

Seeding details: Seeded May 14, at 65 lb/ac with a 22.8 cm row spacing. Products were applied in-furrow.

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

Treatment	Yield (bu/ac)	Yield (kg/ha)
ALPINE G22™ Liquid	25.0 [a]	1681 [a]
ALPINE G22™ and AGTIV® COMBO • Liquid for PULSES	32.6 [b]	2192 [b]
ALPINE G22™ and Competitor inoculant A	28.8 [ab]	1937 [ab]
ALPINE G22™ and Competitor inoculant D	28.4 [ab]	1910 [ab]

[1] Yields followed by different letters are significantly different (LSD Test at $p<0.05$).
Data from bloc 1 were not analyzed due to a high presence of *Kochia scoparia*.

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: ALPINE G22™

Pesticides: One herbicide: June 6

Harvesting: Dessicated September 22;
Combined October 17.

Month	Precipitation (mm)
May	16
June	50
July	16
August	25
TOTAL	**107**

EFFICACY REPORT

2016 – MYCORRHIZAL & RHIZOBIAL INOCULANT

LENTIL

AGTIV THRIVE

► PLOT TRIAL

Research partner: Wheatland Conservation Area Inc.

Research site: Swift Current, SK

Treatments:
a) AGTIV® PULSES • Granular applied at 5 lb/ac*;
b) AGTIV® RHIZO • Granular for PULSES applied at 5 lb/ac*;
c) Competitor inoculant A applied at 3.6 lb/ac*;
d) Competitor inoculant B applied at 3.6 lb/ac*;
e) Competitor inoculant C applied at 5.1 lb/ac*.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 8 repetitions

Variety: Small Red Lentils, Imax CL

Previous crop: Canola

Seeding details: Seeded at 68 lb/ac to obtain 12 plants/ft^2 using Fabro plot dill, Atomjet knife openers.

Fertility: 98 lb/ac of 11-52-0 side banded

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: None

Pesticides:
- RT 540 (0.67 L/ac): preseed burnoff
- Edge (15 lb/ac): pre-seed
- Odyssey (17.3 g/ac)
- Poast Ultra (190 mL/ac)
- Merge spray solution (0.5 L/100 L)
- Priaxor (180 mL/ac): at 10% flower

Month	Precipitation (mm)
April	7
May	129.3
June	85.1
July	115
August	58
September	39
October	58
TOTAL	**491.4**

Harvesting: Dessicated: Reglone + Ag Surf adjuvant (700 mL/ac + 0.1 L/100 L). Combined with Wintersteiger.

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

Treatment	Yield (bu/ac)	Yield (kg/ha)
AGTIV® PULSES • Granular (dual inoculant)	50.1 [b]	3369 [b]
AGTIV® RHIZO • Granular for PULSES (single inoculant)	46.6 [b]	3134 [b]
Competitor inoculant A	43.3 [a,b]	2912 [a,b]
Competitor inoculant B	41.1 [a]	2764 [a]
Competitor inoculant C	37.7 [a2]	2535 [a2]

[1] Average yields followed by different letters are significantly different using Duncan's multiple range test at p≤0.1.
[2] The difference in yield is significant at *p= 0.012*, compared with AGTIV® PULSES • Granular (dual inoculant).

Data analysis:
As noted byWheatland Conservation Area Inc., the lower part of the field had damaging effect on all plots of replicate 7 and the first plot of replicate 8, which was the competitor inoculant B treatment.
All data from those affected plots were removed from the analysis.

EFFICACY REPORT

2015 – MYCORRHIZAL & RHIZOBIAL INOCULANT

LENTIL

AGTIV THRIVE

► STRIP TRIAL

Research partner: G-MAC's AgTeam

Research site: Brock, SK

Objective: Evaluate the performance of competitor inoculant brands with an emphasis on comparing granular formulations against the competitor inoculant D liquid formulation on lentil.

Treatments:
a) AGTIV® PULSES • Granular applied at 5 lb/ac*;
b) Competitor inoculant A granular applied at 3.6 lb/ac*;
c) Competitor inoculant B granular applied at 3.6 lb/ac*;
d) Competitor inoculant C granular applied at 3.6 lb/ac*;
e) Competitor inoculant D liquid applied at 76 mL/bu*;
f) Competitor inoculant D liquid applied at 76 mL/bu + Competitor inoculant B granular applied at 1.8 lb/ac*.

* Products applied according to manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, minimum of 2 repetitions. See field layout.

Seeding details: Seeded on May 9, using the growers' existing machinery.

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

Treatment	Yield (bu/ac)	Yield (kg/ha)
AGTIV® PULSES • Granular (dual inoculant)	18.4	1237
Competitor inoculant A	13.4	901
Competitor inoculant B	11.4	767
Competitor inoculant C	11.8	794
Competitor inoculant D	11.3	760
Competitor inoculant D + B	11.1	747

Field layout

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: None

Pesticides: In-season herbicide, fungicide, and insecticide, applications were all registered practices and made in accordance with product labels.

Month	Precipitation (mm)
May	0.8
June	1.43
July	2.31
TOTAL	**4.54**

Harvesting: August 31, 2015, using the growers' existing machinery. Harvest data was scaled with weigh wagons then recorded.

PEA

AVERAGE YIELD INCREASE

AGTIV THRIVE

3.5 bu/ac

6.1%

235 kg/ha

30 sites over 14 years

Canada

TRIALS PICTURES

PEA

AGTIV THRIVE

Pea split field with AGTIV THRIVE® PEA & LENTIL vs competitor inoculant.
Enhanced plant growth and health,
and sooner row closure in AGTIV® pea fields, on the right.

AGTIV® pea plants have a better developed root system
with more branching, which leads to increased plant health and growth.

EFFICACY REPORT

SUMMARY – MYCORRHIZAL & RHIZOBIAL INOCULANT

PEA AGTIV THRIVE

► PLOT TRIALS

Research partners:
- Ag-Quest Inc;
- ICMS;
- New Era Ag Research;
- Wheatland Conservation Area Inc.

Research sites:
- Alberta;
- Saskatchewan;
- Manitoba.

Treatments*:
a) AGTIV THRIVE® PEA & LENTIL;
b) Competitor inoculant A;
c) Competitor inoculant B;
d) Competitor inoculant D.

*Products applied according to the manufacturer's recommended rate.

Experimental design:
- Randomized Complete Block Design: 12 trials (5-8 repetitions each)

► GROWER DEMONSTRATIONS

Experimental design: Split field: 16 demos

Table 1. **Summary of yields (bu/ac) per trial**

Year	Location	Seed variety	AGTIV THRIVE® PEA & LENTIL	Competitor inoculant		
				A	B	D
2015	Fort Saskatchewan	Meadow	88.6	86.2	79.5	
2017	Swift Current	Amarillo	14	12.7	12.4	
2019	Saskatoon	AAC Ardill	65	52		63.2
2021	Portage la Prairie	Carver	45.2		41.3	
2022	Josephburg	Striker	45.4		46.6	
	Saskatoon	ACC Ardill	36.4		35.8	
	Saskatoon	CDC Spectrum	30.7		28.8	
	Swan River	Inca	91.5		87.1	
2023	Swan River	Inca	57.2		58.4	
2024	Olds	CDC Spectrum	75.5			74
2025	Moon Lake	CDC Lewochko	67.1			69.4
	Josephburg	CDC Canary	56.7			55.8

EFFICACY REPORT

2025 – MYCORRHIZAL & RHIZOBIAL INOCULANT

PEA AGTIV THRIVE

► PLOT TRIAL

Research partner: ICMS

Research site: Moon Lake, SK

Treatments*:
a) Untreated check;
b) AGTIV THRIVE® PEA & LENTIL;
c) Competitor inoculant D.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 8 repetitions, 33.12 m^2 plots

Variety: CDC Lewochko

Previous crop: Canola

Seeding details: Seeded on May 23 with a cone planter at a rate of 225 kg/ha in a clay soil (pH: 8.0, OM: 6.6%). Emergence on June 6.

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated check	63.0	-
AGTIV THRIVE® PEA & LENTIL	67.1	4.1
Competitor inoculant D	69.4	6.4

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 11-52-0 (31 kg/ha): May 23

Pesticides:
- Trico (6.07 L/ac): August 18
- Reglone Ion (0.83 L/ac): September 8

Harvesting: September 15, 2025

Month	Precipitation (mm)
May	7.9
June	78.4
July	69.0
August	43.3
September	4.4
TOTAL	**203.0**

EFFICACY REPORT

2025 – MYCORRHIZAL & RHIZOBIAL INOCULANT

PEA AGTIV THRIVE

► PLOT TRIAL

Research partner: ICMS

Research site: Josephburg, AB

Treatments*:
a) Untreated check;
b) AGTIV THRIVE® PEA & LENTIL;
c) Competitor inoculant D.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design
8 repetitions, 29.28 m^2 plots

Variety: CDC Canary

Previous crop: Barley

Seeding details: Seeded on May 15 with a cone planter at a rate of 225 kg/ha in a loam soil (pH: 6.2, OM: 7.9%).
Emergence on May 29.

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated check	54.4	-
AGTIV THRIVE® PEA & LENTIL	56.7	2.3
Competitor inoculant D	55.8	1.4

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: Blend of 46-0-0 (92 kg/ha) + 11-52-0 (63 kg/ha) + 16-0-0-40 (84 kg/ha): May 15

Pesticides:
- Odyssey NXT (43 g/ha): June 4
- Poast Ultra (0.19 L/ac): June 4
- Merge (0.5/100 L): June 4 and August 20
- Select (0.38 L/ha): June 22
- Roundup (1.25 L/ha): August 20
- Heat LQ (0.146 L/ha): August 20

Harvesting: September 4, 2025

Month	Precipitation (mm)
May	18.6
June	72.0
July	64.8
August	63.7
TOTAL	**219.1**

EFFICACY REPORT

2024 – MYCORRHIZAL & RHIZOBIAL INOCULANT

PEA AGTIV THRIVE

► PLOT TRIAL

Research partner: Olds College Centre for Innovation (OCCI)

Research site: Olds, AB

Treatments*:
a) Untreated check;
b) AGTIV THRIVE® PEA & LENTIL;
c) Competitor inoculant D.

*Products applied according to the manufacturer's recommended rate.

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

Variety: CDC Spectrum

Previous crop: Barley (hay)

Seeding details: Seeded on May 28 with a plot drilling machine at a rate of 88 plants/m^2 in a loam soil (pH: 7.2, OM: 7.3%). Emergence on June 4.

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 12-51-0 (25 kg/ha): May 28

Pesticides:
- Viper ADV (0.404 L/ac): At the 4th internode stage
- UAN (0.81 L/ac): At the 4th internode stage

Harvesting: September 9, 2024

Month	Precipitation (mm)
May	69
June	72.8
July	21
August	70.8
TOTAL	**233.6**

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated check	70.7	-
AGTIV THRIVE® PEA & LENTIL	75.5	4.8
Competitor inoculant D	74	3.3

EFFICACY REPORT

2023 – MYCORRHIZAL & RHIZOBIAL INOCULANT

PEA AGTIV THRIVE

► PLOT TRIAL

Research partners: New Era Ag Research

Research sites: Swan River, MB

Treatments:
a) Untreated check;
b) AGTIV THRIVE® PEA & LENTIL;
c) Competitor inoculant B.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block, 6 repetitions, 16.95 m^2 plots

Variety: Inca treated with Insure Pulse

Previous crop: Wheat

Seeding details: Seeded on May 13 with a direct drill seeder at a rate of 240 lb/ac in a loam soil (pH: 6.9, OM:4.8%). Emergence on May 24.

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated check	53.6	-
AGTIV THRIVE® PEA & LENTIL	57.2	3.6
Competitor inoculant B	58.4	4.8

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 11-52-0 (38 lb/ac): May 13

Pesticides:
- Arrow-All-In-One (100 mL/ac): June 2
- Coragen (101 mL/ac): June 2
- Viper ADV (400 mL/ac): June 8
- Delaro (356 mL/ac): June 30

Harvesting: August 15, 2023

Month	Precipitation (mm)
May	19.7
June	45.3
July	33.0
August	118.2
TOTAL	**216.2**

EFFICACY REPORT

2022 – MYCORRHIZAL & RHIZOBIAL INOCULANT

PEA AGTIV THRIVE

► PLOT TRIAL

Research partner: ICMS

Research site: Josephburg, AB

Treatments:
a) Untreated check;
b) AGTIV THRIVE® PEA & LENTIL;
c) Competitor inoculant B*.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 8 repetitions, 15 m^2 plots.

Variety: Stricker

Previous crop: Fallow

Seeding details: Seeded on June 20, with a cone seeder at a rate of 160 kg/ha in a loam soil (pH: 5.7, OM: 8%).
Emergence on July 3.

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: NPKS 80-30-20-20 kg/ha: pre seeding

Pesticides:
- Merge: June 1
- Odyssey: June 1
- Roundup WeatherMax: June 1

Harvesting: September 2022

Month	Precipitation (mm)
June	109.3
July	35
August	34.4
September	10.6
TOTAL	**189.3**

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)	Protein content (%)
Untreated check	44.1	-	21.3
AGTIV THRIVE® PEA & LENTIL	45.4	1.3	22.2
Competitor inoculant B	46.6	2.5	20.9

EFFICACY REPORT

2022 – MYCORRHIZAL & RHIZOBIAL INOCULANT

PEA AGTIV THRIVE

► PLOT TRIAL

Research partners: ICMS

Research sites: Saskatoon, SK

Treatments:
a) Untreated check;
b) AGTIV THRIVE® PEA & LENTIL;
c) Competitor inoculant B*.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 8 repetitions, 15 m^2 plots.

Variety: ACC Ardill

Previous crop: Wheat

Seeding details: Seeded on May 26, with a cone seeder at a rate of 225 kg/ha in a clay soil (pH: 8, OM: 8.8%).
Emergence on June 15.

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 80-20-10-20 kg/ha NPKS pre seeding + 28% Urea Ammonium Nitrate on July 4

Pesticides:
- Viper ADV: July 4
- Reglone Ion: August 31

Harvesting: September 6, 2022

Month	Precipitation (mm)
May	25.8
June	38.0
July	46.5
August	25.6
TOTAL	**135.9**

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)	Protein content (%)
Untreated check	34.8	-	17.5
AGTIV THRIVE® PEA & LENTIL	36.4	1.6	18.0
Competitor inoculant B	35.8	1.0	17.1

EFFICACY REPORT

2022 – MYCORRHIZAL & RHIZOBIAL INOCULANT

PEA AGTIV THRIVE

► PLOT & STRIP TRIALS

Research partner: Ag-Quest

Research site: Saskatoon, SK

Treatments: a) Untreated check;
b) AGTIV THRIVE® PEA & LENTIL ;
c) Competitor inoculant B*.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 6 repetitions, 8.2 m^2 plots.

Variety: CDC Spectrum

Previous crop: Oats

Seeding details: Seeded on May 27, 2022, with a cone seeder and a techno till drill opener at a rate of 160 kg/ha in a loam soil (pH: 5.8, OM: 3.5%).
Emergence on June 3.

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated check	27.2	-
AGTIV THRIVE® PEA & LENTIL	30.7	3.5
Competitor inoculant B	28.8	1.6

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 11-52-0 side banded (72 kg/ha)

Pesticides:
- Aim EC: May 11
- Roundup WeatherMax: May 11
- Centurion: June 8
- Basagran Forté: June 21, July 4 & 12
- Assure II: June 21, July 4 & 12
- Matador herbicide: August 6
- Reglone Ion: August 16

Harvesting: August 24, 2022

Month	Precipitation (mm)
May	27.3
June	37.1
July	41.3
August	15.8
TOTAL	**121.5**

EFFICACY REPORT

2022 – MYCORRHIZAL & RHIZOBIAL INOCULANT

PEA AGTIV THRIVE

► PLOT TRIAL

Research partner: New Era Ag Research

Research site: Swan River, MB

Treatments:
a) Untreated check;
b) AGTIV THRIVE® PEA & LENTIL*;
c) Competitor inoculant B*.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 6 repetitions, 15 m^2 plots.

Variety: Inca

Previous crop: Canola

Seeding details: Seeded on May 24, with a cone seeder at a rate of 286 kg/ha in a clay loam soil (pH: 6.5, OM: 5.3%). Emergence on June 3.

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

Treatment	Yield [1] (bu/ac)	Yield increase (bu/ac)
Untreated check	85.3 [b]	-
AGTIV THRIVE® PEA & LENTIL	91.5 [a]	6.2
Competitor inoculant B	87.1 [b]	1.8

[1] Yields with same letter are not statistically different according to a Tukey HSD test (p≤0.1).

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: MAP 11-52-0 on May 25 (47 kg/ha)

Pesticides:
- Coragen: June 9
- Pounce: June 9
- Viper ADV: June 22
- Priaxor: July 18
- Guardsman : August 25

Harvesting: August 31, 2022

Month	Precipitation (mm)
May	14.5
June	80.0
July	32.3
August	48.8
September	58.9
TOTAL	**234.5**

EFFICACY REPORT

2021 – MYCORRHIZAL & RHIZOBIAL INOCULANT

PEA AGTIV THRIVE

► PLOT TRIAL

Research partner: ICMS

Research site: Portage la Prairie, MB

Treatments:
a) Untreated check;
b) AGTIV® PULSES • Granular*;
c) Competitor inoculant B*.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 6 repetitions, 24.4 m^2 plots.

Variety: Carver

Previous crop: Wheat

Seeding details: Seeded on June 3, with a cone seeder at a rate of 200 kg/ha.

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)	Protein content (%)
Untreated check	41.6	-	17.8
AGTIV® PULSES • Granular	45.2	3.6	18.4
Competitor inoculant B	41.3	-	17.8

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: None

Pesticides:
- Viper ADV: June 25
- Basagran Forte: July 14
- Assure II: July 14
- Cygon: July 27

Harvesting: September 1, 2021

Month	Precipitation (mm)
June	90.0
July	78.4
August	68.3
TOTAL	**236.7**

EFFICACY REPORT

2019 – MYCORRHIZAL & RHIZOBIAL INOCULANT

PEA AGTIV THRIVE

► PLOT TRIAL

Research partner: ICMS

Research site: Saskatoon, SK

Treatments:
a) ALPINE G22™ Liquid*;
b) ALPINE G22™ and AGTIV® COMBO • Liquid for PULSES*;
c) ALPINE G22™ and Competitor inoculant A*;
d) ALPINE G22™ and Competitor inoculant D*.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 6 repetitions.

Variety: AAC Ardill

Previous crop: Wheat

Seeding details: Seeded with a cone seeder June 1 at 201 lb/ac with a 15.2 cm row spacing. Products were applied in-furrow.

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

Treatment	Yield (bu/ac)	Yield (kg/ha)
ALPINE G22™ Liquid	56.0	3766
ALPINE G22™ and AGTIV® COMBO • Liquid for PULSES	65.0	4371
ALPINE G22™ and Competitor inoculant A	52.3	3517
ALPINE G22™ and Competitor inoculant D	63.2	4250

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: Urea 28% (0.8 lb/ac): July 12

Pesticides:
- Viper: July 12
- Centurion: July 29
- Matador: July 8 and 13

Month	Precipitation (mm)
June	84.8
July	67.6
August	20.3
September	39.5
TOTAL	**212.2**

Harvesting: Combined with a small plot combine on October 11, 2019.

EFFICACY REPORT

2017 – MYCORRHIZAL & RHIZOBIAL INOCULANT

PEA AGTIV THRIVE

► STRIP TRIAL

Research partner: Down to Earth + PAMI

Research site: Saskatoon, SK

Treatments:
a) AGTIV® PULSES • Granular applied at 5.0 lb/ac + Taurus Advanced Acre™* (TAA) + fungicide application;
b) AGTIV® RHIZO • Granular for PULSES in granular form applied at 4.0 lb/ac + Designed Fertility Program**.

Experimental design: 2 replicated strips for a total of 610 ft^2 per treatment.

Variety: Meadow

Previous crop: Canola / oats split

Seeding details: Seeded May 20, at 3 bu/ac at 10 in row spacing using Seed Master plot Drill by Down to Earth.

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

Treatment	Yield (bu/ac)	Yield (kg/ha)
AGTIV® PULSES • Granular (dual inoculant) + TAA* + Fungicide	48.1	3235
AGTIV® RHIZO • Granular for PULSES (single inoculant) + Designed Fertility Program**	35.8	2408

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: Seed placed 2-15-0 -0 lb/ac
Side band 17-20-15-15 lb/ac

Pesticides:
- Viper (400 mL/ac): 5 node Stage
- UAN (81 mL/ac): 5 node Stage

Harvesting: Combined on August 25, with a Wintersteiger and weighed & moisture averaged by PAMI.

Month	Precipitation (mm)
TOTAL	**100.4**

* **The Taurus Advanced Acre™:** Using the Designed Fertility Program with the addition of key Taurus solutions.
** **Designed Fertility Program:** a calculated fertility program based on soil tests and targeted yield. Target yield for Peas was 60 bu/ac

EFFICACY REPORT

2017 – MYCORRHIZAL & RHIZOBIAL INOCULANT

PEA AGTIV THRIVE

► PLOT TRIAL

Research partner: Wheatland Conservation Area Inc.

Research site: Swift Current, SK

Treatments:
a) AGTIV® PULSES • Granular applied at 5 lb/ac*;
b) AGTIV® RHIZO • Granular for PULSES applied at 4 lb/ac*;
c) Competitor inoculant A applied at 3.6 lb/ac*;
d) Competitor inoculant B applied at 3.6 lb/ac*;
e) Competitor inoculant C applied at 4.0 lb/ac*;
f) Competitor inoculant E applied at 5.0 lb/ac*.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 6 repetitions.

Variety: Amarillo, seeded at 200 lb/ac.

Previous crop: Canola

Seeding details: Seeded May 24, at 9 in row spacing using Fabro plot drill. Preseed burnoff with Clean Start at 1 L/ac and Aim at 30 mL/ac.

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

Treatment	Yield (bu/ac)	Yield (kg/ha)
AGTIV® PULSES • Granular (dual inoculant)	14.0	942
AGTIV® RHIZO • Granular for PULSES (single inoculant)	13.1	881
Competitor inoculant A	12.7	854
Competitor inoculant B	12.4	834
Competitor inoculant C	13.2	888
Competitor inoculant E	12.3	827

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 98 lb/ac of 11-52-0 sidebanded

Pesticides:
- Viper ADV (400 mL/ac)
- Poast Ultra (190 mL/ac)
- UAN (810 mL/ac)

Harvesting: Combined on August 17, with Wintersteiger plot combine.

Month	Precipitation (mm)
May	32.1
June	35
July	4
August	28
September	3
TOTAL	**102.1**

EFFICACY REPORT

2015 – MYCORRHIZAL & RHIZOBIAL INOCULANT

PEA AGTIV THRIVE

► PLOT TRIAL

Research partner: ICMS

Research site: Fort Saskatchewan, AB

Treatments:
a) AGTIV® PULSES • Granular applied at 5 lb/ac*;
b) Competitor inoculant A applied at 3.3 lb/ac*;
c) Competitor inoculant B applied at 3.3 lb/ac*.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 5 repetitions.

Variety: Meadows

Previous crop: Canola

Seeding details: Seeded on May 21, at 15.2 cm row spacing.

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: None

Pesticides: In season maintenance:
- Odyssey (17 g/ac – 35%)
- Equinox (67 mL/ac)
- Edge (0.5%)

Harvesting: Combined with Wintersteiger Elite plot combine on Sept 25, 2015.

Month	Precipitation (mm)
May	37.3
June	59.7
July	108.6
August	10.3
September	71.1
TOTAL	**287**

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

Treatment	Yield (bu/ac)	Yield (kg/ha)
AGTIV® PULSES • Granular (dual inoculant)	88.6	5958
Competitor inoculant A	86.2	5797
Competitor inoculant B	79.5	5347

Table 2. **Summary of yields per treatment**

Treatment	Yield (bu/ac)	Yield (kg/ha)
AGTIV® PULSES • Granular (dual inoculant)	88.6	5958
Competitor inoculant A	86.2	5797
Competitor inoculant B [1]	85.8	5770

[1] One replication from the competitor inoculant B treatment yielded very low and has a negative impact on the treatment average. The data below represents the average of the competitor inoculant B treatment without the very low yielding rep for a total of four reps for the competitor inoculant B average yield.

CHICKPEA

AVERAGE YIELD INCREASE

AGTIV THRIVE

3.1 bu/ac

8.7%

208 kg/ha

6 sites over 7 years

Canada

EFFICACY REPORT

SUMMARY – MYCORRHIZAL & RHIZOBIAL INOCULANT

CHICKPEA

AGTIV THRIVE

► PLOT TRIALS

Research partners:
- Ag-Quest inc;
- Prairie Ag Research Inc.;
- Small Plot Inc.;
- Wheatland Conservation Area Inc.

Research sites:
- Alberta;
- Saskatchewan.

Treatments*:
a) AGTIV THRIVE® CHICKPEA;
b) Competitor inoculant A;
c) Competitor inoculant B;
d) Competitor inoculant D.

*Products applied according to the manufacturer's recommended rate.

Experimental design:
Randomized Complete Block Design:
6 trials (6-8 repetitions each)

Table 1. **Summary of yields (bu/ac) per trial**[1]

Year	Location	Seed variety	AGTIV THRIVE® CHICKPEA	Competitor inoculant		
				A	B	D
2018	Lethbridge	Alma	73	71.3	71	
2018	Swift Current	Leader	28	28.8	26.1	
2022	Lethbridge	Clearfield Kabuli	43.1		41.2	
2022	Taber	CDC Pearl	41.7[b]		39.4[ab]	
2023	Vulcan	CDC Orion	6.3			6
2024	Taber	CDC Palmer	39.7			38.8

[1] Yields with the same letter are not statistically different according to a LSD test (p≤05).

EFFICACY REPORT

2024 – MYCORRHIZAL & RHIZOBIAL INOCULANT

CHICKPEA

AGTIV THRIVE

► PLOT TRIAL

Research partner: Ag-Quest

Research site: Taber, AB

Treatments*:
a) Untreated check;
b) AGTIV THRIVE®;
c) Competitor inoculant D.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block, 8 repetitions, 10.5 m^2 plots.

Variety: CDC Palmer

Previous crop: Winter rye

Seeding details: Seeded on June 5 with a cone planter at a rate of 180 kg/ha in a coarse sandy loam soil (pH: 8.2, OM: 2.7%). Emergence on June 13.

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated check	35.7	-
AGTIV THRIVE®	39.7	4
Competitor inoculant D	38.8	3.1

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: None

Pesticides:
- Roundup WeatherMax (1.74 L/ha): May 15
- Authority 480 EC (0.29 L/ha): June 1
- Tough (1.48 L/ha): June 14
- Select (0.19 L/ha): June 14
- Reglone Ion (2.2 L/ha): September 10, 16 & 27

Harvesting: October 3, 2024

Month	Precipitation (mm)	Irrigation (mm)
May	186.4	
June	75.7	12.5
July	100.7	134.7
August	41.8	14.6
September	71.9	
TOTAL	**476.5**	**161.8**

EFFICACY REPORT

2023 – MYCORRHIZAL & RHIZOBIAL INOCULANT

CHICKPEA

AGTIV THRIVE

► PLOT TRIAL

Research partners: Small Plot Inc.

Research sites: Vulcan, AB

Treatments:
a) Untreated check;
b) AGTIV THRIVE® G CHICKPEA;
c) Competitor inoculant D.

*Products applied according to the manufacturer's recommended rate.

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

Variety: CDC Orion

Previous crop: Lentil

Seeding details: Seeded on May 11 with a plot drilling machine at a rate of 215 lb/ac in a loam soil (pH: 7.9, OM: 3.3%). Emergence on May 30.

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated check	6.1	-
AGTIV THRIVE® G CHICKPEA	6.3	0.2
Competitor inoculant D	6.0	-

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 19-40-10-12 kg/ha : May 11

Pesticides: Assure II (0.75 L/ha): July 5

Harvesting: September 2, 2023

Month	Precipitation (mm)
May	4.3
June	43.4
July	37.8
August	31.5
TOTAL	**117.0**

EFFICACY REPORT

2022 – MYCORRHIZAL & RHIZOBIAL INOCULANT

CHICKPEA

AGTIV THRIVE

► PLOT TRIALS

Research partner: Prairie Ag Research Inc.

Research site: Lethbridge, AB

Treatments:
a) Untreated check;
b) AGTIV THRIVE® CHICKPEA*;
c) Competitor inoculant B*.

*Products applied according to the manufacturer's recommended rate.

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

Variety: Alma Clearfield Kabuli

Previous crop: Fallow

Seeding details: Seeded on May 23, with a cone seeder at a rate of 150 kg/ha in a clay loam soil (pH: 7.4, OM: 4%). Emergence on June 3.

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated check	36.1	-
AGTIV THRIVE® CHICKPEA	43.2	7.1
Competitor inoculant B	41.2	5.1

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: None

Pesticides:
- Glyphosate: May 20
- Odyssey and Merge: June 30

Harvesting: September 14, 2022

Month	Precipitation (mm)
May	35.8
June	114.5*
July	57.4
August	31.7*
TOTAL	**239.4**

*Plots were irrigated during those months.

EFFICACY REPORT

2022 – MYCORRHIZAL & RHIZOBIAL INOCULANT

CHICKPEA

AGTIV THRIVE

► PLOT TRIALS

Research partner: Ag-Quest

Research site: Taber, AB

Treatments:
a) Untreated check;
b) AGTIV THRIVE® CHICKPEA*;
c) Competitor inoculant B*.

*Products applied according to the manufacturer's recommended rate.

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

Variety: CDC Pearl

Previous crop: Rye

Seeding details: Seeded on May 27, with a cone seeder at a rate of 150 kg/ha in a sandy loam soil (pH: 7.9, OM: 2.1%). Emergence on June 13.

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

Treatment	Yield (bu/ac) [1]	Yield increase (bu/ac)
Untreated check	37.2 [a]	-
AGTIV THRIVE® CHICKPEA	41.7 [b]	4.5
Competitor inoculant B	39.4 [ab]	2.2

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

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: P_2O_5 (36 kg/ha): preseeding

Pesticides:
- Authority: May 28
- Roundup Transorb: May 28
- Select: June 27
- AMIGO: June 27
- Solo: June 28
- Merge: June 28
- TOUGH: July 2

Harvesting: September 23, 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.

EFFICACY REPORT

2018 – MYCORRHIZAL & RHIZOBIAL INOCULANT

CHICKPEA

AGTIV THRIVE

► PLOT TRIALS

Research partner: Wheatland Conservation Area Inc.

Research site: Swift Current, SK

Treatments:
a) AGTIV THRIVE® CHICKPEA applied at 5 lb/ac*;
b) AGTIV® FIELD CROPS • Granular applied at 5 lb/ac*;
c) Competitor inoculant A applied at 5 lb/ac*;
d) Competitor inoculant B applied at 3.6 lb/ac*.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 6 repetitions.

Variety: Leader

Previous crop: Canola stubble

Seeding details: Seeded with cone seeder May 14, 2018, at 40 plants/m² with 22.8 cm row spacing.

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

Treatment	Yield (bu/ac)	Yield (kg/ha)
AGTIV THRIVE® CHICKPEA	28.0	1882
AGTIV® FIELD CROPS • Granular	26.0	1747
Competitor inoculant A	28.8	1935
Competitor inoculant B	26.1	1754

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 11-52-0 (96 lb/ac)

Pesticides: Authority (118 mL/ac): May 14

Harvesting: Combined on August 16, 2018.

Month	Precipitation (mm)
May	13
June	28
July	48
August	19
TOTAL	**108**

EFFICACY REPORT

2018 – MYCORRHIZAL & RHIZOBIAL INOCULANT

CHICKPEA

AGTIV THRIVE

► PLOT TRIALS

Research partner: Prairie Ag Research Inc.

Research site: Lethbridge, AB

Treatments:
a) AGTIV THRIVE® CHICKPEA applied at 5 lb/ac*;
b) AGTIV® FIELD CROPS • Granular applied at 5 lb/ac*;
c) Competitor inoculant A applied at 5 lb/ac*;
d) Competitor inoculant B applied at 3.6 lb/ac*.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 6 repetitions.

Variety: Alma

Previous crop: Canola stubble

Seeding details: Seeded with cone seeder May 22, in 2 X 8 m plots.

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

Treatment	Yield (bu/ac)	Yield (kg/ha)
AGTIV THRIVE® CHICKPEA	73.0	4906
AGTIV® FIELD CROPS • Granular	71.5	4805
Competitor inoculant A	71.3	4791
Competitor inoculant B	71.0	4771

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: None

Pesticides:
- Agral 90: May 15
- Aim: May 15
- Glyphosate: May 15
- Merge: June 5
- Odyssey: June 5

Harvesting: September 17, 2018

Month	Precipitation (mm)
May	25.1
June	45.8
July	13.6
August	21.5
September	19.1
TOTAL	**125.1**

SOYBEAN

AVERAGE YIELD INCREASE

AGTIV THRIVE

3.3 bu/ac

6.7%

222 kg/ha

94 sites over 12 years
Canada and Europe

AGTIV ENRICH

1.8 bu/ac*

3.3%

* vs competitors average

11 third-party sites over 5 years
Canada

TRIALS PICTURES

SOYBEAN

AGTIV THRIVE

Split field with AGTIV THRIVE® SOYBEAN vs competitor inoculant.
Enhanced plant growth and health,
and sooner row closure in AGTIV® soybean fields, on the right.

AGTIV® soybean plants have a better developed root system
with more branching and nodules.

EFFICACY REPORT

SUMMARY – MYCORRHIZAL & RHIZOBIAL INOCULANT

SOYBEAN AGTIV THRIVE

► PLOT & STRIP TRIALS

Research partners:
- Ag-Quest;
- ICMS;
- New Era Ag research;
- South East Research Farm;
- Stoney Ridge Ag Services.

Research sites:
- Manitoba;
- Saskatchewan.

Treatments*:
a) AGTIV THRIVE® SOYBEAN;
b) Competitor inoculant A;
c) Competitor inoculant B;
d) Competitor inoculant C;
e) Competitor inoculant D;
f) Competitor inoculant E.

*Products applied according to the manufacturer's recommended rate.

Experimental design:
- Randomized Complete Block Design: 17 trials (5-8 repetitions each)
- Strip trial: 2 trials (2 repetitions each)

Table 1. **Summary of yields (bu/ac)[1] per trial**

Year	Location	Seed variety	AGTIV THRIVE® SOYBEAN	Competitor inoculant				
				A	B	C	D	E
2015	Morden	Northstar	31.8 [a]	27.8 [b]	30.5 [a,b]			
	Portage la Prairie	Pride Seeds	57.3	55.4	58.2			
2016	Oakville	Legend Seeds	79.7	77.8	77.7			
2017	Swan River	Prograin	40.7 [a]	35 [b,c]		32.5 [c]		
	Portage la Prairie	Northstar	58.3	54.5	54.5	54.7		
	Binscarth	Pioneer	30.1 [a]	27.7 [b]	29 [a,b]	28.5 [b]		
2018	Redvers	Prograin	31.1	28.2	25.8			
	Swan River	Prograin	57.7	47.2	54.3	55.5		
	Portage la Prairie	Secan	49.4	47.2	47.8			
2019	Elm Creek	Gray R2	37.1	36.9			35.9	
	Redvers	NSC Watson	16.3	14.9		15.8		
	Swan River	Syngenta	35.7 [a]	29.9 [b]		35.7 [a]		
2021	Swan River	Syngenta	46.3 [b]					43.5[b]
	Redvers	Watson	21					20
2022	Redvers	NSC Redvers	54.9	53.7				
	Portage la Prairie	NSC Redvers	64.9	63.4				
2025	Elm Creek	Bourke R2X	48.6		45.3			46.9
	Bright	P17Z39E	45.4		41.5			42.6

[1] Average yields followed by different letters are significantly different at p≤05.

► GROWER DEMONSTRATIONS

Experimental design: Split field: 76 demos

EFFICACY REPORT

2025 – MYCORRHIZAL & RHIZOBIAL INOCULANT

SOYBEAN AGTIV THRIVE

► PLOT TRIAL

Research partner: Ag-Quest

Research site: Elm Creek, MB

Treatments*:
a) Untreated check;
b) AGTIV THRIVE® SOYBEAN;
c) Competitor inoculant B;
d) Competitor inoculant E.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 6 repetitions, 27 m^2 plots.

Variety: Bourke R2X treated with Vitaflo

Previous crop: Field pea

Seeding details: Seeded on May 9 with a cone planter at a rate of 100 kg/ha in a coarse sandy loam soil (pH: 6.8, OM: 1.9%). Emergence on May 27.

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated check	45.1	-
AGTIV THRIVE® SOYBEAN	48.6	3.5
Competitor inoculant B	45.3	0.2
Competitor inoculant E	46.9	1.8

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 0-0-62 (48 kg/ha): May 9

Pesticides:
- Aim (0.07 L/ha): May 7
- StartUp (1.65 L/ha): May 7 and June 5
- Basagran Forte (2.25 L/ha): July 2
- Centurion (0.19 L/ha): July 2
- Priaxor (0.44 L/ha): August 22

Harvesting: October 1, 2025

Month	Precipitation (mm)
May	68.7
June	28.5
July	93.1
August	80.7
September	85.6
TOTAL	**356.6**

EFFICACY REPORT

2025 – MYCORRHIZAL & RHIZOBIAL INOCULANT

SOYBEAN AGTIV THRIVE

► PLOT TRIAL

Research partner: BlackCreek Research Inc.

Research site: Bright, ON

Treatments*:
a) Untreated check;
b) AGTIV THRIVE® SOYBEAN;
c) Competitor inoculant B;
d) Competitor inoculant E.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 8 repetitions, 36 m^2 plots.

Variety: P17Z39E treated with Vitaflo

Previous crop: Corn

Seeding details: Seeded on May 27 with a plt planter at a rate of 48 kg/ha in a sandy loam soil (pH: 6.6, OM: 1.6%). Emergence on June 5.

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated check	43.3	-
AGTIV THRIVE® SOYBEAN	45.4	2.1
Competitor inoculant B	41.5	-
Competitor inoculant E	42.6	-

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 3.4-16.1-29.3-6.5S-3.1Mg (364 kg/ha): May 27

Pesticides:
- Roundup Transorb (1.67 L/ha): May 26 and July 2
- Boundary LQD (2.5 L/ha): June 1
- Antler (125 mL/ha): July 2
- Merge (0.5% V/V): July 2

Harvesting: September 29, 2025

Month	Precipitation (mm)
May	106.2
June	128.8
July	90.4
August	38.8
September	70.0
TOTAL	**434.2**

EFFICACY REPORT

2022 – MYCORRHIZAL & RHIZOBIAL INOCULANT

SOYBEAN AGTIV THRIVE

► PLOT TRIAL

Research partner: South East Research Farm

Research site: Redvers, SK

Treatments: a) Untreated check (no granular product);
b) AGTIV THRIVE® SOYBEAN*;
c) Competitor inoculant A*.

*Products applied according to the manufacturer's recommended rate.

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

Variety: NSC Redvers (seeds pretreated with a commercial rhizobium).

Previous crop: Pea

Seeding details: Seeded on June 8, with a cone seeder at a rate of 80 kg/ha in a loam soil (pH: 7.6, OM: 4.2%).

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 5-22-0 at seeding

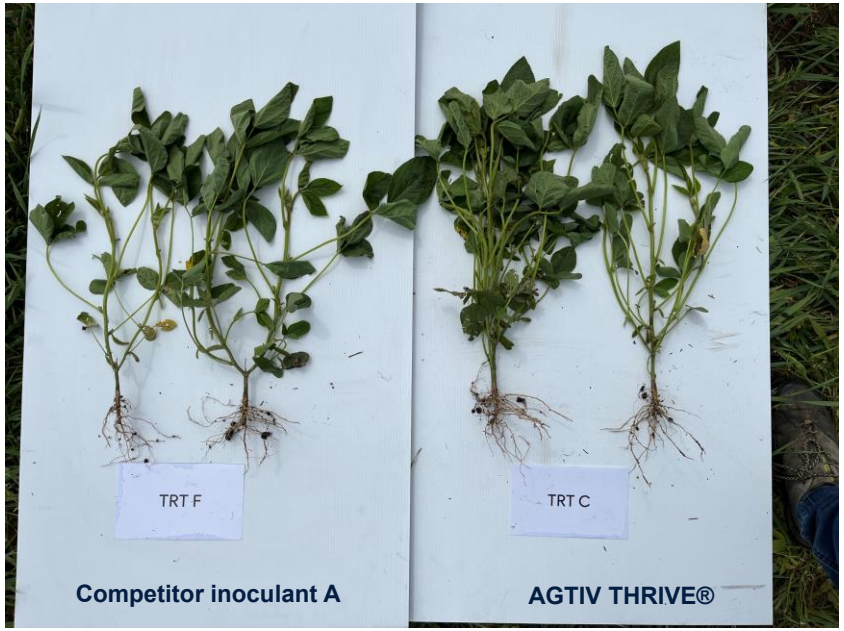
Pesticides: Roundup: June 9 and July 6

Harvesting: October 5, 2022

Month	Precipitation (mm)
May	121.0
June	75.0
July	259.0
August	25.2
September	15.0
TOTAL	**465.2**

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated check	52.9	-
AGTIV THRIVE® SOYBEAN	54.9	2.0
Competitor inoculant A	53.7	0.8



EFFICACY REPORT

2022 – MYCORRHIZAL & RHIZOBIAL INOCULANT

SOYBEAN AGTIV THRIVE

► PLOT TRIAL

Research partner: ICMS

Research site: Portage la Prairie, MB

Treatments:
a) Untreated check (no granular product);
b) AGTIV THRIVE® SOYBEAN*;
c) Competitor inoculant A*.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 6 repetitions, 21 m^2 plots.

Variety: NSC Redvers RR2X (seeds pretreated with a commercial rhizobium).

Previous crop: Wheat

Seeding details: Seeded on June 17, with a cone seeder at a rate of 140 kg/ha in a clay loam soil (pH: 8.2, OM: 6.7%). Emergence on June 22.

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: None

Pesticides: Roundup WeatherMax: June 24 & July 14

Harvesting: October 11, 2022

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

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated check	63.0	-
AGTIV THRIVE® SOYBEAN	64.9	1.9
Competitor inoculant A	63.4	0.4

EFFICACY REPORT

2021 – MYCORRHIZAL & RHIZOBIAL INOCULANT

SOYBEAN AGTIV THRIVE

► PLOT TRIAL

Research partner: New Era Ag Research

Research site: Swan River, MB

Treatments:
a) Untreated check;
b) AGTIV® SOYBEAN • Granular*;
c) Competitor inoculant E*.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 6 repetitions, 20 m^2 plots.

Variety: Syngenta M2

Previous crop: Wheat

Seeding details: Seeded on May 18, with a cone seeder at a rate of 70 kg/ha. Seeds pretreated with a commercial rhizobium.

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 11-52-0 (86 kg/ha): May 28

Pesticides: RT 540: June 15 and July 6

Harvesting: September 28, 2021

Month	Precipitation (mm)
May	33.0
June	65.9
July	45.5
August	77.1
September	39.0
TOTAL	**260.5**

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

Treatment	Yield [1] (bu/ac)	Yield increase (bu/ac)	Protein (%)
Untreated check	41.9 [a]	-	29.5
AGTIV® SOYBEAN • Granular	46.3 [b]	4.4	31.7
Competitor inoculant E	43.5 [b]	1.6	31.1

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

EFFICACY REPORT

2021 – MYCORRHIZAL & RHIZOBIAL INOCULANT

SOYBEAN AGTIV THRIVE

► PLOT TRIAL

Research partner: South East Research Farm

Research site: Redvers, SK

Treatments:
a) Untreated check;
b) AGTIV® SOYBEAN • Granular*;
c) Competitor inoculant E*.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 6 repetitions, 8 m^2 plots.

Variety: Watson

Previous crop: Wheat

Seeding details: Seeded on May 29, with a cone seeder at a rate of 75 kg/ha. Seeds pretreated with a commercial rhizobium.

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)	Protein (%)
Untreated check	19.1	-	36.9
AGTIV® SOYBEAN • Granular	21.0	1.9	36.4
Competitor inoculant E	20.0	0.9	36.9

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: MAP 11-48-0 (65 kg/ha): at seeding

Pesticides: Glyphosate: June 24

Harvesting: September 17, 2021

Month	Precipitation (mm)
May	52.9
June	70.5
July	19.9
August	55.4
TOTAL	**198.7**

EFFICACY REPORT

2019 – MYCORRHIZAL & RHIZOBIAL INOCULANT

SOYBEAN AGTIV THRIVE

► PLOT TRIAL

Research partner: Ag-Quest

Research site: Elm Creek, MB

Treatments:
a) ALPINE G22™ Liquid*;
b) ALPINE G22™ and AGTIV® COMBO • Liquid for SOYBEAN*;
c) ALPINE G22™ and Competitor inoculant A*;
d) ALPINE G22™ and Competitor inoculant D*.

*Products applied according to manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 6 repetitions.

Variety: Gray R2 with *Bradyrhizobium* pre-inoculated on the seed.

Previous crop: Barley

Seeding details: Seeded May 28, 2019, with a 21 cm row spacing.

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

Treatment	Yield (bu/ac)	Yield (kg/ha)
ALPINE G22™ Liquid	34.6	2327
ALPINE G22™ and AGTIV® COMBO • Liquid for SOYBEAN	37.1	2495
ALPINE G22™ and Competitor inoculant A	36.9	2482
ALPINE G22™ and Competitor inoculant D	35.9	2414

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: None

Pesticides:
- Roundup WeatherMax: June 14, July 9, and 24
- CORAGEN: August 14

Harvesting: Combined on October 26, 2019.

Month	Precipitation (mm)
May	42.2
June	59.5
July	91.7
August	40.9
September	196.7
TOTAL	**431**

EFFICACY REPORT

2019 – MYCORRHIZAL & RHIZOBIAL INOCULANT

SOYBEAN

AGTIV THRIVE

► PLOT TRIAL

Research partner: New Era Ag Research

Research site: Swan River, MB

Treatments:
a) Untreated;
b) AGTIV® SOYBEAN • Granular*;
c) Competitor inoculant A applied*;
d) Competitor inoculant C applied*.

*Products applied according to manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 6 repetitions.

Variety: Syngenta M2 with *Bradyrhizobium* pre-inoculated on the seed.

Previous crop: Canola stubble

Seeding details: Seeded May 24, with a 22.4 cm row spacing and a rate of 190 000 seeds/acre.

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

Treatment	Yield [1] (bu/ac)	Yield [1] (kg/ha)	Protein [1] (%)
Untreated	26.5 [a]	1782 [a]	32.87 [a]
AGTIV® SOYBEAN • Granular	35.7 [b]	2401 [b]	37.59 [c]
Competitor inoculant A	29.9 [a]	2011 [a]	35.27 [b]
Competitor inoculant C	35.7 [b]	2401 [b]	37.87 [c]

[1] Yields and protein contents followed by different letters are significantly different (Tukey's test HSD at p≤0.05).

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 0-20-10-0: at season start

Pesticides:
- Glyphosate: June 12, 25, and July 12
- POUNCE: August 12

Harvesting: October 7, 2019

Month	Precipitation (mm)
May	25.7
June	26.1
July	59.4
August	51.8
September	48.8
TOTAL	**211.8**

EFFICACY REPORT

2019 – MYCORRHIZAL & RHIZOBIAL INOCULANT

SOYBEAN AGTIV THRIVE

► PLOT TRIAL

Research partner: South East Research Farm

Research site: Redvers, SK

Treatments:
a) Untreated;
b) AGTIV® SOYBEAN • Granular*;
c) Competitor inoculant A*;
d) Competitor inoculant C*.

*Products applied according to manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 6 repetitions.

Variety: NSC Watson RR2Y with *Bradyrhizobium* pre-inoculated on the seed.

Previous crop: Canola

Seeding details: Seeded May 27, at a rate of 210 000 seeds/acre.

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

Treatment	Yield (bu/ac)	Yield (kg/ha)
Untreated	13.4	901
AGTIV® SOYBEAN • Granular	16.3	1096
Competitor inoculant A	14.9	1002
Competitor inoculant C	15.8	1063

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: None

Pesticides:
- Glyphosate: June 18
- Viper and UAN: July 1

Harvesting: Combined on October 6, 2019.

Month	Precipitation (mm)
May	18
June	79
July	54
August	88
September	99
TOTAL	**338**

EFFICACY REPORT

2018 – MYCORRHIZAL & RHIZOBIAL INOCULANT

SOYBEAN AGTIV THRIVE

► PLOT TRIAL

Research partner: South East Research Farm

Research site: Redvers, SK

Treatments:
a) AGTIV® SOYBEAN • Granular*;
b) COMBO AGTIV® • Liquid for SOYBEAN*;
c) Competitor inoculant A*;
d) Competitor inoculant B*.

*Products applied according to manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 8 repetitions.

Variety: Dario

Previous crop: Canola stubble

Seeding details: Seeded May 28, at 210 000 seeds/ac with 15 cm row spacing. No tillage.

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

Treatment	Yield (bu/ac)	Yield (kg/ha)	Protein (%)
AGTIV® SOYBEAN • Granular	31.1	2092	32.5
COMBO AGTIV® • Liquid for SOYBEAN	28.2	1896	29.0
Competitor inoculant A	25.8	1735	28.5
Competitor inoculant B	29.7	1997	30.8

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 58 lb/ac of P

Pesticides: Glyphosate: twice during growth.

Harvesting: September 27, 2018

Month	Precipitation (mm)
May	13.8
June	44.3
July	19.5
August	17.4
September	27.6
TOTAL	**122.6**

EFFICACY REPORT

2018 – MYCORRHIZAL & RHIZOBIAL INOCULANT

SOYBEAN AGTIV THRIVE

► PLOT TRIAL

Research partner: ICMS

Research site: Portage La Prairie, MB

Treatments:
a) AGTIV® SOYBEAN • Granular*;
b) COMBO AGTIV® • Liquid for SOYBEAN*;
c) Competitor inoculant A*;
d) Competitor inoculant B*.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 8 repetitions, 24 m² plots.

Variety: Barker

Previous crop: Fallow

Seeding details: Seeded June 6.

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

Treatment	Yield (bu/ac)	Yield (kg/ha)
AGTIV® SOYBEAN • Granular	49.4	3322
COMBO AGTIV® • Liquid for SOYBEAN	47.4	3188
Competitor inoculant A	47.2	3174
Competitor inoculant B	47.8	3215

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: None

Pesticides:
- Round up: July 5
- Thiram: July 10, 17 and 27

Harvesting: Combined on October 19, 2018.

Month	Precipitation (mm)
June	65.1
July	41.1
August	31.8
September	115.3
TOTAL	**253.3**

EFFICACY REPORT

2018 – MYCORRHIZAL & RHIZOBIAL INOCULANT

SOYBEAN AGTIV THRIVE

► PLOT TRIAL

Research partner: New Era Ag Research

Research site: Swan River, MB

Treatments:
a) AGTIV® SOYBEAN • Granular applied at 5.1 lb/ac*;
b) Competitor inoculant A applied at 5 lb/ac*;
c) Competitor inoculant B applied at 4.45 lb/ac*;
d) Competitor inoculant C applied at 7.14 lb/ac*.

*Products applied according to manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 8 repetitions.

Variety: Dario

Previous crop: Canola stubble

Seeding details: Seeded May 21, at 200 000 seeds/ac with 25 cm row spacing. No tillage.

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

Treatment	Yield (bu/ac)	Yield (kg/ha)	Protein (%)
AGTIV® SOYBEAN • Granular	57.7	3880	34.2
Competitor inoculant A	47.2	3174	31.5
Competitor inoculant B	54.3	3651	33.1
Competitor inoculant C	55.5	3732	33.6

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: P (30 lb/ac)
K (40 lb/ac)

Pesticides:
- Glyphosate: June 6, 25 and July 5
- Proline: July 10
- Round up: September 12
- Heat: September 12

Harvesting: Combined in October 2018.

Month	Precipitation (mm)
May	38.4
June	127.6
July	59.3
August	35.4
September	51.1
TOTAL	**311.8**

EFFICACY REPORT

2017 – MYCORRHIZAL & RHIZOBIAL INOCULANT

SOYBEAN AGTIV THRIVE

► STRIP TRIAL

Research partner: Stoney Ridge Ag Services

Research site: Binscarth, MB

Treatments:
a) AGTIV® SOYBEAN • Granular applied at 5.0 lb/ac;
b) Competitor inoculant A applied at 5.0 lb/ac;
c) Competitor inoculant B applied at 5.0 lb/ac;
d) Competitor inoculant C applied at 5.0 lb/ac.

Experimental design: 2 replicated strips of 1.36 acres per treatment.

Variety: Pioneer Experimental Ultra-Early variety, treated with Optimize St.

Previous crop: Canola

Seeding details: Seeded May 20, at 180 000 seeds/ac at 15 in row spacing using DB60.

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

Treatment	Yield [1] (bu/ac)	Yield [1] (kg/ha)
AGTIV® SOYBEAN • Granular	30.11 [a]	2025 [a]
Competitor inoculant A	27.71 [b]	1864 [b]
Competitor inoculant B	28.99 [a,b]	1950 [a,b]
Competitor inoculant C	28.46 [b]	1914 [b]

[1] Average yields followed by different letters are significantly different (P < 0.05, 1-way ANOVA + Tukey-Kramer Significance Test)

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 5-23-23-13 (231 lb/ac): fall broadcast and incorporated

Pesticides:
- Roundup WeatherMax: Preplant application
- Express SG: Preplant application
- Roundup Transorb HC: Incrop application
- Xtendimax: Incrop application
- Roundup WeatherMax: second incrop application
- Pursuit: second incrop application

Harvesting: Combined on September 18, 2017.
Weighed using J&M Speed Tender.

EFFICACY REPORT

2017 – MYCORRHIZAL & RHIZOBIAL INOCULANT

SOYBEAN AGTIV THRIVE

► STRIP TRIAL

Research partner: Down to Earth + PAMI

Research site: Saskatoon, SK

Treatments:
a) AGTIV® SOYBEAN • Granular applied at 5.0 lb/ac + Taurus Advanced Acre[2] (TAA) + fungicide application;
b) AGTIV® SOYBEAN • Granular applied at 5.0 lb/ac + Taurus Advanced Acre[3] (TAA) & no fungicide application;
c) AGTIV® BRADY • Granular for SOYBEAN applied at 4.0 lb/ac + designed fertility[1].

Experimental design: 2 replicated strips for a total of 540 ft^2 per treatment

Variety: Syngenta, M2 variety, treated with 1.82 mL/kg Optimize St.

Previous crop: Canola / wheat / oats split

Seeding details: Seeded May 20, at 180 000 seeds/ac at 10 inches row spacing using Seed Master plot Drill by Down to Earth.

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

Treatment	Yield (bu/ac)	Yield (kg/ha)
AGTIV® SOYBEAN • Granular + TAA + Fungicide	39.1	2630
AGTIV® SOYBEAN • Granular + TAA & No Fungicide	41.1	2764
AGTIV® BRADY • Granular for SOYBEAN + designed fertility	34.9	2347

OPERATIONAL NOTES AND RAIN FALL

Month	Precipitation (mm)
TOTAL	100.4

Fertilisation: Seed placed 2-15-0 -0 lb/ac
Side band 17-20-15-15 lb/ac

Pesticides:
- Viper (400 mL/ac): 2-3 trifoliate
- UAN (81 mL/ac): 2-3 trifoliate
- Roundup (0.67 L/ac): 3-4 trifoliate

Harvesting: Combined on September 18, with a Wintersteiger. Weighed & moisture averaged by PAMI .

1. **Designed Fertility Program:** a calculated fertility program based on soil tests and targeted yield. Target yield for Soybean was 40 bushels/ac
2. **The Taurus Advanced Acre™:** Using the Designed Fertility Program with the addition of key Taurus solutions.
3. **The Taurus Advanced Acre™ with no Fungicide:** Using the Designed Fertility Program with the addition of key Taurus solutions without the addition of fungicide.

EFFICACY REPORT

2017 – MYCORRHIZAL & RHIZOBIAL INOCULANT

SOYBEAN AGTIV THRIVE

► PLOT TRIAL

Research partner: ICMS

Research site: Portage La Prairie, MB

Treatments:
a) AGTIV® SOYBEAN • Granular applied at 5 lb/ac*;
b) AGTIV® BRADY • Granular for SOYBEAN applied at 4 lb/ac*;
c) Competitor inoculant A applied at 5.0 lb/ac*;
d) Competitor inoculant B applied at 4.5 lb/ac*;
e) Competitor inoculant C applied at 7 lb/ac*;
f) Competitor inoculant D applied at 0.063 g/1000 seeds*.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 6 repetitions.

Variety: Northstar Seeds, Richer

Previous crop: Canola

Seeding details: Seeded June 1 at 165 000 plants/ac with 15 cm row spacing using a cone planter. Conventional tillage before spring.

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

Treatment	Yield (bu/ac)	Yield (kg/ha)
AGTIV® SOYBEAN • Granular	58.3	3921
AGTIV® BRADY • Granular for SOYBEAN	54.6	3672
Competitor inoculant A	54.5	3665
Competitor inoculant B	54.5	3665
Competitor inoculant C	54.7	3679
Competitor inoculant D	54.9	3692

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 0-80-40-20 N-P-K-S (288 lb/ac): before seeding

Pesticides:
- Roundup TR 540 (0.7 L/ac): June 26 and July 14
- Cygon: August 8

Harvesting: Combined on October 12, with a Wintersteiger.

Month	Precipitation (mm)
May	26.8
June	69.9
July	29.4
August	8.8
September	83.8
TOTAL	**218.7**

EFFICACY REPORT

2017 – MYCORRHIZAL & RHIZOBIAL INOCULANT

SOYBEAN AGTIV THRIVE

► PLOT TRIAL

Research partner: New Era Ag Research

Research site: Swan River, MB

Treatments:
a) AGTIV® SOYBEAN • Granular applied at 5.1 lb/ac*;
b) Competitor inoculant A applied at 5.0 lb/ac*;
c) Competitor inoculant A applied at 10 .0 lb/ac;
d) Competitor inoculant C applied at 7.1 lb/ac*;
e) Competitor inoculant C applied at 14.3 lb/ac.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 8 repetitions.

Variety: Prograin, Dario, treated with 2 mL/kg CBMV and 1.82 mL/kg Optimize.

Previous crop: Canola

Seeding details: Seeded May 23, at 200 000 seeds/ac at 10 in row spacing using seedhawk air drill.

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

Treatment	Yield [1] (bu/ac)	Yield [1] (kg/ha)
AGTIV® SOYBEAN • Granular	40.7 [a]	2737 [a]
Competitor inoculant A low rate	35.0 [b,c]	2354 [b,c]
Competitor inoculant A high rate	36.5 [b]	2455 [b]
Competitor inoculant C low rate	32.5 [c]	2186 [c]
Competitor inoculant C high rate	35.3 [b,c]	2374 [b,c]

[1] Average yields followed by different letters are significantly different ($P < 0.05$, Student-Newman-Keuls)

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 7-34-20-0 (102 lb/ac): spring broadcast

Pesticides:
- Viper (400 mL/ac): 2-3 trifoliate
- UAN (81 mL/ac): 2-3 trifoliate
- Roundup (0.67 L/ac): 3-4 trifoliate
- Guardsman (607 mL/ac): R8

Harvesting: Combined on October 10 with Hedge 140 plot combine.

Month	Precipitation (mm)
TOTAL	**197.1**

EFFICACY REPORT

2016 – MYCORRHIZAL & RHIZOBIAL INOCULANT

SOYBEAN AGTIV THRIVE

► PLOT TRIAL

Research partner: ICMS

Research site: Oakville, MB

Treatments:
a) AGTIV® SOYBEAN • Granular applied at 5 lb/ac*;
b) Competitor inoculant A applied at 5 lb/ac*;
c) Competitor inoculant B applied at 4.5 lb/ac*;
d) Competitor inoculant C applied at 7 lb/ac*.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 5 repetitions.

Variety: Legend Seeds, Eclipse

Previous crop: Fallow

Seeding details: Seeded at 95 kg/ha with 15 cm row spacing using plot drill and double disc openers. The plot area was cultivated one week before planting.

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

Treatment	Yield (bu/ac)	Yield (kg/ha)
AGTIV® SOYBEAN • Granular	79.7	5360
Competitor inoculant A	77.8	5232
Competitor inoculant B	77.7	5225
Competitor inoculant C	75.7	5091

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: None

Pesticides: Roundup TR 540 (0.66 L/ac): one month after planting

Harvesting: Combined with Wintersteiger plot combine.

Month	Precipitation (mm)
May	58.5
June	90.3
July	86
August	99.9
September	43.6
TOTAL	**378.3**

EFFICACY REPORT

2015 – MYCORRHIZAL & RHIZOBIAL INOCULANT

SOYBEAN AGTIV THRIVE

► PLOT TRIAL

Research partner: Ag-Quest

Research site: Morden, MB

Treatments:
a) AGTIV® SOYBEAN • Granular applied at 5 lb/ac*;
b) Competitor inoculant A applied at 5 lb/ac*;
c) Competitor inoculant B applied at 4.5 lb/ac*.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 8 repetitions.

Variety: NORTHSTAR genetics, ANOLA variety

Previous crop: Canola

Seeding details: Seeded on June 2, at 18 cm row spacing and 100 kg/ha

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

Treatment	Yield [1] (bu/ac)	Yield [1] (kg/ha)
AGTIV® SOYBEAN • Granular	31.8 [a]	2139 [a]
Competitor inoculant A	27.8 [b]	1870 [b]
Competitor inoculant B	30.5 [a, b]	2051 [a, b]

[1]Yields followed by different letters are statistically different at alpha 0.05.

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: None

Pesticides: Roundup TR 540 (0.61 L/ac)

Harvesting: Combined on September 30, 2015, with Wintersteiger plot combine.

Month	Precipitation (mm)
May	62.8
June	87.1
July	47.0
August	47.3
TOTAL	**244.2**

EFFICACY REPORT

2015 – MYCORRHIZAL & RHIZOBIAL INOCULANT

SOYBEAN AGTIV THRIVE

► PLOT TRIAL

Research partner: ICMS

Research site: Portage La Prairie, MB

Treatments: a) AGTIV® SOYBEAN • Granular applied at 5 lb/ac*;
b) Competitor inoculant A applied at 5 lb/ac*;
c) Competitor inoculant B applied at 4.5 lb/ac*.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 7 repetitions.

Variety: PRIDE SEEDS genetics, PS 0035 NR2 variety

Previous crop: Canola

Seeding details: Seeded on May 29, at 15.2 cm row spacing and 100 kg/ha.

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

Treatment	Yield (bu/ac)	Yield (kg/ha)
AGTIV® SOYBEAN • Granular	57.3	3853
Competitor inoculant A	55.4	3725
Competitor inoculant B	58.2	3913

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: None

Pesticides: Roundup TR 540 (0.61 L/ac)

Harvesting: Combined on October 6, 2015, with Wintersteiger plot combine.

Month	Precipitation (mm)
May	76.2
June	52.6
July	176.7
August	64.2
September	18.4
TOTAL	**388.1**

EFFICACY REPORT

2017 – MYCORRHIZAL INOCULANT

SOYBEAN AGTIV REACH

► PLOT TRIAL

Research partner: BlackCreek Research Inc.

Research site: Bright, ON

Treatments: a) Untreated check;
b) AGTIV® ON SEED™ mycorrhizal inoculant.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 8 repetitions.

Variety: ELITE SEED, Katonda R2

Previous crop: Winter Wheat

Seeding details: Seeded June 9 at 168 000 plants/ac with 38 cm row spacing using a cone planter.

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

Treatment	Yield (bu/ac)	Yield (kg/ha)
Untreated check	41.4 [a]	2782 [a]
AGTIV® ON SEED™ mycorrhizal inoculant	44.0 [b]	2957 [b]

[1] Average yields followed by different letters are significantly different (P < 0.05, Student-Newman-Keuls)

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: None

Pesticides:
- Boundary Lqd (2.47 L/ha)
- Broadstrike Rc (87.5 g/ha): June 10
- Classic (36 g/ha): June 29

Harvesting: Combined on October 19, 2017, with Wintersteiger plot combine.

Month	Precipitation (mm)
May	120.0
June	53.5
July	81.0
August	106.0
September	32.0
TOTAL	**392.5**

EFFICACY REPORT

2017 – MYCORRHIZAL INOCULANT

SOYBEAN AGTIV REACH

► PLOT TRIAL

Research partner: Independent consultant

Research site: Saint-Simon (#1), QC

Treatments: a) Untreated check;
b) AGTIV® ON SEED™ mycorrhizal inoculant.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 4 repetitions.

Variety: ELITE SEED, Auriga

Previous crop: Corn

Seeding details: Seeded May 25 at 182 000 plants/ac with 33 cm row spacing using a cone planter. Conventional tillage before spring. Vibro before seeding.

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

Treatment	Yield (bu/ac)	Yield (kg/ha)
Untreated check	46.4	3119
AGTIV® ON SEED™ mycorrhizal inoculant	48.8	3280

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: None

Pesticides:
- Dual II Magnum (1.75 L/ha): May 25
- Firstrate (20.8 g/ha): May 25
- Pursuit (0.312 L/ha): May 25

Harvesting: Combined on September 27, 2017 with Delta plot combine.

Month	Precipitation (mm)
May	81.5
June	120.4
July	57.4
August	57.6
September	45.0
TOTAL	**361.9**

EFFICACY REPORT

2017 – MYCORRHIZAL INOCULANT

SOYBEAN AGTIV REACH

► PLOT TRIAL

Research partner: Independent consultant

Research site: Saint-Simon (#2), QC

Treatments: a) Untreated check;
b) AGTIV® ON SEED™ mycorrhizal inoculant.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 4 repetitions.

Variety: ELITE SEED, Auriga

Previous crop: Corn

Seeding details: Seeded May 25 at 182 000 plants/ac with 33 cm row spacing using a cone planter. Conventional tillage before spring. Vibro before seeding.

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

Treatment	Yield (bu/ac)	Yield (kg/ha)
Untreated check	44.3	2953
AGTIV® ON SEED™ mycorrhizal inoculant	45.9	3058

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: None

Pesticides:
- Dual II Magnum (1.75 L/ha): May 25
- Firstrate (20.8 g/ha): May 25
- Pursuit (0.312 L/ha): May 25

Harvesting: Combined on September 27, 2017, with Delta plot combine.

Month	Precipitation (mm)
May	81.5
June	120.4
July	57.4
August	57.6
September	45.0
TOTAL	**361.9**

EFFICACY REPORT

SUMMARY – RHIZOBIAL & BACILLUS INOCULANT

SOYBEAN AGTIV ENRICH

► PLOT TRIALS

Research partners:
- Ag-Quest;
- BlackCreek Research Inc.;
- ICMS;
- New Era Ag Research;
- New-Marc Research Inc.;
- Tall Pines Agricultural Research Ltd.;
- Wellington Agricultural Research.

Research sites:
- Ontario;
- Manitoba;
- Quebec.

Treatments*:
a) AGTIV ENRICH® SOYBEAN;
b) Competitor inoculant B;
c) Competitor inoculant C;
d) Competitor inoculant E.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design:
11 trials (6-8 repetitions each)

Table 1. **Summary of yields (bu/ac) per trial**

Year	Location	Seed variety	AGTIV ENRICH® SOYBEAN	Competitor inoculant		
				B	C	E
2021	Bright	Katonda R2	72.2	70.1	70.7	69.3
2022	Portage la Prairie	NCS Redvers RR2X	54.2	57	53	53
	Swan River	Syngenta D8X	57.4	56.9	57.6	55.5
	Bright	Pioneer 12T94E	52.8	52.8	51.9	52.4
	Saint-Marc-sur-Richelieu	Katonda R2	34.4	32.8	32.6	32.5
2023	Alma	Pioneer P08A44E	59.2	53.5		56.4
	Rockwood	Dekalb 03-25	105.1	101.1		104
2024	Swan River	S000-D8X	61.2			60.5
	Redvers	PV 22s002 RR2X	29			24.7
2025	Bright	P17Z39E	44.4	41.5		42.6
	Elm Creek	Bourke R2X	46.9	45.3		46.9

EFFICACY REPORT

2025 – RHIZOBIAL & BACILLUS INOCULANT

SOYBEAN AGTIV ENRICH

► PLOT TRIAL

Research partner: BlackCreek Research Inc.

Research site: Bright, ON

Treatments*:
a) Untreated check;
b) AGTIV ENRICH® SOYBEAN;
c) Competitor inoculant B;
d) Competitor inoculant E.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 8 repetitions, 36 m^2 plots.

Variety: P17Z39E treated with Vitaflo

Previous crop: Corn

Seeding details: Seeded on May 27 with a plt planter at a rate of 48 kg/ha in a sandy loam soil (pH: 6.6, OM: 1.6%). Emergence on June 5.

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated check	43.3	-
AGTIV ENRICH® SOYBEAN	44.4	1.1
Competitor inoculant B	41.5	-
Competitor inoculant E	42.6	-

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 3.4-16.1-29.3-6.5S-3.1Mg (364 kg/ha): May 27

Pesticides:
- Roundup Transorb (1.67 L/ha): May 26 and July 2
- Boundary LQD (2.5 L/ha): June 1
- Antler (125 mL/ha): July 2
- Merge (0.5% V/V): July 2

Harvesting: September 29, 2025

Month	Precipitation (mm)
May	106.2
June	128.8
July	90.4
August	38.8
September	70.0
TOTAL	**434.2**

EFFICACY REPORT

2025 – RHIZOBIAL & BACILLUS INOCULANT

SOYBEAN AGTIV ENRICH

► PLOT TRIAL

Research partner: Ag-Quest

Research site: Elm Creek, MB

Treatments*:
a) Untreated check;
b) AGTIV ENRICH® SOYBEAN;
c) Competitor inoculant B;
d) Competitor inoculant E.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 6 repetitions, 27 m^2 plots.

Variety: Bourke R2X treated with Vitaflo

Previous crop: Field pea

Seeding details: Seeded on May 9 with a cone planter at a rate of 100 kg/ha in a coarse sandy loam soil (pH: 6.8, OM: 1.9%). Emergence on May 27.

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 0-0-62 (48 kg/ha): May 9

Pesticides:
- StartUp (1.65 L/ha): May 7 and June 5
- Aim (0.07 L/ha): May 7
- Basagran Forte (2.25 L/ha): July 2
- Centurion (0.19 L/ha): July 2
- Priaxor (0.44 L/ha): August 22

Harvesting: October 1, 2025

Month	Precipitation (mm)
May	68.7
June	28.5
July	93.1
August	80.7
September	85.6
TOTAL	**356.6**

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated check	45.1	-
AGTIV ENRICH® SOYBEAN	46.9	1.8
Competitor inoculant B	45.3	0.2
Competitor inoculant E	46.9	1.8

EFFICACY REPORT

2024 – RHIZOBIAL & BACILLUS INOCULANT

SOYBEAN AGTIV ENRICH

► PLOT TRIAL

Research partner: New Era Ag Research

Research site: Swan River, MB

Treatments*: a) Untreated check;
b) AGTIV ENRICH® SOYBEAN;
c) Competitor inoculant E.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block, 6 repetitions, 22 m^2 plots.

Variety: S000-D8X treated with Vayantis RFC

Previous crop: Soybean

Seeding details: Seeded on May 29 with a cone planter at a rate of 190 000 seed/ac in a sandy loam soil (pH: 7, OM: 4.1%). Emergence on June 9.

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 11-52-0 (38 lb/ac): May 28

Pesticides: RT 540 (0.67 L/ac): June 27 and July 19

Harvesting: September 27, 2024

Month	Precipitation (mm)
May	45.5
June	76.5
July	71.4
August	110.2
September	36.1
TOTAL	**339.7**

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated check	59.8	-
AGTIV ENRICH® SOYBEAN	61.2	1.4
Competitor inoculant E	60.5	0.7

EFFICACY REPORT

2024 – RHIZOBIAL & BACILLUS INOCULANT

SOYBEAN AGTIV ENRICH

► PLOT TRIAL

Research partner: South East Research Farm

Research site: Redvers, SK

Treatments*: a) Untreated check;
b) AGTIV ENRICH® SOYBEAN;
c) Competitor inoculant E.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block, 6 repetitions, 9.3 m^2 plots.

Variety: PV 22s002 RR2X treated with Vibrance Maxx RFC

Previous crop: Fallow

Seeding details: Seeded on May 29 with a cone planter at a rate of 200 000 seeds/ac in a loam soil (pH: 8.3, OM: 2.8%).

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated check	25.9	-
AGTIV ENRICH® SOYBEAN	29	3.1
Competitor inoculant E	24.7	-1.2

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 11-52-0 (65 lb/ac) sidebanded at seeding

Pesticides: Roundup 540 (670 mL/ac): June 7

Harvesting: September 29, 2024

Month	Precipitation (mm)
June	156.2
July	13.4
August	39
September	70.6
TOTAL	**279.2**

EFFICACY REPORT

2023 – RHIZOBIAL & BACILLUS INOCULANT

SOYBEAN AGTIV ENRICH

► PLOT TRIAL

Research partner: Wellington Agricultural Research.

Research site: Alma, ON

Treatments: a) AGTIV ENRICH® SOYBEAN;
b) Competitor inoculant B;
c) Competitor inoculant E.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized complete block, 6 repetitions, 18.04 m^2 plots.

Variety: Pioneer P08A44E

Previous crop: Grain Corn

Seeding details: Seeded on May 26 with a cone seeder at a rate of 400 000 seeds/ha in a loam soil (pH: 7.6, OM: 2.6%).

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

Treatment	Yield (bu/ac)
AGTIV ENRICH® SOYBEAN	59.2
Competitor inoculant B	53.5
Competitor inoculant E	56.4

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: None

Pesticides: Roundup WeatherMAX: June 8

Harvesting: October 4, 2023

Month	Precipitation (mm)
May	38.7
June	79.3
July	168.6
August	115.8
September	40.3
TOTAL	**442.7**

EFFICACY REPORT

2023 – RHIZOBIAL & BACILLUS INOCULANT

SOYBEAN AGTIV ENRICH

► PLOT TRIAL

Research partner: Tall Pines Agricultural Research Ltd.

Research site: Rockwood, ON

Treatments:
a) AGTIV ENRICH® SOYBEAN
b) Competitor inoculant B
c) Competitor inoculant E

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized complete block, 6 repetitions, 12.0 m^2 plots.

Variety: Dekalb 03-25

Previous crop: Corn

Seeding details: Seeded on May 25 with a plot drilling machine at a rate of 200000 seeds/ac in a sandy loam (pH: 7.2, OM: 3.4 %). Emergence on June 4.

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

Treatment	Yield (bu/ac)
AGTIV ENRICH® SOYBEAN	105.1
Competitor inoculant B	101.1
Competitor inoculant E	104.0

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 120 – 52 – 60 (516 kg/ha): May 15

Pesticides:
- Roundup WeatherMAX (2.47 L/ha): June 13
- Roundup WeatherMAX (2.47 L/ha): July 10

Harvesting: October 27, 2023

Month	Precipitation (mm)
May	49.2
June	75.6
July	162.8
August	86.5
September	16.2
October	31.9
TOTAL	**422.2**

EFFICACY REPORT

2022 – RHIZOBIAL & BACILLUS INOCULANT

SOYBEAN AGTIV ENRICH

► PLOT TRIAL

Research partner: ICMS

Research site: Portage la Prairie, MB

Treatments:
a) AGTIV ENRICH® SOYBEAN;
b) Competitor inoculant B;
c) Competitor inoculant C;
d) Competitor inoculant E.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized complete block, 6 repetitions, 20 m^2 plots.

Variety: NSC Redvers R2X

Previous crop: Spring wheat (cover crop tilled under prior to maturity)

Seeding details: Seeded on June 17 with a cone seeder at a rate of 115 kg/ha in a clay loam soil (pH: 8.2, OM: 6.7%).

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

Treatment	Yield (bu/ac)
AGTIV ENRICH® SOYBEAN	54.2
Competitor inoculant B	57.0
Competitor inoculant C	53.0
Competitor inoculant E	53.0

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: None

Pesticides: Roundup WeatherMAX (0.33 L/ac): June 24 and July 14

Harvesting: October 12, 2022

Month	Precipitation (mm)
May	140.7
June	70.3
July	95.2
August	90.1
September	50.3
TOTAL	**446.6**

EFFICACY REPORT

2022 – RHIZOBIAL & BACILLUS INOCULANT

SOYBEAN AGTIV ENRICH

► PLOT TRIAL

Research partner: New-Marc Research Inc.

Research site: Saint-Marc-sur-Richelieu, QC

Treatments:
a) AGTIV ENRICH® SOYBEAN*;
b) Competitor inoculant B*;
c) Competitor inoculant C*;
d) Competitor inoculant E*.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 6 repetitions, 18 m^2 plots.

Variety: Katonda R2

Previous crop: Corn

Seeding details: Seeded on May 26, with a CP cone planter at a rate of 60 kg/ha in a clay soil (pH: 7.4, OM: 3.7%).
Emergence on June 8.

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

Treatment	Yield (bu/ac)
AGTIV ENRICH® SOYBEAN	34.4
Competitor inoculant B	32.8
Competitor inoculant C	32.6
Competitor inoculant E	32.5

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: None

Pesticides: Credit Xtreme: June 26

Harvesting: October 17, 2022

Month	Precipitation (mm)
May	75.5
June	123.7
July	98.3
August	140.0
September	156.9
TOTAL	**594.4**

EFFICACY REPORT

2022 – RHIZOBIAL & BACILLUS INOCULANT

SOYBEAN AGTIV ENRICH

► PLOT TRIAL

Research partner: New Era Ag Research

Research site: Swan River, MB

Treatments:
a) AGTIV ENRICH® SOYBEAN*;
b) Competitor inoculant B*;
c) Competitor inoculant C*;
d) Competitor inoculant E*.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 6 repetitions, 24 m^2 plots.

Variety: Syngenta D8X

Previous crop: Canola

Seeding details: Seeded on May 27, with a CP cone planter at a rate of 68 kg/ha in a clay loam soil (pH: 6.5, OM: 5.3%). Emergence on June 6.

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

Treatment	Yield (bu/ac)
AGTIV ENRICH® SOYBEAN	57.4
Competitor inoculant B	56.4
Competitor inoculant C	57.6
Competitor inoculant E	55.5

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: MAP 4-20-24: May 26

Pesticides:
- Viper ADV: June 28
- RT540: June 28 and July 7

Harvesting: October 3, 2022

Month	Precipitation (mm)
May	14.5
June	80.0
July	32.3
August	48.8
September	58.9
TOTAL	**234.5**

EFFICACY REPORT

2022 – RHIZOBIAL & BACILLUS INOCULANT

SOYBEAN AGTIV ENRICH

► PLOT TRIAL

Research partner: BlackCreek Research Inc.

Research site: Bright, ON

Treatments:
a) AGTIV ENRICH® SOYBEAN*;
b) Competitor Inoculant B*;
c) Competitor Inoculant C*;
d) Competitor Inoculant E*.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 6 repetitions, 24 m^2 plots.

Variety: Pioneer 12T94E

Previous crop: Corn

Seeding details: Seeded on May 30, with a CP cone planter at a rate of 58 kg/ha in a sandy loam soil (pH: 7.5, OM: 3.2%). Emergence on June 5.

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

Treatment	Yield (bu/ac)
AGTIV ENRICH® SOYBEAN	52.8
Competitor inoculant B	52.8
Competitor inoculant C	51.9
Competitor Inoculant E	52.4

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 4-20-24-6 of NPKS on May 27 prior to final cultivator pass

Pesticides:
- Boundary LQD: May 31
- Roundup Transorb: July 7

Harvesting: October 5, 2022

Month	Precipitation (mm)
May	82.0
June	56.8
July	48.2
August	83.6
Septembre	52.6
TOTAL	**323.2**

EFFICACY REPORT

2021 – RHIZOBIAL & BACILLUS INOCULANT

SOYBEAN AGTIV ENRICH

► PLOT TRIAL

Research partner: BlackCreek Research Inc.

Research site: Bright, ON

Treatments:
a) AGTIV ENRICH® *;
b) Competitor Inoculant B*;
c) Competitor Inoculant C*;
d) Competitor Inoculant E*.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 8 repetitions, 24 m^2 plots.

Variety: Katonda R2

Previous crop: Corn

Seeding details: Seeded on May 19, with a cone seeder at a rate of 60 kg/ha. Seeds pretreated with a commercial rhizobium.

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

Treatment	Yield (bu/ac)	Protein content (%)
AGTIV ENRICH®	72.2	35.3
Competitor B	70.1	35.5
Competitor C	70.7	34.9
Competitor E	69.3	35.1

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: None

Pesticides:
- Boundary LQD: May 22
- Roundup Transorb: June 23

Harvesting: September 29, 2021

Month	Precipitation (mm)
May	26.4
June	86.3
July	84.6
August	121.0
Septembre	162.4
TOTAL	**480.7**

DRY BEANS

AVERAGE YIELD INCREASE

AGTIV REACH

266 lb/ac

9.1%

298 kg/ha

18 sites over 12 years

North America

TRIALS PICTURES

Dry bean split field with AGTIV® vs untreated.
Faster plant development, larger plants and quicker row closure on the right.

AGTIV® dry bean plants are bigger with more branches and larger leaves.
With AGTIV®, the root mass is increased with darker green plants
(through more nutrient absorption).

EFFICACY REPORT

SUMMARY – MYCORRHIZAL INOCULANT

DRY BEAN

AGTIV REACH

► PLOT TRIALS

Research partners:
- ICMS;
- Tall Pines Agricultural Research Ltd.

Research sites: Ontario

Treatments*:
a) Untreated check;
b) AGTIV REACH®.

*Products applied according to the manufacturer's recommended rate.

Experimental design:
- Randomized Complete Block Design: 3 trials (8 repetitions each)
- Split field: 15 demos

► GROWER DEMONSTRATIONS

Experimental design: Split field: 15 demos

Figure 1. **Yields with and without AGTIV REACH®.**

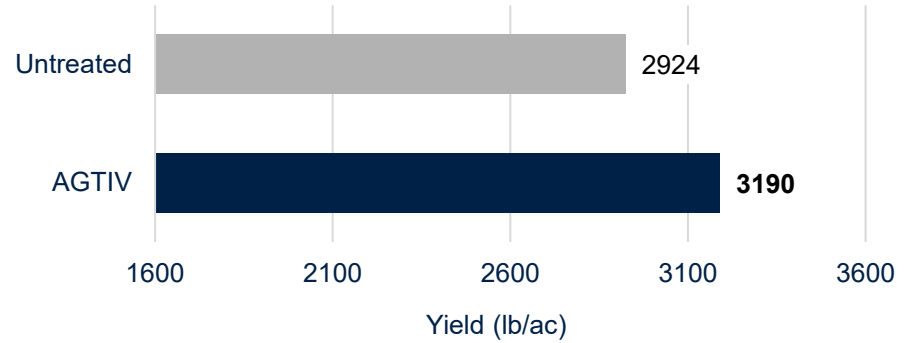


Table 1. **Average yield increase with AGTIV REACH® per year for trials and demos**

Year	Number of sites	Average increase		
		(lb/ac)	(kg/ha)	(%)
2014	2	337	378	13
2015	2	482	542	17.3
2016	5	130	146	5.5
2017	2	146	164	5.1
2020	1	462	518	10.7
2023	3	163	183	6.4
2024	1	589	660	25.5
2025	2	414	464	12
Total	**18 sites**	**265.7 lb/ac**	**297.7 kg/ha**	**9.1%**

Faster plant development, larger plants and quicker row closure.

EFFICACY REPORT

2025 – MYCORRHIZAL INOCULANT

DRY BEAN

AGTIV REACH

► PLOT TRIAL

Research partner: ICMS

Research site: Portage la Prairie, MB

Treatments*: a) Untreated check;
b) AGTIV REACH® P;
c) AGTIV IGNITE® L.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 8 repetitions, 21.3 m^2 plots.

Variety: AAC Argosy treated with Cruiser Maxx Vibrance, Dynasty, and Precede

Previous crop: Fallow

Seeding details: Seeded on May 28 with a plot drilling machine at a rate of 96 kg/ha in a silty clay loam soil (pH: 7.9, OM: 6.5%). Emergence on June 4.

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

Treatment	Yield (lb/ac)	Yield increase (lb/ac)
Untreated check	3024.0	-
AGTIV REACH® P	3504.0	480.0
AGTIV IGNITE® L	3366.0	342.0

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 45-39-11.2-11.2 (kg/ha) actual NPKS

Pesticides:
- Basagran Forte (0.145 L/ac): June 26
- Viper ADV (0.4 L/ac): June 26
- UAN (0.8 L/ac): June 26
- Acapela (0.35 L/ac): August 29
- Armory (1.11 L/ac): October 2
- Agral 90 (0.1 L/ 100 L): October 2

Harvesting: October 9, 2025

Month	Precipitation (mm)
May	25.1
June	11.9
July	46.3
August	197.9
September	39.6
TOTAL	**320.8**

EFFICACY REPORT

2025 – MYCORRHIZAL INOCULANT

DRY BEAN

AGTIV REACH

► PLOT TRIAL

Research partner: Wellington Agricultural Research

Research site: Elmira, ON

Treatments*: a) Untreated check;
b) AGTIV REACH® P;
c) AGTIV IGNITE® L.

*Products applied according to the manufacturer's recommended rate.

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

Variety: Rogue treated with Cruiser Maxx Vibrance, Apron XL, and Rancona Trio

Previous crop: Corn

Seeding details: Seeded on June 13 with a cone planter at a rate of 44.4 kg/ha in a loam soil (pH: 7.7, OM: 3.4%).
Emergence on June 20.

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 5-27-27 (67 kg/ha): June 9

Pesticides: Treflan (2.3 L/ha): June 13

Harvesting: October 3, 2025

Month	Precipitation (mm)
June	60.2
July	83.7
August	55.5
September	65.3
TOTAL	**264.7**

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

Treatment	Yield (lb/ac)	Yield increase (lb/ac)
Untreated check	3978.0	-
AGTIV REACH® P	4326.0	348.0
AGTIV IGNITE® L	4548.0	570.0

EFFICACY REPORT

2024 – MYCORRHIZAL INOCULANT

DRY BEAN

AGTIV REACH

► PLOT TRIAL

Research partner: Tall Pines Agricultural Research Ltd.

Research site: Rockwood, ON

Treatments*: a) Untreated check;
b) AGTIV REACH® P.

*Products applied according to the manufacturer's recommended rate.

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

Variety: HDC Rogue

Previous crop: Winter wheat

Seeding details: Seeded on June 13 with a cone planter at a rate of 63 lb/ac in a sandy loam soil (pH: 7, OM: 2.5%). Emergence on June 21.

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 120-60-90 (589 kg/ha): May 6

Pesticides:
- Dual II Magnum (1.75 L/ha): June 15
- Pursuit (0.21 L/ha): June 15
- Allegro (1 L/ha): July 28 and August 8

Harvesting: October 21, 2024

Month	Precipitation (mm)
June	87.3
July	139.5
August	61.9
September	24.9
TOTAL	**313.6**

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

Treatment	Yield (lb/ac)	Yield increase (lb/ac)
Untreated check	2309.8	-
AGTIV REACH® P	2898.8	589.0

CANOLA

AVERAGE YIELD INCREASE

AGTIV IGNITE

2.5 bu/ac

6.5%

140 kg/ha

38 sites over 8 years

Canada

EFFICACY REPORT

SUMMARY – SERENDIPITA INOCULANT

CANOLA AGTIV IGNITE

► PLOT TRIALS

Research partners:

- Ag-Quest;
- ICMS;
- New Era Ag Research;
- North Peace Applied Research Association;
- Olds College of Agriculture;
- Prairie Ag Research Inc.;
- Small Plot Inc.;
- South East Research Farm;
- Wellington Agricultural Research;
- Wheatland Conservation Area Inc.

Research sites:

- Ontario;
- Manitoba;
- Saskatchewan;
- Alberta.

Treatments*:

a) Untreated check;
b) AGTIV IGNITE® L.

*Products applied according to the manufacturer's recommended rate.

Experimental design:

- Randomized Complete Block Design: 29 trials (6-8 repetitions each)
- Latin square: 3 trials (6 repetitions each)

► GROWER DEMONSTRATIONS

Experimental design: Split field: 5 demos

Table 1. **Average increase of yield per year, trials and demos.**

Year	Number of sites	Untreated check (bu/ac)	AGTIV IGNITE® L yield (bu/ac)	Yield increase (bu/ac)
2018	1	63.5	68	4.5
2019	6	44.6	47.1	2.5
2020	5	37.2	39.6	2.4
2021	8	32.5	35	2.5
2022	7	33.6	36.2	2.6
2023	5	36	37.7	1.7
2024	1	33.7	35.6	1.9
2025	4	48.5	51.9	3.4
Total	**37 sites**	**38.1[a]**	**40.6[b]**	**2.5 bu/ac***

*Summary of means are significantly different following a combined site ANOVA and a Tukey test (p<05) p < 001

Table 2. **Average increase in canola oil content per year.**

Year	Number of sites	Untreated check (oil %)	AGTIV IGNITE® L (oil %)	Oil increase (%)
2019	3	41.2	42.1	0.9
2020	4	39.2	40.6	1.4
2021	5	38.1	38.5	0.4
2022	7	35.3	36.1	0.8
Total	**19 sites**	**37.8[a]**	**38.7[b]**	**0.9%****

** Summary of means are significantly different following a combined site ANOVA and a Tukey test (p<0.1) p=05

EFFICACY REPORT

SUMMARY OF YIELD – SERENDIPITA INOCULANT

CANOLA AGTIV IGNITE

Table 1. **Summary of yield per site and year – Ontario**

Site	Year	Untreated check	AGTIV IGNITE® L	Increase
Alma	2022	20	21.4	1.4

Table 2. **Summary of canola per site and year – Manitoba**

Site	Year	Untreated check	AGTIV IGNITE® L	Increase
Elm Creek	2021	36.2	37.2	1
	2022	46.1	48	1.9
Portage la Prairie	2019	78	78	0
	2021	36.3	38.9	2.6
	2022	29.3	32.8	3.5
	2025	54.3	60.8	6.5
Sandy Ridge Farms	2021	41.8	44.1	2.3
Swan River	2018	63.5	68	4.5
	2019	53.7	55.4	1.7
	2020	61.2	64	2.8
	2021	46.9	48.2	1.3
	2022	60	62.2	2.2
	2023	71	72.8	1.8
	2025	61.9	66.0	4.1

Table 3. **Summary of canola yield per site and year – Saskatchewan**

Site	Year	Untreated check	AGTIV IGNITE® L	Increase
Farm Beechy	2020	24.2	27.8	3.6
Moon Lake	2020	16.3	18.2	1.9
	2023	23.8	24.9	1.1
Redvers	2022	32.2	34.1	1.9
	2023	32.2	33.8	1.6
Saskatoon	2019	38.8	41.8	3
	2021	10.3	12.5	2.2
	2022	19.6	21	1.4
Swift Current	2019	25	27.1	2.1

Table 4. **Summary of canola yield per site and year – Alberta**

Site	Year	Untreated check	AGTIV IGNITE® L	Increase
Josephburg	2019	46.8	53.2	6.4
	2020	47.2	49.5	2.3
	2021	23.9	25	1.1
	2023	45.6	47.7	2.1
Lillico Farms	2021	26.4	31.5	5.1
Manning	2024	33.7	35.6	1.9
MARA	2025	37.4	39.4	2.0
Olds	2025	40.4	41.5	1.1
Taber	2019	25.4	27	1.6
	2020	37.3	38.5	1.2
	2022	28.2	32.7	4.5
Westline Farms	2021	29.7	32.5	2.8
Vulcan	2023	7.3	9.3	2

EFFICACY REPORT

SUMMARY OF OIL CONTENT – SERENDIPITA INOCULANT

CANOLA AGTIV IGNITE

Table 1. **Summary of canola seed oil content per site and year – Ontario**

site	Year	Untreated check oil	AGTIV IGNITE® L (oil %)	oil increase (%)
Alma	2022	36.3	36.9	0.6

Table 2. **Summary of canola seed oil content trials per site and year – Manitoba**

site	Year	Untreated check oil	AGTIV IGNITE® L (oil %)	oil increase (%)
Elm Creek	2021	35.1	37.1	2
	2022	37.7	37.3	-0.4
Portage la Prairie	2019	45.5	45.7	0.2
	2021	36.6	36	-0.6
	2022	30.6	35.2	4.6
Swan River	2019	49.9	52.1	2.2
	2020	38.7	40.5	1.8
	2021	37.8	37.8	0
	2022	37.3	37.7	0.4

Table 3. **Summary of canola seed oil content per site and year – Saskatchewan**

site	Year	Untreated check oil	AGTIV IGNITE® L (oil %)	oil increase (%)
Moon Lake	2020	41.6	43.1	1.5
Redvers	2022	36.6	36.5	-0.1
Saskatoon	2021	41.8	42.1	0.3
	2022	36.6	36.3	-0.3

Table 4. **Summary of canola seed oil content per site and year – Alberta**

site	Year	Untreated check oil	AGTIV IGNITE® L (oil %)	Increase (%)
Josephburg	2019	28.1	28.6	0.5
	2020	34.7	36.6	1.9
	2021	39.1	39.7	0.6
Taber	2020	41.7	42.1	0.4
	2022	32.1	32.9	0.8

EFFICACY REPORT

2025 – SERENDIPITA INOCULANT

CANOLA AGTIV IGNITE

► PLOT TRIAL

Research partner: Olds College of Agriculture

Research site: Olds, AB

Treatments*: a) Untreated check;
b) AGTIV IGNITE® L.

*Products applied according to the manufacturer's recommended rate.

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

Variety: DK901TF treated with Prosper Evergol and Buteo Start

Previous crop: Wheat

Seeding details: Seeded on May 24 with a plot drilling machine at a rate of 7 kg/ha in a loam soil (pH: 7.4, OM: 7.7%).
Emergence on June 3.

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: Blend of 46-0-0 + 11-52-0 + 21-0-0-24S (455 kg/ha): May 24

Pesticides: Roundup (1 L/ha): May 29

Harvesting: October 1, 2025

Month	Precipitation (mm)
May	70.4
June	81.5
July	75.8
August	46.3
September	0.5
TOTAL	**274.5**

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated check	40.4	-
AGTIV IGNITE® L	41.5	1.1

EFFICACY REPORT

2025 – SERENDIPITA INOCULANT

CANOLA AGTIV IGNITE

► PLOT TRIAL

Research partner: New Era Ag Research

Research site: Swan River, MB

Treatments*:
a) Untreated check;
b) AGTIV IGNITE® L;
c) Competitor inoculant B.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 8 repetitions, 30 m^2 plots.

Variety: L340PC treated with Helix Vibrance and Buteo Start

Previous crop: Wheat

Seeding details: Seeded on May 19 with a cone planter at a rate of 6.5 kg/ha in a sandy loam soil (pH: 7.6, OM: 4.6%). Emergence on May 27.

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated check	61.9	-
AGTIV IGNITE® L	66.0	4.1
Competitor inoculant B	63.0	1.1

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: Blend of 46-0-0 + 11-52-0 + 21-0-0-24S (406 kg/ha): May 8

Pesticides:
- Edge MicroActiv (11.12 kg/ha): May 7
- RT 540 (0.33 L/ac): May 7
- Liberty 150SN (1.6 L/ac): June 11
- Arrow-All-In (0.05 L/ac): June 11
- Cotegra (0.27 L/ac): July 8
- Decis 5EC (0.06 L/ac): August 5

Harvesting: September 10, 2025

Month	Precipitation (mm)
May	17.7
June	100.6
July	11.5
August	185.6
September	46.9
TOTAL	**362.3**

EFFICACY REPORT

2025 – SERENDIPITA INOCULANT

CANOLA AGTIV IGNITE

► PLOT TRIAL

Research partner: ICMS

Research site: Portage la Prairie, MB

Treatments*:
a) Untreated check;
b) AGTIV IGNITE® L;
c) Competitor inoculant B

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 8 repetitions, 21.3 m^2 plots.

Variety: L345PC treated with Buteo Start and Helix Vibrance

Previous crop: Fallow

Seeding details: Seeded on May 27 with a plot drilling machine at a rate of 6.5 kg/ha in a silty clay loam soil (pH: 7.9, OM: 6.5%). Emergence on June 3.

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated check	54.3	-
AGTIV IGNITE® L	60.8	6.5
Competitor inoculant B	58.6	4.3

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 45-39-11.2-11.2 (kg/ha) actual NPKS

Pesticides:
- Sevin (0.1 L/ac): June 13
- Liberty (1.33 L/ac): June 24

Harvesting: September 23, 2025

Month	Precipitation (mm)
May	25.1
June	11.9
July	46.3
August	197.9
September	39.6
TOTAL	**320.8**

EFFICACY REPORT

2024 – SERENDIPITA INOCULANT

CANOLA AGTIV IGNITE

► PLOT TRIAL

Research partner: North Peace Applied Research Association

Research site: Manning, AB

Treatments*: a) Untreated check;
b) AGTIV IGNITE® L.

*Products applied according to manufacturer's recommended rate.

Experimental design: Randomized Complete Block,
6 repetitions, 12.8 m^2 plots.

Variety: CS2600 CR – T(RR) treated with Helix Saltro and Fortenza

Previous crop: Fallow

Seeding details: Seeded on May 28 with a cone planter at a rate of 7 kg/ha in a heavy clay soil (pH: 4.8, OM: 6.8%).
Emergence on June 14.

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated check	33.7	-
AGTIV® IGNITE™ L	35.6	1.9

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 46-0-0 (120 lb/ac) and 13-33-0 -15 (80 lb/ac) sidebanded at seeding

Pesticides: Glyphosate (1 L/ac): May 28 and July 9

Harvesting: October 3, 2024

Month	Precipitation (mm)
May	51.5
June	75.3
July	103.2
August	45.4
September	26.6
October	18.1
TOTAL	**320.2**

EFFICACY REPORT

2023 – SERENDIPITA INOCULANT

CANOLA AGTIV IGNITE

► PLOT TRIAL

Research partners: Integrated Crop Management Services (ICMS)

Research sites: Moon Lake, SK

Treatments: a) Untreated check;
b) AGTIV IGNITE® L.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Latin Square (LS),
6 repetitions, 16.56 m^2 plots.

Variety: InVigor L356PC treated with Helix Vibrance & Lumiderm

Previous crop: Spring wheat

Seeding details: Seeded on June 6 with a cone seeder of 7 kg/ha in a clay soil (pH: 7.9, OM: 7.2%).
Emergence on June 13.

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated check	23.8	-
AGTIV IGNITE® L	24.9	1.1

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 80-30-10-20 actual kg/ha: May 29

Pesticides:
- Amigo (0.5 L/100l): June 28
- Centurion (0.075 L/ac): June 28
- Liberty 150 (1.62 L/ac): June 28
- Decis 5 EC (0.06 L/ac): August 14

Harvesting: September 25, 2023

Month	Precipitation (mm)
June	174.4
July	19.9
August	50.4
September	7.9
TOTAL	**252.6**

EFFICACY REPORT

2023 – SERENDIPITA INOCULANT

CANOLA AGTIV IGNITE

► PLOT TRIAL

Research partners: New Era Ag Research

Research sites: Swan River, MB

Treatments: a) Untreated check;
b) AGTIV IGNITE® L.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block,
6 repetitions, 33.9 m^2 plots.

Variety: InVigor L234PC treated with Helix Vibrance and Lumiderm

Previous crop: Wheat

Seeding details: Seeded on May 22, at a rate of 6.2 kg/ha with a cone seeder in a loam soil (pH: 6.9, OM: 4.8%).
Emergence on May 31.

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated check	71.0	-
AGTIV IGNITE® L	72.8	1.8

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 102.5-0-0-20 (268 lbs/ac): May 21
5.3-25-0-0 (48 lbs/ac): May 22

Pesticides:
- Armory 240 (0.69 L/ac): September 12
- Arrow-All-In-One: (100 mL/ac) June 2, (150 mL/ac) June 8
- Cotegra (280 mL/ac): July 6
- Interline (1.35 L/ac): June 19
- Liberty 150 SN (1.35 L/ac) : June 8
- Pounce: (73 mL/ac) June 2, (100 mL/ac) June 8

Harvesting: September 19, 2023

Month	Precipitation (mm)
May	13.8
June	33.5
July	16.1
August	109.9
September	5.1
TOTAL	**178.4**

EFFICACY REPORT

2023 – SERENDIPITA INOCULANT

CANOLA AGTIV IGNITE

► PLOT TRIAL

Research partners: Integrated Crop Management Services (ICMS)

Research sites: Josephburg, AB

Treatments: a) Untreated check;
b) AGTIV IGNITE® L.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Latin Square (LS),
6 repetitions, 14.64 m^2 plots.

Variety: InVigor L343PC treated with Buteo Start and Helix Vibrance

Previous crop: Spring barley

Seeding details: Seeded on June 13 with a cone seeder of 7 kg/ha in loam soil (pH: 5.8, OM: 8%).
Emergence on July 4.

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated check	45.6	-
AGTIV IGNITE® L	47.7	2.1

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: Fertilizer blend of 33-8-0 actual kg/ha: June 5

Pesticides:
- Matador (0.83 L/ha): July 7
- Liberty 150 SN (3.33 L/ha): July 8
- Select (0.125 L/ha): July 8
- Amigo (0.1 L/100l): July 8
- Heat LQ (0.11 L/ha): October 5

Harvesting: October 13, 2023

Month	Precipitation (mm)
June	128.8
July	110.0
August	56.3
September	11.8
October	2.0
TOTAL	**308.9**

EFFICACY REPORT

2023 – SERENDIPITA INOCULANT

CANOLA AGTIV IGNITE

► PLOT TRIAL

Research partners: South East Research Farm

Research sites: Redvers, SK

Treatments: a) Untreated check;
b) AGTIV IGNITE® L.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block,
6 repetitions, 9 m^2 plots.

Variety: L233P treated with Buteo Start & Helix Vibrance

Previous crop: Spring barley

Seeding details: Seeded on June 7 with a cone seeder of 4.2 lb/ac in loam soil (pH: 8.5, OM: 2.8%)

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated check	32.2	-
AGTIV IGNITE® L	33.8	1.6

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 89.31-32.82-3.16-14.29 actual kg/ha: June 7

Pesticides:
- RT 540 (0.75l/ac): May 19
- Liberty (1.35 L/ac): June 21

Harvesting: September 15, 2023

Month	Precipitation (mm)
May	70.0
June	25.0
July	11.0
August	49.4
September	22.0
TOTAL	**177.4**

EFFICACY REPORT

2023 – SERENDIPITA INOCULANT

CANOLA AGTIV IGNITE

► PLOT TRIAL

Research partner: Small Plot Inc.

Research site: Vulcan, AB

Treatments: a) Untreated check;
b) AGTIV IGNITE® L.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Latin square (LS),
6 repetitions, 32 m^2 plots.

Variety: LL variety treated with Buteo Start

Previous crop: Wheat

Seeding details: Seeded on June 7 with a direct drill at a rate of 4.5 kg/ha in a loam soil (pH: 8.1, OM: 2.9%).
Emergence on June 22.

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 60-15-15-10 : June 7

Pesticides: No pesticide applied

Harvesting: September 28, 2023

Month	Precipitation (mm)
June	43.4
July	37.8
August	31.5
TOTAL	**112.7**

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated check	7.3	-
AGTIV IGNITE® L	9.3	2.0

EFFICACY REPORT

2022 – SERENDIPITA INOCULANT

CANOLA AGTIV IGNITE

► PLOT TRIAL

Research partner: ICMS

Research site: Saskatoon, SK

Treatments: a) Untreated check;
b) AGTIV IGNITE® L*.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete 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, 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 and oil content 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

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 80-30-10-20 kg/ha: prior to seeding

Pesticides:
- Liberty 150: July 4
- Decis 5EC: August 18
- Reglone Ion: September 6

Harvesting: September 16, 2022

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

EFFICACY REPORT

2022 – SERENDIPITA INOCULANT

CANOLA

AGTIV IGNITE

► PLOT TRIAL

Research partner: ICMS

Research site: Portage la Prairie, MB

Treatments: a) Untreated check;
b) AGTIV IGNITE® L*.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete 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, 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 and oil content 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

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: None

Pesticides:
- Roundup WeatherMax: June 24 and July 14
- Sevin XLR: June 24

Harvesting: September 26, 2022

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

EFFICACY REPORT

2022 – SERENDIPITA INOCULANT

CANOLA AGTIV IGNITE

► PLOT TRIAL

Research partner: Ag-Quest

Research site: Taber, AB

Treatments: a) Untreated check;
b) AGTIV IGNITE® L*.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete 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, 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 and oil content 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

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 0-58-0-17 kg/ha: May 16

Pesticides:
- Roundup Transorb: May 18, June 9, 17 & 29
- Decis: June 22, July 6 & 15
- Sevin XLR Plus: June 22, July 6 & 15

Harvesting: 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

EFFICACY REPORT

2022 – SERENDIPITA INOCULANT

CANOLA AGTIV IGNITE

► PLOT TRIAL

Research partner: Ag-Quest

Research site: Elm Creek, MB

Treatments: a) Untreated check;
b) AGTIV IGNITE® L*.

*Products applied according to the manufacturer's recommended rate.

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

Variety: In Vigor L233P treated with Lumiderm

Previous crop: Rye

Seeding details: Seeded on June 5, 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 and oil content 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

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 137-36-22-28 kg/ha: prior to seeding

Pesticides:
- Liberty: June 17
- AMIGO: July 1
- Centurion: July 1
- Coragen: July 1
- Reglone Ion: September 8

Harvesting: September 13, 2022

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

EFFICACY REPORT

2022 – SERENDIPITA INOCULANT

CANOLA AGTIV IGNITE

► PLOT TRIAL

Research partner: Wellington Agricultural Research

Research site: Alma, ON

Treatments: a) Untreated check;
b) AGTIV IGNITE® L*.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete 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, 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 and oil content 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

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 160-20-0 kg/ha: May 10

Pesticides:
- Liberty: June 21
- Matador: June 21

Harvesting: September 17, 2022

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

EFFICACY REPORT

2022 – SERENDIPITA INOCULANT

CANOLA AGTIV IGNITE

► PLOT TRIAL

Research partner: South East Research Farm

Research site: Redvers, SK

Treatments: a) Untreated check;
b) AGTIV IGNITE® L*.

*Products applied according to the manufacturer's recommended rate.

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

Variety: InVigor L340 PC treated with Vercoras & Poncho.

Previous crop: Pea

Seeding details: Seeded on June 1, 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 and oil content 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

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 100-25-0-6 (kg/ha): at seeding

Pesticides:
- Roundup: June 6
- Voliam: June 23
- Liberty: June 23

Harvesting: September 16, 2022

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

EFFICACY REPORT

2022 – SERENDIPITA INOCULANT

CANOLA AGTIV IGNITE

► PLOT TRIAL

Research partner: New Era Ag Research

Research site: Swan River, MB

Treatments: a) Untreated check;
b) AGTIV IGNITE® L*.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete 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, 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

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 100-25-0-6 (kg/ha): at seeding

Pesticides:
- ARROW ALL IN: June 19 & 28
- Pounce: June 23 & 28
- Cotegra: July 22

Harvesting: September 28, 2022

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

EFFICACY REPORT

2021 – SERENDIPITA INOCULANT

CANOLA AGTIV IGNITE

► PLOT TRIAL

Research partner: ICMS

Research site: Josephburg, AB

Treatments: a) Untreated check;
b) AGTIV IGNITE® L*.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 8 repetitions, 24.4 m^2 plots.

Variety: RR Canola 6086 CR

Previous crop: Wheat

Seeding details: Seeded on May 31, with a cone drill at a rate of 7 kg/ha.

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)	Oil content (%)
Untreated check	23.9	-	39.1
AGTIV IGNITE® L	25	1.1	40.2

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: N-P-K 81-41-0 lb/ac

Pesticides:
- Round up WeatherMax: June 12
- Heat LQ: September 20

Harvesting: Combined on October 7, 2021.

Month	Precipitation (mm)
June	85.3
July	112.1
August	52.5
September	53.7
TOTAL	**303.6**

EFFICACY REPORT

2021 – SERENDIPITA INOCULANT

CANOLA AGTIV IGNITE

► PLOT TRIALS

Research partner: New Era Ag Research

Research site: Swan River, MB

Treatments: a) Untreated check;
b) AGTIV IGNITE® L*.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 8 repetitions, 30 m^2 plots.

Variety: InVigor LL234PC

Previous crop: Wheat

Seeding details: Seeded on May 18, with a cone planter at a rate of 4 kg/ha.

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)	Oil content (%)
Untreated check	46.9	-	37.8
AGTIV IGNITE® L	48.2	1.3	37.8

OPERATIONAL NOTES AND RAIN FALL

Fertilisation:
- Urea (46-0-0): May 28
- MAP (11-52-0): May 28

Pesticides:
- Edge: May 7
- RT 540: May 27
- Pounce: June 13
- Arrow: June 13
- Arrow all-in-one: June 18
- Liberty: June 18
- Guardsman: August 26

Harvesting: Combined on September 11, 2021.

Month	Precipitation (mm)
May	33.0
June	65.9
July	45.5
August	77.1
September	39.0
TOTAL	**260.5**

EFFICACY REPORT

2021 – SERENDIPITA INOCULANT

CANOLA AGTIV IGNITE

► PLOT TRIAL

Research partner: ICMS

Research site: Portage la Prairie, MB

Treatments: a) Untreated check;
b) AGTIV IGNITE® L*.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 8 repetitions, 24.4 m^2 plots.

Variety: RR Canola CS2100

Previous crop: Wheat

Seeding details: Seeded on June 2, with a cone drill at a rate of 6 kg/ha.

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)	Oil content (%) [1]
Untreated check	36.3	-	36.8 [ab]
AGTIV IGNITE® L	38.9	2.6	37.1 [a]

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

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: None

Pesticides:
- Pounce: June 14, July 7 and August 9
- Roundup Transorb: June 19 and July 9
- Proline 480 SC: July 8

Harvesting: Combined on September 10, 2021.

Month	Precipitation (mm)
June	90.0
July	78.4
August	68.3
TOTAL	**236.7**

EFFICACY REPORT

2021 – SERENDIPITA INOCULANT

CANOLA AGTIV IGNITE

► PLOT TRIAL

Research partner: ICMS

Research site: Saskatoon, SK

Treatments: a) Untreated check;
b) AGTIV IGNITE® L*.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 8 repetitions, 24.4 m^2 plots.

Variety: LL canola P501L

Previous crop: Wheat

Seeding details: Seeded on May 20, with a cone drill at a rate of 7 kg/ha.

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)	Oil content (%)
Untreated check	10.3	-	41.8
AGTIV IGNITE® L	12.5	2.2	42.3

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 80-40-10-20: preseeding.

Pesticides:
- Centurion: June 21
- Liberty: June 21

Harvesting: Combined on August 26, 2021.

Month	Precipitation (mm)
May	35.5
June	41.7
July	17.7
August	28.9
TOTAL	**123.8**

EFFICACY REPORT

2021 – SERENDIPITA INOCULANT

CANOLA

AGTIV IGNITE

► PLOT TRIAL

Research partner: Ag-Quest

Research site: Elm Creek, MB

Treatments: a) Untreated check;
b) AGTIV IGNITE® L*.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 8 repetitions, 33 m^2 plots.

Variety: DEKALB DKTF 96 SC

Previous crop: Soybean

Seeding details: Seeded on May 18, with a cone drill at a rate of 6 kg/ha.

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)	Oil content (%)
Untreated check	36.3	-	35.1
AGTIV IGNITE® L	37.4	1.1	37.1

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: Blend of Urea, MAP, MOP and AMS 94-79-90-11: at seeding
Foliar copper: June 22

Pesticides:
- Roundup WeatherMax: May 19, June 10 and 24
- Pounce: June 4, 16 and August 13
- Coragen: June 16
- Reglone: August 31

Harvesting: Combined on September 7, 2021.

Month	Precipitation (mm)
May	61.9
June	101.5
July	25.4
August	103.3
TOTAL	**292.1**

EFFICACY REPORT

2020 – SERENDIPITA INOCULANT

CANOLA AGTIV IGNITE

► PLOT TRIAL

Research partner: Ag-Quest

Research site: Taber, AB

Treatments: a) Untreated check;
b) AGTIV IGNITE® L*.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 8 repetitions, 25.2 m^2 plots.

Variety: Pioneer 45CS40

Previous crop: Wheat

Seeding details: Seeded on June 11, with a cone planter at a rate of 6.41 kg/ha.

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated check	37.3	-
AGTIV IGNITE® L	38.5	1.2

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 11-52-0 and 20-0-0-24 (116.3 kg/ha and 56.3 kg/ha): June 11

Pesticides:
- Roundup WeatherMax: May 24
- Decis: July 17
- Weed Whacker: August 20

Harvesting: Combined on September 23, 2020.

Month	Precipitation (mm)
June	80.8
July	23.1
August	18.8
September	47.3
TOTAL	**170.0**

EFFICACY REPORT

2020 – SERENDIPITA INOCULANT

CANOLA AGTIV IGNITE

► PLOT TRIAL

Research partner: New Era Ag Research

Research site: Swan River, MB

Treatments: a) Untreated check;
b) AGTIV IGNITE® L*.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 8 repetitions, 30 m^2 plots.

Variety: Pioneer 45CS40

Previous crop: Soybean

Seeding details: Seeded on May 21, with a cone planter at a rate of 6 kg/ha.

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)	Oil content (%) [1]
Untreated check	61.2	-	38.7 [a]
AGTIV IGNITE® L	64	2.8	40.5 [b]

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

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: NH3, MAP, potash and AMS (163-30-35-60): fall 2019

Pesticides:
- Pounce: June 5 and 16
  Roundup: June 23
- Clethodim: July 10
- Proline: July 17
- Guardsman: September 5

Harvesting: Combined on September 22, 2020.

Month	Precipitation (mm)
May	12.0
June	62.8
July	122.7
August	43.2
September	9.9
TOTAL	**250.6**

EFFICACY REPORT

2020 – SERENDIPITA INOCULANT

CANOLA AGTIV IGNITE

► PLOT TRIAL

Research partner: ICMS

Research site: Moon Lake, SK

Treatments: a) Untreated check;
b) AGTIV IGNITE® L*.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 8 repetitions, 30 m^2 plots.

Variety: Pioneer 45CS40

Previous crop: Field pea

Seeding details: Seeded on May 19, with a cone planter at a rate of 7 kg/ha.

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)	Oil content (%) [1]
Untreated check	16.3	-	41.6 [a]
AGTIV IGNITE® L	18.2	1.9	43.6 [b]

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

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: Blend of 70-30-0-20: preseeding with the tillage

Pesticides: None

Harvesting: Combined on August 31, 2020.

Month	Precipitation (mm)
May	42.1
June	106.9
July	52.1
August	16.2
TOTAL	**217.3**

EFFICACY REPORT

2020 – SERENDIPITA INOCULANT

CANOLA AGTIV IGNITE

► PLOT TRIAL

Research partner: ICMS

Research site: Josephburg, AB

Treatments: a) Untreated check;
b) AGTIV IGNITE® L*.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 8 repetitions, 30 m^2 plots.

Variety: Pioneer 45CS40

Previous crop: Barley

Seeding details: Seeded on May 25, with a cone planter at a rate of 7 kg/ha.

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)	Oil content (%)
Untreated check	47.2	-	34.7
AGTIV IGNITE® L	49.5	2.3	36.3

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: Blend of 51-22-26: preseeding with the tillage

Pesticides:
- Lontrel: June 12
- Roundup WeatherMax: June 12

Harvesting: Combined on October 6, 2020.

Month	Precipitation (mm)
May	93.5
June	121.4
July	121.9
August	68.4
September	4.9
TOTAL	**410.1**

EFFICACY REPORT

2019 – SERENDIPITA INOCULANT

CANOLA AGTIV IGNITE

► PLOT TRIAL

Research partner: ICMS

Research site: Saskatoon, SK

Treatments: a) Untreated check;
b) AGTIV IGNITE® L*.

*Products applied according to the manufacturer's recommended rate.

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

Variety: In Vigor L252

Previous crop: Wheat

Seeding details: Seeded on June 7, with a drill seeder at a rate of 7 kg/ha.

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated check	38.8	-
AGTIV IGNITE® L	41.8	3

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: Blend of 70-30-10-20: preseeding with the tillage

Pesticides:
- Centurion: July 12
- Liberty 150: July 12
- Matador: September 9

Harvesting: Combined on October 21, 2019.

Month	Precipitation (mm)
June	84.8
July	67.6
August	20.3
September	39.5
October	3.0
TOTAL	**215.2**

EFFICACY REPORT

2019 – SERENDIPITA INOCULANT

CANOLA AGTIV IGNITE

► PLOT TRIAL

Research partner: ICMS

Research site: Josephburg, AB

Treatments: a) Untreated check;
b) AGTIV IGNITE® L*.

*Products applied according to the manufacturer's recommended rate.

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

Variety: Dekalb 75-42BL

Previous crop: Barley

Seeding details: Seeded on June 1, with a cone planter at a rate of 7 kg/ha.

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated check	46.8	-
AGTIV IGNITE® L	53.2	6.4

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: Blend of 31-0-10-8: : preseeding with the tillage

Pesticides: Roundup WeatherMax: June 26

Harvesting: Combined on October 4, 2019.

Month	Precipitation (mm)
May	0
June	0
July	153.7
August	31
September	43.7
TOTAL	**228.4**

EFFICACY REPORT

2019 – SERENDIPITA INOCULANT

CANOLA AGTIV IGNITE

► PLOT TRIAL

Research partner: New Era Ag Research

Research site: Swan River, MB

Treatments: a) Untreated check;
b) AGTIV IGNITE® L*.

*Products applied according to the manufacturer's recommended rate.

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

Variety: InVigor L255PC

Previous crop: Canola stubble

Seeding details: Seeded on May 21, with a drill planter at a rate of 7 kg/ha.

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)	Oil content (%)
Untreated check	53.7	-	49.9
AGTIV IGNITE® L	55.4	1.7	52.1

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 90-50-0-25: broadcast at seeding.

Pesticides:
- Avadex: May 3
- Liberty: June 6 and 27
- Pounce: June 6
- Arrow: June 11 and 27
- Proline: July 12
- Heat: September 6

Harvesting: Combined on September 22, 2019.

Month	Precipitation (mm)
May	25.4
June	26.1
July	59.3
August	51.8
September	48.7
TOTAL	**211.3**

EFFICACY REPORT

2019 – SERENDIPITA INOCULANT

CANOLA AGTIV IGNITE

► PLOT TRIAL

Research partner: Prairie Ag Research Inc.

Research site: Taber, AB

Treatments: a) Untreated check;
b) AGTIV IGNITE® L*.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 6 repetitions, 16 m^2 plots.

Variety: Pioneer 45M35

Previous crop: Wheat

Seeding details: Seeded on May 27, with a drill planter at a rate of 5.6 kg/ha.

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated check	25.4	-
AGTIV IGNITE® L	27.0	1.6

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: Broadcast of 29-37-0-30

Pesticides:
- Roundup WeatherMax: May 20 and July 3
- Pounce: July 3 and August 8

Harvesting: Combined on September 25, 2019.

Month	Precipitation (mm)
May	58.7
June	47.0
July	31.3
August	22.8
TOTAL	**159.8**

EFFICACY REPORT

2019 – SERENDIPITA INOCULANT

CANOLA AGTIV IGNITE

► PLOT TRIAL

Research partner: Wheatland Conservation Area Inc.

Research site: Swift Current, SK

Treatments: a) Untreated check;
b) AGTIV IGNITE® L*.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 6 repetitions, 9 m^2 plots.

Variety: In Vigor L233P

Previous crop: Wheat

Seeding details: Seeded on May 28, with a cone seeder at a rate of 6.7 kg/ha.

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated check	25.0	-
AGTIV IGNITE® L	27.1	2.1

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: Broadcast of 29-37-0-30: May 27

Pesticides: Roundup WeatherMax: June 25

Harvesting: Combined on September 25, 2019.

Month	Precipitation (mm)
May	13.3
June	156.0
July	11.1
August	42.6
September	92.1
TOTAL	**315.1**

EFFICACY REPORT

2018 – SERENDIPITA INOCULANT

CANOLA AGTIV IGNITE

► PLOT TRIAL

Research partner: New Era Ag Research

Research site: Swan River, MB

Treatments: a) Untreated check;
b) AGTIV IGNITE® L*.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 8 repetitions, 15 m^2 plots.

Variety: In Vigor L140P

Previous crop: Canola stubble

Seeding details: Seeded on June 4, with a drill planter at a rate of 5.6 kg/ha.

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

Treatment	Yield [1] (bu/ac)	Yield increase (bu/ac)
Untreated check	63.5 [b]	-
AGTIV IGNITE® L	68.0 [a]	4.5

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

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: Midrow band 20-58-5-8 and broadcast 125-0-35-25.

Pesticides: None

Harvesting: Combined on October 4, 2018.

Month	Precipitation (mm)
June	127.6
July	59.3
August	35.4
September	51.1
TOTAL	**273.4**

DURUM WHEAT

AVERAGE YIELD INCREASE

AGTIV REACH

3.5 bu/ac

5.8%

237 kg/ha

14 sites over 12 years

Canada

AGTIV IGNITE

4.1 bu/ac

8.5%

276 kg/ha

13 sites over 5 years

Canada

TRIALS PICTURES

Durum wheat split field with AGTIV® vs untreated.
More uniform field, head and spikes almost all out on the right.

Young wheat plants whose root systems show better growth with AGTIV®
and the plants are stronger with more leaves.
Better nitrogen absorption through the more developed root system.

► SPLIT FIELD DEMOS

Research partners: Growers

Research sites:
- Canada;
- Europe.

Treatments*:
a) Untreated check;
b) AGTIV REACH®.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Split field: 45 demos

Table 1. **Average yield increase with AGTIV REACH® in Canada and Europe**

Number of sites	Average increase (%)
45	6.4%

Table 2. **Average yield increase with AGTIV REACH® in Canada**

Number of sites	Average increase (bu/ac)	Average increase (%)
14	3.5	5.8%

Table 3. **Average yield increase with AGTIV® mycorrhizal inoculant in France and Germany, Europe**

Number of sites	Average increase (bu/ac)	Average increase (%)
31	8.3	6.5%

EFFICACY REPORT

2019 – MYCORRHIZAL INOCULANT

DURUM WHEAT

AGTIV REACH

► PLOT TRIAL

Research partner: Eurofins Agroscience Services

Research site: Beauce, France

Treatments: a) Untreated check;
b) AGTIV® FIELD CROPS • Powder*.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 8 repetitions.

Variety: Anvergur

Previous crop: Sugar beet

Seeding details: Seeded on November 15 at 300 seeds/m^2 with 15 cm row spacing.

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

Treatment	Yield[1] (bu/ac)	Yield[1] (t/ac)
Untreated check	142.8 [a]	9.6 [a]
AGTIV® FIELD CROPS • Powder	155.2 [b]	10.4 [b]

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

OPERATIONAL NOTES AND RAIN FALL

Fertilisation:
- N:P+S (450 kg/ha): February 18
- Ammonitrate (290 kg/ha): March 18

Pesticides:
- Atlantis Pro: March 21
- Priori Xtra: April 21
- Bofix and Chardol: April 23
- Rubric 125 SC: May 15
- Prosaro: May 29

Harvesting: July 25, 2019

Month	Precipitation (mm)
November	96.7
December	57.9
January	41.2
February	34.3
March	77.5
April	30.8
May	79.2
June	70.7
TOTAL	**488.3**

EFFICACY REPORT

2018 – MYCORRHIZAL INOCULANT

DURUM WHEAT

AGTIV REACH

► PLOT TRIAL

Research partner: Wheatland Conservation Area Inc.

Research site: Swift Current, SK

Treatments: a) Untreated check;
b) AGTIV® FIELD CROPS • Granular*.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 4 repetitions.

Variety: Precision durum

Previous crop: Canola stubble

Seeding details: Seeded with fabro plot drill & Atomjet knife openers on May 13, at 115 lb/ac on 20 m² plots with 9 in row spacing.

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

Treatment	Yield (bu/ac)	Yield (kg/ha)
Untreated	12.0	806
AGTIV® FIELD CROPS • Granular	13.3	894

OPERATIONAL NOTES AND RAIN FALL

Fertilisation:
- 21-0-0-24 (58 lb/ac)
- 11-52-0 (67 lb/ac)
- 46-0-0 (111 lb/ac)

Pesticides: Clean Start: pre-seeding

Harvesting: Combined on August 9, 2018.

Month	Precipitation (mm)
May	8.8
June	23.6
July	15.1
August	28.3
TOTAL	**75.8**

EFFICACY REPORT

SUMMARY – SERENDIPITA ON SEED INOCULANT

DURUM WHEAT

AGTIV IGNITE

► PLOT TRIALS

Research partners:
- Ag-Quest;
- Murphy et al Inc.;
- Prairie Ag Research Inc.;
- Small Plot Inc.;
- Wheatland Conservation Area Inc.

Research sites:
- Alberta;
- Saskatchewan.

Treatments*:
a) Untreated check;
b) AGTIV IGNITE® L.

*Products applied according to the manufacturer's recommended rate.

Experimental design:
Randomized Complete Block Design:
10 trials (6-8 repetitions each)

Table 1. **Summary of yield (bu/ac) per trial**

Year	Sites	Untreated check yield	AGTIV IGNITE® L yield	Yield increase
2021	Lethbridge	66.7	73.3	6.6
	Vulcan	25.8	28.8	3
	Taber	39	40.6	1.6
	Swift Current	11.8	14.4	2.6
2022	Lethbridge	50.2	59	8.8
	Swift Current	54	55.8	1.8
	Vulcan	29.2	31	1.8
	Taber	27.3	31.8	4.5
2023	Raymond	53	56.1	3.1
	Lethbridge	32.6	34.6	2

► GROWER DEMONSTRATIONS

Experimental design:
Split field: 3 demos

EFFICACY REPORT

2023 – SERENDIPITA INOCULANT

DURUM WHEAT

AGTIV IGNITE

► PLOT TRIAL

Research partners: Prairie Ag Research Inc.

Research sites: Raymond, AB

Treatments: a) Untreated check;
b) AGTIV IGNITE® L.

*Products applied according to the manufacturer's recommended rate.

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

Variety: Grainland

Previous crop: Spring barley

Seeding details: Seeded on May 12 with a cone seeder at a rate of 100 kg/ha in a clay loam soil (pH: 7.3, OM: 3.7%).
Emergence on May 19.

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: None

Pesticides:
- Glyphosate: May 11
- Pardner: June 19

Harvesting: August 30, 2023

Month	Precipitation (mm)
May	13.2
June	30.1
July	7.8
August	26.2
TOTAL	**64.3**

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated check	53.0	-
AGTIV IGNITE® L	56.1	3.1

EFFICACY REPORT

2023 – SERENDIPITA INOCULANT

DURUM WHEAT

AGTIV IGNITE

► PLOT TRIAL

Research partners: Murphy et al Inc.

Research sites: Lethbridge, AB

Treatments: a) Untreated check;
b) AGTIV IGNITE® L.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block, 6 repetitions, 12.0 m^2 plots.

Variety: Stronghold Cert #1 treated with Raxil Pro

Previous crop: Canola

Seeding details: Seeded on May 31 with a cone seeder at a rate of 110 kg/ha in clay soil (pH: 8.2, OM: 1.6 %).

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated check	32.6	-
AGTIV IGNITE® L	34.6	2.0

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 28-10-11-3 (310 kg/ha): May 31

Pesticides:
- OcTTain XL(450 mL/ac): June 20
- 2,4-D (86 mL/ac): June 20 and July 15
- Dicamba (117 mL/ac): July 15

Harvesting: September 5, 2023

Month	Precipitation (mm)	Irrigation (mm)
May	17.8	19.1
June	36.3	69.9
July	13.3	151.3
August	10.7	50.8
TOTAL	**78.1**	**291.1**

EFFICACY REPORT

2022 – SERENDIPITA INOCULANT

DURUM WHEAT

AGTIV IGNITE

► PLOT TRIAL

Research partner: Prairie Ag Research Inc.

Research site: Lethbridge, AB

Treatments: a) Untreated check;
b) AGTIV IGNITE® L*.

*Products applied according to the manufacturer's recommended rate.

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

Variety: Grainland

Previous crop: Fallow

Seeding details: Seeded on May 23, 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.

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: None

Pesticides:
- Glyphosate: May 20
- Infinity: June 30

Harvesting: 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.

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] Yield mean with the same letter are not statistically different according to a Tukey HSD test ($p \leq 0.05$).

EFFICACY REPORT

2022 – SERENDIPITA INOCULANT

DURUM WHEAT

AGTIV IGNITE

► PLOT TRIAL

Research partner: Wheatland Conservation Area Inc.

Research site: Swift Current, SK

Treatments: a) Untreated check;
b) AGTIV IGNITE® L*.

*Products applied according to the manufacturer's recommended rate.

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

Variety: Alloy

Previous crop: Wheat

Seeding details: Seeded on May 18, 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

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 30-15-0-6 (374 kg/ha): sidebanded on June 8.

Pesticides:
- RT540: May 2
- Achieve: June 8

Harvesting: August 16, 2022

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

EFFICACY REPORT

2022 – SERENDIPITA INOCULANT

DURUM WHEAT

AGTIV IGNITE

► PLOT TRIAL

Research partner: Small Plot Inc.

Research site: Vulcan, AB

Treatments: a) Untreated check;
b) AGTIV IGNITE® L*.

*Products applied according to the manufacturer's recommended rate.

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

Variety: Spitfire

Previous crop: Rye

Seeding details: Seeded on May 16, with a plot drill 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

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 60-15-15-6 kg/ha: sidebanded on May 16.

Pesticides:
- Epic: June 25
- Stellar XL: June 25
- ZIVATA: June 25

Harvesting: August 30, 2022

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

EFFICACY REPORT

2022 – SERENDIPITA INOCULANT

DURUM WHEAT

AGTIV IGNITE

► PLOT TRIAL

Research partner: Ag-Quest

Research site: Vulcan, AB

Treatments: a) Untreated check;
b) AGTIV IGNITE® L*.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete 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

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 5-20-5 kg/ha prior to seeding

Pesticides:
- Roundup Transorb: May 18
- Achieve liquid: June 19 and July 6
- Infinity: July 6

Harvesting: 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.

EFFICACY REPORT

2021 – SERENDIPITA INOCULANT

DURUM WHEAT

AGTIV IGNITE

► PLOT TRIAL

Research partner: Prairie Ag Research Inc.

Research site: Lethbridge, AB

Treatments: a) Untreated check;
b) AGTIV IGNITE® L*.

*Products applied according to the manufacturer's recommended rate.

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

Variety: Grainland

Previous crop: Barley

Seeding details: Seeded on May 31, 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 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≤0.05).

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: None

Pesticides:
- Glyphosate: May 31
- Achieve: June 28
- Infinity: June 28
- Turbocharge: June 28

Harvesting: September 14, 2021

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

EFFICACY REPORT

2021 – SERENDIPITA INOCULANT

DURUM WHEAT

AGTIV IGNITE

► PLOT TRIAL

Research partner: Small Plot Inc.

Research site: Vulcan, AB

Treatments: a) Untreated check;
b) AGTIV IGNITE® L*.

*Products applied according to the manufacturer's recommended rate.

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

Variety: Spitfire

Previous crop: Oats

Seeding details: Seeded on May 16, with a plot drill 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

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 70-20-20-20 kg/ha sidebanded at seeding.

Pesticides: ZIVATA: July 25

Harvesting: August 30, 2021

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

EFFICACY REPORT
2021 – SERENDIPITA INOCULANT

DURUM WHEAT

AGTIV IGNITE

► PLOT TRIAL

Research partner: Ag-Quest

Research site: Taber, AB

Treatments: a) Untreated check;
b) AGTIV IGNITE® L*.

*Products applied according to the manufacturer's recommended rate.

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

Variety: Strongfield

Previous crop: Rye

Seeding details: Seeded on June 6, 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

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: None

Pesticides:
- Achieve: July 2
- Infinity: July 2
- Axial Herbicide: July 16

Harvesting: September 3, 2021.

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

EFFICACY REPORT

2021 – SERENDIPITA INOCULANT

DURUM WHEAT

AGTIV IGNITE

► PLOT TRIAL

Research partner: Wheatland Conservation Area Inc.

Research site: Swift Current, SK

Treatments: a) Untreated check;
b) AGTIV IGNITE® L*.

*Products applied according to the manufacturer's recommended rate.

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

Variety: Transcend

Previous crop: Barley

Seeding details: Seeded on May 28, 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

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 30-15-06-6 sidebanded at seeding (374 kg/ha)

Pesticides:
- Aim EC: May 4
- RT540: May 4
- Achieve: June 17
- Buctril: June 17

Harvesting: August 27, 2021

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

SPRING WHEAT

AVERAGE YIELD INCREASE

AGTIV IGNITE

4.0 bu/ac

8.9%

269 kg/ha

5 sites over 3 years

Canada

EFFICACY REPORT

SUMMARY – SERENDIPITA INOCULANT

SPRING WHEAT

AGTIV IGNITE

► PLOT TRIALS

Research partners:
- Ag-Quest;
- New Era Technologies.

Research sites:
- Manitoba;
- Saskatchewan.

Treatments*:
a) Untreated check;
b) AGTIV IGNITE® L.

*Products applied according to the manufacturer's recommended rate.

Experimental design:
Randomized Complete Block Design:
2 trials (6 repetitions each)

Table 1. **Summary of yield (bu/ac) per trial**

Year	Sites	Untreated check yield (bu/ac)	AGTIV IGNITE® L yield (bu/ac)	Yield increase (bu/ac)
2023	Swan River	68.1	74.7	6.6
2023	Saskatoon	13.9	17.6	3.7

► GROWER DEMONSTRATIONS

Experimental design:
Split field: 3 demos

EFFICACY REPORT
2023 – SERENDIPITA INOCULANT

SPRING WHEAT

AGTIV IGNITE

► PLOT TRIAL

Research partners: New Era Technologies

Research sites: Swan River, MB

Treatments: a) Untreated check;
b) AGTIV IGNITE® L.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block,
6 repetitions, 16.95 m^2 plots.

Variety: AAC Wheatland treated with Raxil Pro

Previous crop: Peas

Seeding details: Seeded on May 11 with an air drill at a rate of 139 lb/ac in a sandy loam soil (pH: 7.0, OM: 4.1%).
Emergence on May 16.

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated check	68.1	-
AGTIV IGNITE® L	74.7	6.6

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 46-0-0 (259 lb/ac): May 16
11-52-0 (67 lb/ac): May 16

Pesticides:
- Fortress: May 9
- Stellar XL (405 mL/ac): June 7
- Decis (30 mL/ac): June 7
- Miravis Neo 300SE (303 mL/ac): June 13
- Miravis Ace (405 mL/ac): July 6

Harvesting: September 3, 2023

Month	Precipitation (mm)
May	19.7
June	45.3
July	33.0
August	118.2
September	5.6
TOTAL	**221.8**

EFFICACY REPORT
2023 – SERENDIPITA INOCULANT

SPRING WHEAT

AGTIV IGNITE

► PLOT TRIAL

Research partners: Ag-Quest Inc

Research sites: Saskatoon, SK

Treatments: a) Untreated check
b) AGTIV IGNITE® L

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block, 6 repetitions, 8.74 m^2 plots.

Variety: AAC Wheatland treated with Vibrance Quattro

Previous crop: Oat

Seeding details: Seeded on May 23 with a cone seeder at a rate of 90 kg/ha in a loam soil (pH: 5.9, OM: 3.8%).

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated check	13.9	-
AGTIV IGNITE® L	17.6	3.7

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: Fertilizer blend of 1-52-0 + 0-0-60 (136 kg/ha)

Pesticides:
- Glyphosate (0.67 L/ac): May 15
- Aim (30 mL/ac): May 15
- Everest 2.0 (24.3 mL/ac): June 7
- Foothills NG (376 mL/ac): June 14
- Coragen Max (83 mL/ac): June 16
- Reglone Ion (84 mL/ac): August 23

Harvesting: September 27, 2023

Month	Precipitation (mm)
May	47.9
June	52.4
July	19.0
August	41.3
September	14.7
TOTAL	**175.3**

BARLEY

AVERAGE YIELD INCREASE

AGTIV REACH

6.4 bu/ac

7.5%

344 kg/ha

34 sites over 14 years

Canada and Europe

AGTIV IGNITE

4.3 bu/ac

5.3%

231 kg/ha

7 sites over 3 years

Canada

EFFICACY REPORT

SUMMARY – MYCORRHIZAL INOCULANT

BARLEY AGTIV REACH

► SPLIT FIELD DEMOS

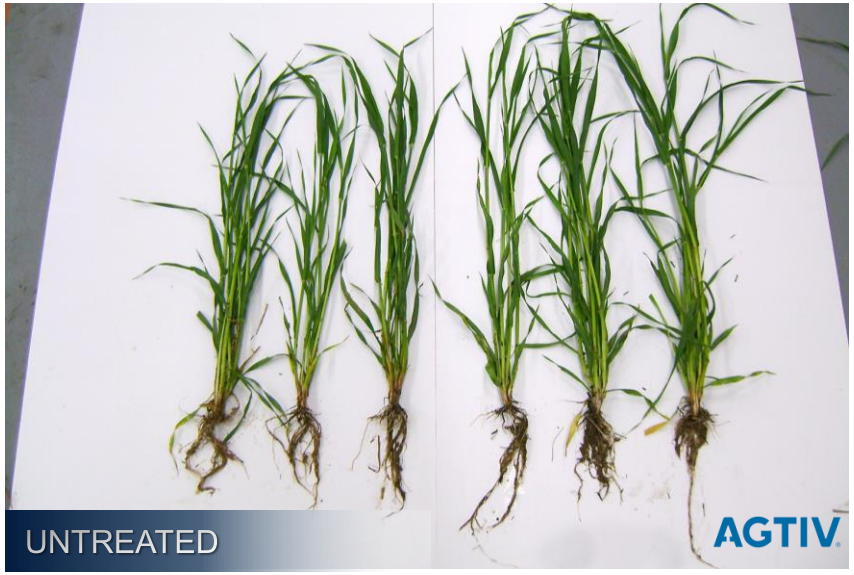
Research partners: Growers

Research sites:
- Canada;
- Europe.

Treatments*: a) Untreated;
b) AGTIV REACH®.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Split field: 28 demos

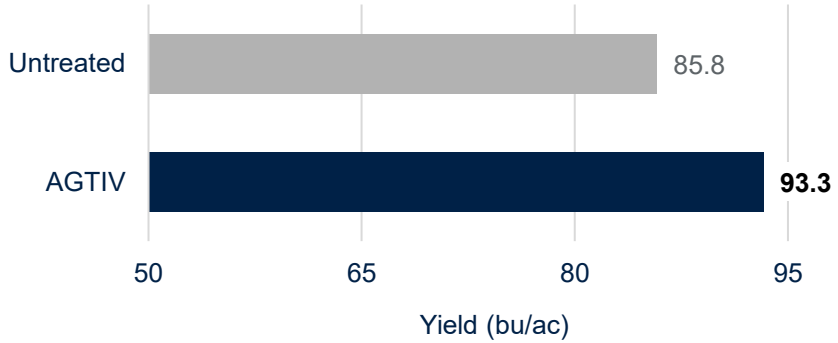


Barley plants have an increased root mass on the right with AGTIV®, which leads to enhanced plant health and growth.

Table 1. **Average yield increase with AGTIV REACH®**

Number of sites	Average increase (bu/ac)	Average increase (kg/ha)	Average increase (%)
28	7.5	394.4	8.7%

Figure 1. **Average yield increase with AGTIV® mycorrhizal inoculant in Canada and Europe (28 sites, 2012 to 2017).**



EFFICACY REPORT

SUMMARY – SERENDIPITA INOCULANT

BARLEY AGTIV IGNITE

► PLOT TRIALS

Research partners:
- Ag-Quest;
- New Era Ag Research;
- Northeast Agriculture Research Foundation;
- Prairie Ag Research Inc.;
- Wheatland Conservation Area Inc.

Research sites:
- Manitoba;
- Saskatchewan.

Treatments*:
a) Untreated check;
b) AGTIV IGNITE® L.

*Products applied according to the manufacturer's recommended rate.

Experimental design:
Randomized Complete Block Design:
6 trials (6-8 repetitions each)

► GROWER DEMONSTRATION

Experimental design:
Split field: 1 demo

Table 1. **Summary of yield (bu/ac) per trial and demo**

Year	Sites	Untreated check yield (bu/ac)	AGTIV IGNITE® L yield (bu/ac)	Yield increase (bu/ac)
2023	Elm Creek	101.9	104	2.1
	Swift Current	22.8	25.6	2.8
	Petruic Family farm	59.5	70.7	11.2
2025	Melfort	114.0	116.9	2.9
	Raymond	105.0	106.7	1.7
	Swan River	114.0	119.0	5.0
	Swift Current	52.9	57.1	4.2

EFFICACY REPORT

2025 – SERENDIPITA INOCULANT

BARLEY AGTIV IGNITE

► PLOT TRIAL

Research partner: Northeast Agriculture Research Foundation

Research site: Melfort, SK

Treatments*:
a) Untreated check;
b) AGTIV IGNITE® L;
c) Competitor inoculant B.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 8 repetitons,16.5 m^2 plots.

Variety: Claymore treated with Raxil Pro

Previous crop: Canola

Seeding details: Seeded on May 12 with a Fabro plot seeder at a rate of 167 lb/ac in a clay soil (pH: 7.1, OM: 5.7%). Emergence on May 28.

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 46-0-0 (151 kg/ha) and blend of 11-52-0 + 0-0-60-21-0-0-24S (73 kg/ha): May 12

Pesticides:
- Avadex (1.2 L/ac): May 15
- StartUp (650 mL/ac): May 15
- Puma Advance (413 mL/ac): June 11
- Momentum (0.45 L/ac):June 20
- MCPA (0.38 L/ac):June 20
- StartUp (670 mL/ac): August 28

Harvesting: September 8, 2025

Month	Precipitation (mm)
May	4.8
June	93.0
July	26.0
August	114.0
September	20.0
TOTAL	**257.8**

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated check	114.0	-
AGTIV IGNITE® L	116.9	2.9
Competitor inoculant B	113.9	-

EFFICACY REPORT

2025 – SERENDIPITA INOCULANT

BARLEY AGTIV IGNITE

► PLOT TRIAL

Research partner: Prairie Ag Research Inc.

Research site: Raymond, AB

Treatments*: a) Untreated check;
b) AGTIV IGNITE® L;
c) Competitor inoculant B.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 8 repetitions, 14 m^2 plots.

Variety: CDC Austenson

Previous crop: Spring Barley (silage)

Seeding details: Seeded on May 25 with a cone planter at a rate of 100 kg/ha in a clay loam soil (pH: 7.7, OM: 3.8%). Emergence on June 2.

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: None

Pesticides: Infinity: June 18

Harvesting: September 5, 2025

Month	Precipitation (mm)	Irrigation (mm)
May	43.8	25.0
June	96.9	
July	103.5	25.0
August	27.9	
TOTAL	**272.1**	**50.0**

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated check	105.0	-
AGTIV IGNITE® L	106.7	1.7
Competitor inoculant B	108.3	3.3

EFFICACY REPORT

2025 – SERENDIPITA INOCULANT

BARLEY

AGTIV IGNITE

► PLOT TRIAL

Research partner: New Era Ag Research

Research site: Swan River, MB

Treatments*: a) Untreated check;
b) AGTIV IGNITE® L;
c) Competitor inoculant B.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 8 repetitions, 30 m^2 plots.

Variety: CDC Austenson treated with Vibrance Quattro

Previous crop: Field pea

Seeding details: Seeded on May 13 with a plot planter at a rate of 132 kg/ha in a sandy loam soil (pH: 7.5, OM: 3.9%). Emergence on May 23.

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: Blend of 46-0-0 + 11-52-0 (117 kg/ha): May 8

Pesticides:
- Stellar XL (0.405 L/ac): June 5
- Tilt 250EC (0.2L/ac): June 20

Harvesting: August 31, 2025

Month	Precipitation (mm)
May	17.7
June	100.6
July	11.5
August	185.6
TOTAL	**315.4**

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated check	114.0	-
AGTIV IGNITE® L	119.0	5.0
Competitor inoculant B	113.4	-

EFFICACY REPORT

2025 – SERENDIPITA INOCULANT

BARLEY AGTIV IGNITE

► PLOT TRIAL

Research partner: Wheatland Conservation Area Inc.

Research site: Swift Current, SK

Treatments*:
a) Untreated check;
b) AGTIV IGNITE® L;
c) Competitor inoculant B.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 8 repetitions, 21.8 m^2 plots.

Variety: Bow treated with Rancona Trio

Previous crop: Durum wheat

Seeding details: Seeded on April 28 with a cone planter at a rate of 132 kg/ha in a silty loam soil (pH: 6.4, OM: 3.2%). Emergence on May 13.

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 30-15-0-6 (298 kg/ha): April 28

Pesticides:
- Roundup Transorb (1 L/ac): April 18
- Aim EC +(47 mL/ac): April 18
- Merge (1 L/ac): April 18
- Buctril (0.4 L/ac): June 4
- Liquid Achieve (0.2 L/ac): June 4
- Carrier (0.5/100 L): June 4

Harvesting: September 29, 2025

Month	Precipitation (mm)
April	39.5
May	34.2
June	31.3
July	78.2
August	92.6
September	0.8
TOTAL	**277.0**

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated check	52.9	-
AGTIV IGNITE® L	57.1	4.2
Competitor inoculant B	55.9	3.0

EFFICACY REPORT

2023 – SERENDIPITA INOCULANT

BARLEY

AGTIV IGNITE

► PLOT TRIAL

Research partner: Ag-Quest Inc

Research site: Elm Creek, MB

Treatments: a) Untreated check;
b) AGTIV IGNITE® L.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block,
6 repetitions, 18 m^2 plots.

Variety: CDC Austenson treated with Sexodane and Lumivia

Previous crop: Soybean

Seeding details: Seeded on May 16 with a cone planter at a rate of 71 lb/ac in a clay loam soil (pH: 7.8, OM: 4.6%).
Emergence on May 17.

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated check	101.9	-
AGTIV IGNITE® L	104.0	2.1

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 46-0-0 and 11-52- 0; May 9

Pesticides: Infinity

Harvesting: August 25, 2023

Month	Precipitation (mm)
May	38.0
June	49.8
July	20.8
August	31.0
TOTAL	**139.6**

EFFICACY REPORT

2023 – SERENDIPITA INOCULANT

BARLEY AGTIV IGNITE

► PLOT TRIAL

Research partners: Wheatland Conservation Area Inc.

Research sites: Swift Current, SK

Treatments: a) Untreated check;
b) AGTIV IGNITE® L.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block,
6 repetitions, 17.3 m^2 plots.

Variety: CDC Bow treated with Cruiser Vibrance Quattro

Previous crop: Durum Wheat

Seeding details: Seeded on May 18 with a cone seeder at a rate of 90 lb/ac in a silty loam soil (pH: 6.7, OM: 2.9%).
Emergence on May 26.

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated check	22.8	-
AGTIV IGNITE® L	25.6	2.8

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 30-15-0-6 (267lb/ac): May 18

Pesticides:
- RT540 (0.67 L/ac): May 12
- Liquid Achieve (200 mL/ac): June 16
- Buctril M (400 mL/ac): June 16
- Carrier (0.5 L/100L): June 16
- Decis (60 mL/ac): July 1

Harvesting: September 19, 2023

Month	Precipitation (mm)
May	48.8
June	33.8
July	76.7
August	47.5
TOTAL	**206.8**

FLAX


PREMIER TECH
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EFFICACY REPORT

2019 – MYCORRHIZAL INOCULANT

FIBRE FLAX

AGTIV REACH

► PLOT TRIAL

Research partner: Antedis

Research site: Bourbourg, North department, France

Treatments: a) Untreated check;
b) AGTIV® FIELD CROPS • Powder*.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block,
9 répétitions.

Seeding details: Seeded April 26 at 2 000 seeds/m^2 16.5 cm row spacing.

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: None

Pesticides:
- Patton M: April 26
- Lontrel: May 22
- Oil: May 22
- Nissodium: May 31

Harvesting: October 15, 2019

Month	Precipitation (mm)
April	3.8
May	47
June	66.6
July	33.2
August	25.4
September	69.6
October	60.6
TOTAL	**306.2**

Table 1. **Summary of marketable yield (whole) per treatment**

Treatment	Yield[1] (kg/ha)	Yield[1] (lb/ac)
Untreated check	5490 [a]	4898 [a]
AGTIV® FIELD CROPS • Powder	6390 [b]	5701 [b]

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

Table 2. **Summary of marketable yield (fiber) per treatment**

Treatment	Yield[1] (kg/ha)	Yield[1] (lb/ac)
Untreated check	730 [a]	651 [a]
AGTIV® FIELD CROPS • Powder	856 [b]	764 [b]

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

CORN

AVERAGE YIELD INCREASE

AGTIV IGNITE

7.2 bu/ac

4.2%

452 kg/ha

18 sites over 4 years

Canada

EFFICACY REPORT

SUMMARY – SERENDIPITA INOCULANT

CORN AGTIV IGNITE

► PLOT TRIALS

Research partners:
- BlackCreek Research Inc.;
- ICMS;
- New-Marc Research;
- Groupe PleineTerre;
- Tall Pines Agricultural Research Ltd.;
- Wellington Agricultural Research.

Research sites:
- Manitoba;
- Ontario;
- Quebec.

Treatments*:
a) Untreated check;
b) AGTIV IGNITE® L.

*Products applied according to the manufacturer's recommended rate.

Experimental design:
- Randomized Complete Block Design: 12 trials (6-8 repetitions each)
- Split plots: 6 trials (6 repetitions each)

Table 1. **Summary of yield (bu/ac) per trial**

Year	Sites	Variety	Untreated check yield (bu/ac)	AGTIV IGNITE® L yield (bu/ac)	Yield increase (bu/ac)
2021	Saint Marc	NK8618-5122A	157.9	158.9	1
	Sherrington	Dekalb 46-17	158.7	163.9	5.2
	Bright	DKB48-56RIB	245.4	251.7	6.3
	Carlisle	DKC 35-37 RIB	183.1	197.9	14.8
2022	Rockwood	Pionner 7527 PM	128.8	134.8	6
	Bright	Maizex 3120	158.9	167.1	8.2
	Elm Creek	PV 62181SRIB	152.8	153.5	0.7
2023	Portage la Prairie	CP2123VT2P/RIB	152.6	159.3	6.7
	Saint Marc	NK8519-DV	107.3	113.7	6.4
	Alma	Pioneer P7005	91.2	99.8	8.6
	Rockwood	Pioneer 8922AM	196.4	220.9	24.5
	Bright	DL 4555	227.5	232.1	4.6
	Sherrington	DKC 4640	163.8	170.2	6.4
2024	Sherrington	Dekalb 56-40	218.2	219.3	1.1
	Saint Marc	DK 44-13	109.9	116.1	6.2
	Bright	MZ3505 BDR RIB	229.5	236	6.5
	Bright	P9466 AML	227.2	235.6	8.4
	Carlisle	DKC 30-63 RIB	201.2	209.3	8.1
Total	**18 sites**		**172.8**	**180**	**7.2 bu/ac***

* Yields are statistically different according to an ANOVA & a Tukey HSD test (p≤05).

EFFICACY REPORT

2024 – SERENDIPITA INOCULANT

CORN AGTIV IGNITE

► PLOT TRIAL

Research partner: Groupe PleineTerre

Research site: Sherrington, QC

Treatments*: a) Untreated check;
b) AGTIV IGNITE® L.

*Products applied according to the manufacturer's recommended rate.

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

Variety: Dekalb 56-40 treated with Acceleron

Previous crop: Soybean

Seeding details: Seeded on May 20 with a four-row planter at a rate of 10.5 kg/ac in a loam soil (pH: 7.3, OM: 3.4%). Emergence on May 29.

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated check	218.2	-
AGTIV IGNITE® L	219.3	1.1

Table 2. **Summary of grain starch content per treatment**

Treatment	Starch (%)	Starch increase (%)
Untreated check	68.7	
AGTIV IGNITE® L	69.8	1.1

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 17.7-17.7-10.6-1.1Ca-0.7Mg-4.1S (335 kg/ha) applied at seeding; 46-0-0 (326 kg/ha) applied post emergence.

Pesticides: Roundup (1 L/ha): May 20

Harvesting: October 18, 2024

Month	Precipitation (mm)
May	28.7
June	128.2
July	211.8
August	186.6
September	67.1
October	31.3
TOTAL	**653.7**

EFFICACY REPORT

2024 – SERENDIPITA INOCULANT

CORN AGTIV IGNITE

► PLOT TRIAL

Research partner: Wellington Agricultural Research

Research site: Carlisle, ON

Treatments*: a) Untreated check;
b) AGTIV IGNITE® L.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Split-plot,
6 repetitions, 18 m^2 plots.

Variety: DKC 30-63 RIB

Previous crop: Soybean

Seeding details: Seeded on June 5 with a cone planter at a rate of 32 000 seeds/ac in a loam soil (pH: 7.3, OM: 3.4%).
Emergence on June 12.

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated check	201.2	-
AGTIV IGNITE® L	209.3	8.1

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 46-0-0 (326 lb/ac) and 5-27-27 (227 lb/ac): June 4

Pesticides: Roundup WeatherMax (2 L/ha): June 18 and July 8

Harvesting: October 31, 2024

Month	Precipitation (mm)
June	103.6
July	176.4
August	67.6
September	2.6
October	14.7
TOTAL	**362.9**

EFFICACY REPORT

2024 – SERENDIPITA INOCULANT

CORN AGTIV IGNITE

► PLOT TRIAL

Research partner: BlackCreek Research Inc.

Research site: Bright, ON

Treatments*: a) Untreated check;
b) AGTIV IGNITE® L.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Split-plot,
6 repetitions, 24 m^2 plots.

Variety: MZ3505 BDR RIB treated with Vibrance Cinco

Previous crop: Soybean

Seeding details: Seeded on May 17 with a four-row planter at a rate of 9.6 kg/ac in a sandy loam soil (pH: 7, OM: 2.8%).
Emergence on May 24.

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated check	229.5	-
AGTIV IGNITE® L	236	6.5

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 180-67-75-22 kg/ha actual NPKS

Pesticides:
- Primextra II Magnum (4l/ha): May 23
- Eragon LQ (300 ml/ha): May 23
- Roundup WeatherMax (1.67 L/ha): July 7
- Delaro Complete (586 ml/ac): July 29
- Proline (210 ml/ac): July 29

Harvesting: October 28, 2024

Month	Precipitation (mm)
May	104.8
June	112.8
July	216.6
August	99.8
September	21.8
October	43
TOTAL	**598.8**

EFFICACY REPORT

2024 – SERENDIPITA INOCULANT

CORN AGTIV IGNITE

► PLOT TRIAL

Research partner: BlackCreek Research Inc.

Research site: Bright, ON

Treatments*: a) Untreated check;
b) AGTIV IGNITE® L.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Split-plot,
6 repetitions, 24 m^2 plots.

Variety: P9466 AML treated with Lumigen

Previous crop: Winter wheat

Seeding details: Seeded on May 16 with a four-row planter at a rate of 9.6 kg/ac in a clay loam soil (pH: 7.8, OM: 4.1%). Emergence on May 23.

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 180-67-75-22 kg/ha actual NPKS

Pesticides:
- Roundup WeatherMax (1.67 L/ha): May 7
- Primextra II Magnum (4 L/ha): May 20
- Eragon LQ (300 ml/ha): May 20
- Delaro Complete (586 ml/ac): August 6

Harvesting: October 27, 2024

Month	Precipitation (mm)
May	104.8
June	112.8
July	216.6
August	99.8
September	21.8
October	43
TOTAL	**598.8**

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated check	227.2	-
AGTIV IGNITE® L	235.6	8.4

Table 2. **Summary of grain starch content per treatment**

Treatment	Starch (%)	Starch increase (%)
Untreated check	55.3	
AGTIV IGNITE® L	59.1	3.8

EFFICACY REPORT

2024 – SERENDIPITA INOCULANT

CORN AGTIV IGNITE

► PLOT TRIAL

Research partner: New-Marc Research

Research site: Saint-Marc-sur-Richelieu, QC

Treatments*: a) Untreated check;
b) AGTIV IGNITE® L.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Split plot,
6 repetitions, 18 m^2 plots.

Variety: DK 44-13

Previous crop: Soybean

Seeding details: Seeded on May 24 with a cone planter at a rate of 9.7 kg/ac in a clay soil (pH: 6.1, OM: 5.1%).
Emergence on June 1.

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 14.6-21.8-12.8 (335 kg/ha) and 46-0-0 (217 kg/ha): June 21

Pesticides: Credit Xtreme (2.5 L/ha): June 22

Harvesting: October 21, 2024

Month	Precipitation (mm)
May	61.1
June	176.3
July	130.8
August	232.6
TOTAL	**600.6**

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated check	109.9	-
AGTIV IGNITE® L	116.1	6.2

EFFICACY REPORT

2023 – SERENDIPITA INOCULANT

CORN AGTIV IGNITE

► PLOT TRIAL

Research partner: ICMS

Research site: Portage la Praire, MB

Treatments*: a) Untreated check;
b) AGTIV IGNITE® L.

*Products applied according to the manufacturer's recommended rate.

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

Variety: CP2123VT2P/RIB treated with Acceleron and Nutriseed Zn

Previous crop: Potato

Seeding details: Seeded on June 1 with a cone planter at a rate of 33.8 lb/ac in a fine loam soil (pH: 7.9, OM: 3.5%).
Emergence on June 8.

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated check	152.6	
AGTIV IGNITE® L	159.3	6.7

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: Blend at rate of 138, 84, 33.6 and 22.4 kg/ha N-P-K-S: May 19

Pesticides: Roundup WeatherMAX (1.67 L/ha): June 16 & August 3

Harvesting: November 13, 2023

Month	Precipitation (mm)
June	23.3
July	23.4
August	24.1
September	24.1
October	65.3
November	8.8
TOTAL	**169**

EFFICACY REPORT

2023 – SERENDIPITA INOCULANT

CORN AGTIV IGNITE

► PLOT TRIAL

Research partner: Tall Pines Agricultural Research Ltd.

Research site: Rockwood, ON

Treatments*: a) Untreated check;
b) AGTIV IGNITE® L.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 6 repetitions, 18 m^2 plots.

Variety: Pioneer 8922AM

Previous crop: Winter wheat

Seeding details: Seeded on June 2 with a finger pickup planter at a rate of 33 500 seeds/ac in a sandy loam (pH: 7.2, OM: 3.4%). Emergence on June 10.

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated check	196.4	
AGTIV IGNITE® L	220.9	24.5

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 120 - 52 - 60 (516 kg/ha): May 15

Pesticides:
- Acuron (4.91 L/ha): June 13
- Roundup WeatherMAX (2.47 L/ha): June 13 & July 10

Harvesting: November 26, 2023

Month	Precipitation (mm)
June	75.6
July	162.8
August	86.5
September	16.2
October	45.9
November	28
TOTAL	**415**

EFFICACY REPORT

2023 – SERENDIPITA INOCULANT

CORN AGTIV IGNITE

► PLOT TRIAL

Research partner: BlackCreek Research Inc.

Research site: Bright, ON

Treatments*: a) Untreated check;
b) AGTIV IGNITE® L.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Split plot,
6 repetitions, 24 m^2 plots.

Variety: DL 4555

Previous crop: Winter wheat

Seeding details: Seeded on May 29 with a cone planter at a rate of 27 lb/ac in a sandy loam soil (pH: 7.5, OM: 3.1%).
Emergence on June 6.

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated check	227.5	
AGTIV IGNITE® L	232.1	4.6

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 24.3-10.8-14.6-2.2S-1Mg (725 lb/ac): May 29

Pesticides:
- Primextra II Magnum (4l/ha): May 29
- Eragon LQ (0.3 L/ha): May 29

Harvesting: November 11, 2023

Month	Precipitation (mm)
May	47
June	92.8
July	227
August	130.2
TOTAL	**497**

EFFICACY REPORT

2023 – SERENDIPITA INOCULANT

CORN AGTIV IGNITE

► PLOT TRIAL

Research partner: Groupe PleineTerre

Research site: Saint-Patrice-de-Sherrington, QC

Treatments*: a) Untreated check;
b) AGTIV IGNITE® L.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Split plot,
6 repetitions, 30 m^2 plots.

Variety: DKC 4640 treated with Acceleron

Previous crop: Soybean

Seeding details: Seeded on May 11 with a four- row planter at a rate of 35 000 seeds/ac in a soil sandy loam (pH: 7, OM: 5%). Emergence on May 23.

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated check	163.8	
AGTIV IGNITE® L	170.2	6.4

Table 2. **Summary of grain starch content per treatment**

Treatment	Starch (%)	Starch increase (%)
Untreated check	70.8	
AGTIV IGNITE® L	71.8	1

OPERATIONAL NOTES AND RAIN FALL

Fertilisation:
- 40 -48 - 24 - 9.1S (230 kg/ha): May 10
- 46-0-0 (245 kg/ha): June 6

Pesticides: Glyphosate (1.4 L/ac): May 18

Harvesting: October 20, 2023

Month	Precipitation (mm)
May	40.9
June	92.6
July	199.2
August	132.8
September	20.9
October	148.7
TOTAL	**635.1**

EFFICACY REPORT

2023 – SERENDIPITA INOCULANT

CORN AGTIV IGNITE

► PLOT TRIAL

Research partner: Wellington Agricultural Research.

Research site: Alma, ON

Treatments*: a) Untreated check;
b) AGTIV IGNITE® L.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 6 repetitions, 18 m^2 plots.

Variety: Pioneer P7005

Previous crop: Soybean

Seeding details: Seeded on May 26 with a cone planter at a rate of 37 000 seeds/ac in a loam soil (pH: 7.6, OM: 2.6%).

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated check	91.2	
AGTIV IGNITE® L	99.8	8.6

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 46-0-0 (330 lb/ac) and 5-27-27 (2220 lb/ac): May 15

Pesticides: Roundup WeatherMAX (1.67 L/ha): June 8

Harvesting: October 28, 2023

Month	Precipitation (mm)
May	38.7
June	79.3
July	168.6
August	115.8
September	40.3
TOTAL	**442.7**

EFFICACY REPORT

2023 – SERENDIPITA INOCULANT

CORN AGTIV IGNITE

► PLOT TRIAL

Research partner: New-Marc Research

Research site: St-Marc-sur-Richelieu, QC

Treatments*: a) Untreated check;
b) AGTIV IGNITE® L.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 6 repetitions, 24 m^2 plots.

Variety: NK8519-DV

Previous crop: Soybean

Seeding details: Seeded on May 29 with a plot planter at a rate of 80 000 seeds/ha in a clay soil (pH: 6.1, OM: 3.2%).
Emergence on June 5.

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated check	107.3	-
AGTIV IGNITE® L	113.7	6.4

OPERATIONAL NOTES AND RAIN FALL

Fertilisation:
- 14.5-21.7-12.7 (345 kg/ha): May 29
- 46-0-0 (217 kg/ha): June 21

Pesticides: Roundup WeatherMAX (2.5 L/ha): June 22

Harvesting: November 5, 2023

Month	Precipitation (mm)
May	51.6
June	111.5
July	218.9
August	126.8
September	42.8
October	222.8
TOTAL	**774.4**

EFFICACY REPORT

2022 – SERENDIPITA INOCULANT

CORN AGTIV IGNITE

► PLOT TRIAL

Research partner: BlackCreek Research Inc.

Research site: Bright, ON

Treatments*: a) Untreated check;
b) AGTIV IGNITE® L.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 6 repetitions, 24 m^2 plots.

Variety: MZ 3120 SMX

Previous crop: Soybean

Seeding details: Seeded on May 24 with a cone planter at a rate of 9.7 kg/ac in a sandy loam soil (pH: 7.5, OM: 3.2%). Emergence on June 2.

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 24.5-10.8-14.6-2.2S-1Mg (725 lb/ac): May 17

Pesticides:
- Primextra II Magnum (4 L/ha): May 29
- Roundup Transorb (1.67 L/ha): June 24

Harvesting: November 11, 2022

Month	Precipitation (mm)
May	82
June	56.8
July	48.2
August	83.6
September	52.6
October	54.6
TOTAL	**377.8**

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated check	158.9	-
AGTIV IGNITE® L	167.1	8.2

EFFICACY REPORT

2022 – SERENDIPITA INOCULANT

CORN AGTIV IGNITE

► PLOT TRIAL

Research partner: Tall Pines Agricultural Research

Research site: Rockwood, ON

Treatments*: a) Untreated check;
b) AGTIV IGNITE® L.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 6 repetitions, 18 m^2 plots.

Variety: Pioneer 7527 AM treated with Lumivia

Previous crop: Soybean

Seeding details: Seeded on June 20 with a cone planter at a rate of 10.2 kg/ac in a sandy loam soil (pH: 7.2, OM: 3.4%).
Emergence on June 28.

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 120-70-90 (610 kg/ha): May 5

Pesticides:
- Acuron (4.91 L/ha): July 18
- Roundup WeatherMax (2.47 L/ha): July 18

Harvesting: December 7, 2022

Month	Precipitation (mm)
June	42.8
July	24
August	90
TOTAL	**156.8**

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated check	128.8	-
AGTIV IGNITE® L	134.8	6

EFFICACY REPORT

2022 – SERENDIPITA INOCULANT

CORN

AGTIV IGNITE

► PLOT TRIAL

Research partner: Ag-Quest

Research site: Elm Creek, MB

Treatments*: a) Untreated check;
b) AGTIV IGNITE® L.

*Products applied according to the manufacturer's recommended rate.

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

Variety: PV 62181SRIB treated with Acceleron

Previous crop: Oats

Seeding details: Seeded on May 26 with a two-row plot planter at a rate of 23.7 kg/ha in a sandy loam soil (pH: 8.2, OM: 3%). Emergence on June 9.

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 59-39-62 kg/ha actual NPK sidebanded at seeding

Pesticides: Roundup WeatherMax (1.67 L/ha): June 24

Harvesting: October 18, 2022

Month	Precipitation (mm)
May	121.2
June	65.8
July	93.6
August	59.4
September	27.6
October	1.4
TOTAL	**369**

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated check	152.8	-
AGTIV IGNITE® L	153.5	0.7

EFFICACY REPORT

2021 – SERENDIPITA INOCULANT

CORN AGTIV IGNITE

► PLOT TRIAL

Research partner: BlackCreek Research Inc.

Research site: Bright, ON

Treatments*: a) Untreated check;
b) AGTIV IGNITE® L.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 8 repetitions, 24 m^2 plots.

Variety: DBB48-56 RIB treated with Acceleron

Previous crop: Soybean stubble

Seeding details: Seeded on May 20 with a four-row cone seeder at a rate of 9.7 kg/ac in a sandy loam soil (pH: 7.5, OM: 3.2%). Emergence on May 30.

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated check	245.4	-
AGTIV IGNITE® L	251.7	6.3

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: None

Pesticides:
- Primextra II Magnum (4 L/ha): May 19
- Eragon LQ (200 ml/ha): May 19
- Roundup Transorb (1.67 L/ha): June 23

Harvesting: November 3, 2021

Month	Precipitation (mm)
May	26.4
June	86.3
July	84.6
August	23.2
September	148.8
TOTAL	**369.3**

EFFICACY REPORT

2021 – SERENDIPITA INOCULANT

CORN AGTIV IGNITE

► PLOT TRIAL

Research partner: Wellington Agricultural Research.

Research site: Carlisle, ON

Treatments*: a) Untreated check;
b) AGTIV IGNITE® L.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 8 repetitions, 24 m^2 plots.

Variety: DKC 35-37 RIB treated with Acceleron

Previous crop: Soybean

Seeding details: Seeded on May 23 with a cone planter at a rate of 9.6 kg/ac in a loam soil (pH: 7.7, OM: 1.7%).
Emergence on May 30.

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 46-0-0 (330 lb/ac) and 5-27-27 (220 lb/ac): May 21

Pesticides: Roundup WeatherMax (2 L/ha): June 13 and July 14

Harvesting: October 11, 2021

Month	Precipitation (mm)
May	34.8
June	98.8
July	99.1
August	60.9
September	183.8
TOTAL	**477.4**

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated check	183.1	-
AGTIV IGNITE® L	197.9	14.8

EFFICACY REPORT

2021 – SERENDIPITA INOCULANT

CORN AGTIV IGNITE

► PLOT TRIAL

Research partner: New-Marc Research Inc

Research site: Saint-Marc-sur-Richelieu, QC

Treatments*: a) Untreated check;
b) AGTIV IGNITE® L.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 8 repetitions, 15 m^2 plots.

Variety: NK8618-5122A treated with Fortenza Maxim Quatro and Vibrance 500 FS

Previous crop: Soybean

Seeding details: Seeded on May 15 with a cone planter at a rate of 24 kg/ha in a clay soil (pH: 6.6, OM: 3.7%).
Emergence on May 22.

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated check	157.9	-
AGTIV IGNITE® L	158.9	1

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 16.9-22-12.7 (360 kg/ha) sidebanded at seeding and 46-0-0 (240 kg/ha): June 18

Pesticides: Roundup Transorb (2.5 L/ha): June 9

Harvesting: October 12, 2021

Month	Precipitation (mm)
May	15.9
June	56.3
July	47.4
August	49.2
September	55.0
TOTAL	**223**

EFFICACY REPORT

2021 – SERENDIPITA INOCULANT

CORN AGTIV IGNITE

► PLOT TRIAL

Research partner: Groupe PleineTerre

Research site: Sherrington, QC

Treatments*: a) Untreated check;
b) AGTIV IGNITE® L.

*Products applied according to the manufacturer's recommended rate.

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

Variety: DKC 46-17RIB treated with Acceleron

Previous crop: Soybean

Seeding details: Seeded on May 13 with a four-row planter at a rate of 25.9 kg/ha in a sandy loam soil (pH: 6.3, OM: 5.1%).

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

Treatment	Yield (bu/ac)	Yield increase (bu/ac)
Untreated check	158.7	-
AGTIV IGNITE® L	163.9	5.2

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 17.4-20.4-11.2 (295 kg/ha) at seeding plus 46-0-0 (325 kg/ha): June 11

Pesticides: None

Harvesting: October 29, 2021

Month	Precipitation (mm)
May	3.5
June	26.2
July	48.8
August	62
September	65.3
October	154.5
TOTAL	**360.3**

FORAGES

AVERAGE YIELD INCREASE

AGTIV REACH

514 lb/ac

16.0%

47 sites over 2 years
Canada

TRIALS PICTURES

Greener and denser alfalfa.
Alfalfa with AGTIV® is better established versus weeds and will yield better.

More uniform and greener field with AGTIV® for better overall performance.

EFFICACY REPORT

SUMMARY – MYCORRHIZAL INOCULANT

FORAGES AGTIV REACH

► SPLIT FIELDS DEMOS

Research partners: Growers

Research sites: Quebec

Treatments*: a) Untreated;
b) AGTIV REACH®.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Split field: 15 demos

Table 1. **Increase in dry weight per cut over two years with AGTIV REACH®**

Cut	Yield increase 2016 season	Yield increase 2017 season
1st	17.5%	23.8%
2nd	20.8%	5.9%
3rd	12.7%	10.6%
Average	**18.7%**[1]	**13.5%**[1]

Table 2. **Winter 2016 Alfalfa survival**[2]

Treatment	Survival winter 2016
Untreated	86.4% [a]
AGTIV®	92.2% [b]
Decrease loss	**+42.8%**

[1] Statistically significant at p⩽05 using t-test for dependent samples.
[2] Averages followed by different letters are significantly different (p⩽05, t-test for dependent samples).

POTATO

AVERAGE MARKETABLE YIELD INCREASE

AGTIV REACH

31.5 cwt/ac

9.1%

3.6 t/ha

1202 sites over 15 years

North America and Europe

+ AGTIV STIMULATE

10.3 cwt/ac

more

1.2 t/ha

16 third-party sites over 4 years

North America

TRIALS PICTURES

POTATO

AGTIV REACH

Potato split field with AGTIV REACH® POTATO vs untreated.
Faster plant development and larger plants on the right,
and row closure occurs sooner with AGTIV®.

Increased tuber count per plant and marketable yield on AGTIV® side.

EFFICACY REPORT

SUMMARY – MYCORRHIZAL INOCULANT

POTATO AGTIV REACH

► GROWER SPLIT FIELDS AND TRIALS

Research sites:
- Belgium;
- Canada;
- France;
- Germany;
- Mexico;
- Switzerland;
- United States.

Treatments*:
a) Untreated;
b) AGTIV REACH® L POTATO.

*Products applied according to the manufacturer's recommended rate.

Experimental design:
- Randomized Complete Block Design: 21 trials (4-8 repetitions each)
- Split plot block: 1 trial (6 repetitions)
- Split field: 1180 demos

Table 1. **Average increase of marketable yield* per region**

Territory	Number of sites	Yield increase (t/ha)	Yield increase (cwt/ac)	Yield increase (%)
Canada	603	3.1	27.6	9.2
United States	67	3.3	29.8	10.8
Mexico	4	2.3	20	8.6
Belgium, France & Switzerland	496	4.1	36.3	9.9
Germany	32	4.2	37.4	10
Total	**1 202 sites**	**3.6 t/ha***	**31.5 cwt/ac****	**9.1%**

Table 2. **Average increase of marketable yield* per year**

Year	Number of sites	Yield increase (t/ha)	Yield increase (cwt/ac)	Yield increase (%)
2011	32	2.6	23.3	6.6
2012	33	3.2	28.5	9
2013	70	3.6	31.9	11.2
2014	116	4.5	40.3	12.8
2015	145	4	35.3	10.7
2016	243	3.9	34.8	10.5
2017	213	2.7	24	7.7
2018	113	3.4	30.2	11.2
2019	117	3.5	31.1	8.6
2020	49	2.9	25.6	9.8
2021	41	4.1	36.4	10.2
2022	12	3.4	29.2	7.8
2023	13	2.7	23.9	8
2024	2	2.1	18.7	8.7
2025	3	2.2	19.5	6.5
Total	**1 202 sites**	**3.6 t/ha***	**31.5 cwt/ac****	**9.1%**

* Statistically significant at p<001 following a T test.
**cwt/ac = 100 lb/ac

EFFICACY REPORT

2023 – MYCORRHIZAL INOCULANT

POTATO

AGTIV REACH

► PLOT TRIAL

Research partners: New-Marc Research Inc.

Research sites: St-Marc-sur-Richelieu

Treatments: a) Untreated check;
b) AGTIV REACH® L POTATO.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Split plot block,
6 repetitions, 21.6 m^2 plots.

Variety: Chieftain

Previous crop: Soybean

Seeding details: Seeded on May 27 at rate of 1700 kg seeds/ha in a clay loam soil (pH: 7.3, OM: 3.7%).

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

Treatment	Yield (cwt/ac)	Yield increase (cwt/ac)
Untreated check	174.0	-
AGTIV REACH® L POTATO	184.0	10.0

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 14.5-21.7-12.7 (691 kg/ha): May 26
46-0-0 (217 kg/ha): June 20

Pesticides:
- Sencor 480 (2.25 L/ha): June 1
- Dual II Magnum (1.75 L/ha): June 1
- Delegate (240 g/ha): July 8 and 26

Harvesting: September 4, 2023

Month	Precipitation (mm)
May	51.6
June	111.5
July	218.9
August	126.8
September	42.8
TOTAL	**551.6**

EFFICACY REPORT

2019 – MYCORRHIZAL INOCULANT

POTATO

AGTIV REACH

► STRIP TRIAL

Research partner: Willard Waugh & Sons LTD.

Research site: Bedeque, PEI

Treatments: a) Untreated check;
b) AGTIV REACH® L POTATO*.

*Products applied according to the manufacturer's recommended rate.

Experimental design: 20 acres strip

Variety: Prospect

Previous crop: Alfalfa

Seeding details: Seeded May June 7, at 6 tubers/m with 33 cm row spacing. Conventional tillage.

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 17-16-10 (392.4 kg/ac)

Pesticides:
- Titan
- Emesto

Harvesting: October 10, 2019

Month	Precipitation (mm)
June	113.0
July	26.6
August	115.1
September	204.9
October	100.0
TOTAL	**559.6**

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

Treatment	Yield (cwt/ac)	Yield increase (t/ac)
Untreated check	359.1	40.2
AGTIV REACH® L POTATO	405.2	45.4

EFFICACY REPORT

SUMMARY – MYCORRHIZAL INOCULANT

POTATO

AGTIV REACH

► GROWER SPLIT FIELD TRIALS

Research Partner: Eurocelp

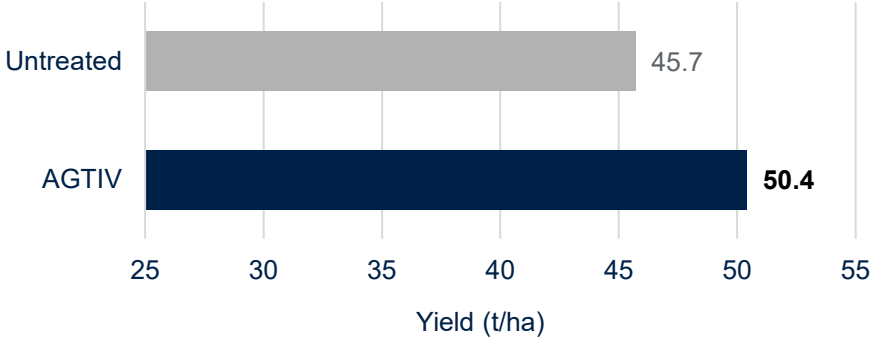
Research Sites: 75 farms (fields) in France, Europe

Treatments: a) Untreated;
b) AGTIV® mycorrhizal inoculant.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Every data point per field consists in an average of 3 samples each (untreated and AGTIV®).

Figure 1. **Marketable potato yields (t/ha) per treatment (all markets)**



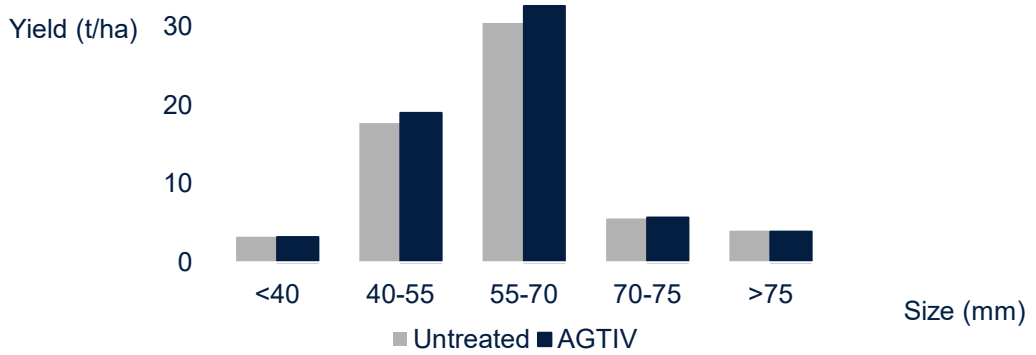
Before 2022:
AGTIV REACH® L POTATO was formerly known as AGTIV® POTATO

Table 1. **Marketable potato yields per treatment (all markets)**

Treatment	Yield (cwt/ac)	Yield increase (t/ac)	Difference (%)
Untreated	412.7	45.7	
AGTIV® mycorrhizal inoculant	455.1	50.4	+9.3%*

*Statistically significant at p≤0,05 using T Test analysis for paired samples.

Figure 2. **Potato yield (t/ha) for the tablestock market (32 plots) by marketable size (40/75 mm)**



EFFICACY REPORT

2011 – MYCORRHIZAL INOCULANT

POTATO

AGTIV REACH

► PLOT TRIAL

Research partner: Independent consultant

Research site: Rawdon, QC

Treatments: a) Untreated check;
b) AGTIV REACH® L POTATO*.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 8 repetitions.

Variety: Goldrush

Previous crop: Potato in 2010, Wheat in 2009

Seeding details: Planted manually in sandy soil. Each plot comprised four rows of 20 seed pieces (35.6 cm apart). Inoculant in liquid suspension applied in furrow. Planted May 21, 2011.

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 206 kg/ha N;
170 kg/ha P_2O_5 and 270 kg/ha K_2O.

Pesticides:
- Actara: planting time
- Quadris: planting time
- Titan: planting time
- Sencor: June 13
- Polyram: June 15
- Bravo: once a week from end of June to August 12
- Reason: August 12

Harvesting: September 18, 2011

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

Treatment	Yield (t/ha)	Yield (cwt/ac)	Average potato weight (g/potato tuber)
Untreated	8,4	74,9	123 [a]
AGTIV REACH® L POTATO	9,7	96,4	136.5 [b]

Results followed by different letters are statistically different according to Duncan
(Marketable yield at p≤0.1; Marketable potato weight at p≤0.05)

EFFICACY REPORT

2010 – MYCORRHIZAL INOCULANT

POTATO

AGTIV REACH

► PLOT TRIAL

Research partner: Independent consultant

Research site: Lyster, QC

Treatments: a) Untreated check;
b) AGTIV REACH® L POTATO*.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 6 repetitions.

Variety: Goldrush

Seeding details: Each plot of 6 m (20 feet) long with 15 seed pieces per treatment. Inoculant in liquid suspension applied in furrow. Planted May 26.

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

Treatment	Yield (t/ha)	Yield (cwt/ac)	Marketable tuber number per plot
Untreated	13	115	34 [a]
AGTIV REACH® L POTATO	17,2	153,5	48 [b]

Results followed by different letters are statistically different according to Duncan *(p≤0.1)*

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: According to host grower's recommendations.

Pesticides:
- Actara: planting time
- Quadris: planting time

Month	Precipitation (mm)
May	39.8
June	104.4
July	48.8
August	112.0
September	184.8
TOTAL	**489.8**

Meteorological data from Québec

EFFICACY REPORT

1999 – MYCORRHIZAL INOCULANT

POTATO

AGTIV REACH

► PLOT TRIAL

Research partner: Laval University

Research site: Lavaltrie, QC

Treatments: a) Untreated check;
b) AGTIV REACH® L POTATO*.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 4 repetitions.

Variety: Goldrush

Seeding details: The trial plot consisted of 32 60-meter rows spaced at 0.9 meter.

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 1800 kg/ha of 10-12-12 (3% Mg, 0.22% B) at planting time;
336 kg/ha of 10-0-15 during the summer.

Pesticides:

- Fumigation:
  - Vapam: Previous fall
- Insecticides:
  - Admire
  - Cymbush
  - Furadan
- Herbicides:
  - Gramoxone
  - Lexone
  - Laroxe

Month	Precipitation (mm)
May	33.1
June	103.6*
July	58.9*
August	73.1
September	123.6
TOTAL	**392.3**

Meteorological data from Québec
* Plots were irrigated during those months.

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

Treatment	Yield (cwt/ac)	Yield (t/ac)
Untreated check	446.1 [a]	49.4 [a]
AGTIV REACH® L POTATO	466.9 [b]	51.7 [b]

Results followed by different letters are statistically different according to Duncan *(p≤0.05)*.

Table 2. **Summary of marketable yields per treatment**

Treatment	Yield (cwt/ac)	Yield (t/ac)
Untreated check	417.2 [a]	46.2 [a]
AGTIV REACH® L POTATO	442.5 [b]	49.0 [b]

Results followed by different letters are statistically different according to Duncan *(p≤0.05)*.

EFFICACY REPORT

SUMMARY – MYCORRHIZAL & BACILLUS INOCULANT

POTATO

AGTIV REACH + AGTIV STIMULATE

► PLOT TRIALS

Research partners:
- Atlantic AgriTech Inc.;
- ICMS;
- New-Marc Research Inc.;
- Prairie Ag Research Inc.;
- Progest inc.;
- Tall Pines Agricultural Research Ltd.;
- Wellington Agricultural Research.

Research sites:
- Alberta;
- Manitoba;
- Ontario;
- Prince-Edward Island;
- Quebec.

Treatments*:

a) AGTIV REACH® L POTATO;
b) AGTIV REACH® L POTATO + AGTIV STIMULATE® POTATO.

*Products applied according to the manufacturer's recommended rate.

Experimental design:
- Randomized Complete Block Design: 3 trials (6 repetitions each)
- Latin square: 13 trials (5-6 repetitions each)

Table 1. **Average increase of marketable yield* in cwt/ac per trial**

Year	Sites	AGTIV REACH®	AGTIV REACH® and AGTIV STIMULATE®	Yield increase*
2021	Sainte-Croix	320.3	319.3	-1
	Saint-Marc	107.8	112.8	5
	New Glasgow	242.1	247.4	5.3
	Rockwood	279.7	322.3	42.6
	Elmira	320.7	343.9	23.2
2022	Saint-Marc	145.4	142.2	-3.2
	Newton	235.9	237.8	1.9
	Newton	92.5	109.3	16.8
	Rockwood	402.5	429	26.5
2023	New Glasgow	413.1	425.6	12.5
	Raymond	138.5	141.1	2.6
	Underhills Farm	361.8	360	-1.8
	Newton	282.4	291.2	8.8
	Newton	482.7	502.3	19.6
2024	Portage la Prairie	238	235.7	-2.3
	Raymond	228	236.3	8.3
Average	**16 sites**	**268.2[a]**	**278.5[b]**	**10.3 cwt/ac**

*Comparison of the double inoculation vs AGTIV REACH® L POTATO
[a,b]Yields with different letters are statistically different according (Tukey HSD test ($p<0.05$)).

EFFICACY REPORT

2024 – MYCORRHIZAL & BACILLUS INOCULANT

POTATO

AGTIV REACH + AGTIV STIMULATE

► PLOT TRIAL

Research partner: ICMS

Research site: Portage la Prairie, MB

Treatments*:
a) Untreated check;
b) AGTIV REACH® L POTATO;
c) AGTIV REACH® L POTATO + AGTIV STIMULATE® L POTATO.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Latin Square (LS), 6 repetitions, 21.96 m^2 plots.

Variety: E3 - Norland

Previous crop: Fallow

Seeding details: Seeded on June 15 with a potato planter at a rate of 2 290 kg/ha in a silty clay loam soil (pH: 7.7, OM: 7.5%). Emergence on June 30.

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

Treatment	Yield (cwt/ac)	Yield increase (cwt/ac)
Untreated check	220.1	-
AGTIV REACH® L POTATO	238	17.9
AGTIV REACH® L POTATO + AGTIV STIMULATE® L POTATO	235.7	15.6

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 179-34-22.4-22.4 kg/ha NPKS: May 29

Pesticides:
- Prism (6 g/ac) and Agral (0.2% V/V): July 8
- Pounce (072 L/ac): July 10
- Silencer (05 L/ac), Poast Ultra (0.45 L/ac) and Merge (1% V/V): July 19
- Minecto Pro (0.271 L/ac): July 23 and August 30
- Bravo Zn (1 L/ac) and Quadris (0.5 L/ac): August 27

Harvesting: October 9, 2024

Month	Precipitation (mm)
May	512.9
June	109.4
July	67.4
August	48.8
September	39.9
TOTAL	**778.4**

EFFICACY REPORT

2024 – MYCORRHIZAL & BACILLUS INOCULANT

POTATO

AGTIV REACH + AGTIV STIMULATE

► PLOT TRIAL

Research partner: Prairie Ag Research Inc.

Research site: Raymond, AB

Treatments*:
a) Untreated check;
b) AGTIV REACH® P POTATO;
c) AGTIV REACH® P POTATO + AGTIV STIMULATE® L POTATO.

*Products applied according to the manufacturer's recommended rate.

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

Variety: Norkotah

Previous crop: Barley

Seeding details: Seeded on May 29 with a potato planter at a rate of 2 500 kg/ha in a clay loam soil (pH: 7.7, OM: 3.4%). Emergence on June 21.

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 20-10-10-15 (100 kg/ha): April 6

Pesticides: Glyphosate: June 14

Harvesting: September 16, 2024

Month	Precipitation (mm)
May	175
June	57.1
July	19.4
August	52.5
TOTAL	**304**

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

Treatment	Yield (cwt/ac)	Yield increase (cwt/ac)
Untreated check	208.5	-
AGTIV REACH® P POTATO	228	19.5
AGTIV REACH® P POTATO + AGTIV STIMULATE® L POTATO	236.3	27.8

EFFICACY REPORT

2023 – MYCORRHIZAL & BACILLUS INOCULANT

POTATO

AGTIV REACH + AGTIV STIMULATE

► PLOT TRIAL

Research partners: Atlantic AgriTech Inc.

Research sites: New Glasgow, PEI

Treatments:
a) Untreated check;
b) AGTIV REACH® L POTATO;
c) AGTIV REACH® L POTATO + AGTIV STIMULATE® L.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Latin Square (LS),
6 repetitions, 21.6 m^2 plots.

Variety: Gold Rush treated with Actara

Previous crop: Spring barley

Seeding details: Hand seeded on May 10 at a rate of 1900 kg/ha, in a sandy loam soil (pH: 6.5, OM: 2.4%).
Emergence on June 12.

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 15-15-15-2Mg (970 kg/ha): May 10

Pesticides:
- Armory (2.0 L/ha): September 4
- Bravo ZN (2 L/ha): July 28 and August 24
- Dual II Magnum (1.75 L/ha): June 1
- Minecto PRO (556 mL/ha): July 15
- NIS (2 L/1000L): July 15
- Penncozeb DG 75 (2.25 kg/ha): July 6, 14, 23, August 3, 12, September 4
- Phostrol 4.17 SL (5 L/ha): July 23
- Sencor 75 DF (1.5 kg/ha): June 1
- Zampro 4.38 SL (1 L/ha): August 12

Month	Precipitation (mm)
May	41.2
June	113.0
July	115.0
August	147.8
TOTAL	**417.0**

Harvesting: October 10, 2023

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

Treatment	Yield (cwt/ac)	Yield increase (cwt/ac)
Untreated check	395.6	-
AGTIV REACH® L POTATO	413.1	17.5
AGTIV REACH® L POTATO + AGTIV STIMULATE® L	425.6	30.0

EFFICACY REPORT

2023 – MYCORRHIZAL & BACILLUS INOCULANT

POTATO

AGTIV REACH + AGTIV STIMULATE

► PLOT TRIAL

Research partners: Prairie Ag Research Inc.

Research sites: Raymond, AB

Treatments:
a) Untreated check;
b) AGTIV REACH® L POTATO;
c) AGTIV REACH® L POTATO + AGTIV STIMULATE® L;
d) AGTIV REACH® P POTATO;
e) AGTIV REACH® P POTATO + AGTIV STIMULATE® L.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block, 5 repetitions, 12 m^2 plots.

Variety: Norkotah

Previous crop: Spring barley

Seeding details: Seeded on May 9 at rate of 2000 kg/ha in a clay loam soil (pH: 7.3, OM: 3.7%).
Emergence on June 2.

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

Treatment	Yield (cwt/ac)	Yield increase (cwt/ac)
Untreated check	130.8	-
AGTIV REACH® L POTATO	138.5	7.7
AGTIV REACH® L POTATO + AGTIV STIMULATE® L	141.1	10.3
AGTIV REACH® P POTATO	139.3	8.7
AGTIV REACH® P POTATO + AGTIV STIMULATE® L	140.3	9.5

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: None

Pesticides: Roundup WeatherMAX: May 26

Harvesting: September 12, 2023

Month	Precipitation (mm)	Irrigation (mm)
May	13.2	15.0
June	30.1	30.0
July	7.8	45.0
August	26.2	-
TOTAL	**77.3**	**90.0**

EFFICACY REPORT

2022 – MYCORRHIZAL & BACILLUS INOCULANT

POTATO

AGTIV REACH + AGTIV STIMULATE

► PLOT TRIAL

Research partner: New-Marc Research Inc.

Research site: St-Marc-sur-Richelieu, QC

Treatments:
a) Untreated Check;
b) AGTIV REACH® L POTATO;
c) AGTIV REACH® L POTATO + AGTIV STIMULATE® L.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block (RCB), 6 repetitions, 21.6 m^2 plots.

Variety: Chieftain

Previous crop: Spring wheat

Seeding details: Seeded on May 25 at a rate of 2250 kg/ha in a clay soil (pH: 6.3, OM: 4.2%).
Emergence on June 9.

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

Treatment	Yield (cwt/ac)	Yield increase (cwt/ac)
Untreated check	138.4	-
AGTIV REACH® L POTATO	145.4	7.0
AGTIV REACH® L POTATO + AGTIV STIMULATE® L	142.2	3.8

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 16.9-22.2-12.7 (675 kg/ha): May 23
46-0-0 (109 kg/ha): June 14

Pesticides:
- Sencor 480 (2.25 L/ha): June 20
- Dual II Magnum (1.75 L/ha): June 20
- Delegate (240 g/ha): July 7

Harvesting: September 6, 2022

Month	Precipitation (mm)
May	110.6
June	121.7
July	130.4
August	114.1
September	133.8
TOTAL	**610.6**

EFFICACY REPORT

2022 – MYCORRHIZAL & BACILLUS INOCULANT

POTATO

AGTIV REACH + AGTIV STIMULATE

► PLOT TRIAL

Research partner: Atlantic AgriTech Inc.

Research site: Newton, PEI

Treatments:
a) Untreated check;
b) AGTIV REACH® L POTATO;
c) AGTIV REACH® L POTATO + AGTIV STIMULATE® L.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block, 6 repetitions, 24 m^2 plots.

Variety: Gold Rush treated with Actara

Previous crop: Turnip

Seeding details: Hand seeded on May 20 at a rate of 1250 kg/ha in a sandy loam soil (pH: 5.4, OM: 2.3%). Emergence on June 8.

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

Treatment	Yield (cwt/ac)	Yield increase (cwt/ac)
Untreated check	232.2	-
AGTIV REACH® L POTATO	235.9	3.7
AGTIV REACH® L POTATO + AGTIV STIMULATE® L	237.8	5.6

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 15-15-15-4S-2Mg (1000 kg/ha): May 19

Pesticides:
- Lorox DF (3 L/ha): June 12
- Sencor 75DF (1.7 L/ha): June 12
- Coragen (350 mL/ha): July 17
- Penncozeb (2.24 kg/ha): July 17 + once a week from July 27 until August 19
- Reglone Ion (2.47 L/ha): September 3

Harvesting: September 20, 2022

Month	Precipitation (mm)
May	51.2
June	78.0
July	60.0
August	130.6
September	130.6
TOTAL	**478.6**

EFFICACY REPORT

2022 – MYCORRHIZAL & BACILLUS INOCULANT

POTATO

AGTIV REACH + AGTIV STIMULATE

► PLOT TRIAL

Research partner: Tall Pines Agricultural Research Ltd.

Research site: Rockwood, ON

Treatments:
a) Untreated check;
b) AGTIV REACH® L POTATO;
c) AGTIV REACH® L POTATO + AGTIV STIMULATE® L.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Latin Square (LS),
6 repetitions, 12 m^2 plots.

Variety: Chieftain

Previous crop: Soybean

Seeding details: Seeded on June 15 at a rate of 18 000 seeds/ac in a sandy loam soil (pH: 7.2, OM: 3.4%).
Emergence on July 5.

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

Treatment	Yield (cwt/ac)	Yield increase (cwt/ac)
Untreated check	395.1	-
AGTIV REACH® L POTATO	402.5	7.4
AGTIV REACH® L POTATO + AGTIV STIMULATE® L	429.0	33.9

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 120-70-90 (620 kg/ha): May 5

Pesticides:
- Lorox (2.3 L/ha): June 22
- Dual II Magnum (2.25 L/ha): June 22
- Coragen (0.2 L/ha): July 17 and August 8
- Bravo ZN (2.4 L/ha): August 5

Harvesting: October 27, 2022

Month	Precipitation (mm)
June	42.8
July	24.0
August	90.0
September	24.2
October	62.3
TOTAL	**243.3**

EFFICACY REPORT

2022 – MYCORRHIZAL & BACILLUS INOCULANT

POTATO

AGTIV REACH + AGTIV STIMULATE

► PLOT TRIAL

Research partner: Atlantic AgriTech Inc.

Research site: Newton, PEI

Treatments:
a) Untreated check;
b) AGTIV REACH® L POTATO;
c) AGTIV REACH® L POTATO + AGTIV STIMULATE® L.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Latin square (LS), 6 repetitions, 24 m^2 plots.

Variety: EVA treated with Actara

Previous crop: Turnip

Seeding details: Hand seeded on May 20 at a rate of 1 250 kg/ha in a sandy loam soil (pH: 5.4, OM: 2.3%). Emergence on June 8.

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 15-15-15-4S-2Mg (1000 kg/ha): May 19

Pesticides:
- Lorox DF (3 L/ha): June 12
- Sencor 75DF (1.7 L/ha): June 12
- Penncozeb (2.24 kg/ha): July 7, 17 and 27, then once a week until August 19
- Coragen (350 mL/ha): July 17
- Reglone Ion (2.47 L/ha): August 20

Harvesting: October 8, 2022

Month	Precipitation (mm)
May	51.2
June	78.0
July	60.0
August	130.6
September	130.6
TOTAL	**478.6**

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

Treatment	Yield (cwt/ac)	Yield increase (cwt/ac)
Untreated check	92.3	-
AGTIV REACH® L POTATO	92.5	0.2
AGTIV REACH® L POTATO + AGTIV STIMULATE® L	109.3	17.0

EFFICACY REPORT

2021 – MYCORRHIZAL AND BACILLUS INOCULANT

POTATO

AGTIV REACH + AGTIV STIMULATE

► PLOT TRIALS

Research partner: Progest inc.

Research site: Sainte-Croix de Lotbinière, QC

Treatments:
a) Untreated check;
b) AGTIV REACH® L POTATO*;
c) AGTIV REACH® L POTATO + AGTIV STIMULATE® POTATO*.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Latin Square, 6 repetitions, 22 m^2 plots.

Variety: Norland

Previous crop: Oat

Seeding details: Seeded on June 3 at a rate of 36 400 seeds/ha.

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 12-12-15 (1333 kg/ha): at seeding

Pesticides:
- Quadris: June 4, 25 and July 5
- Titann, June 4
- Lorox: June 9
- Select and Amigo: June 24
- Manzate: June 25, July 5 and August 13
- Coragen: July 15 and 29
- Delegate: July 23
- Agrovia Top: July 29 and August 13
- Reglone: August 23 and September 10

Harvesting: September 23, 2021

Month	Precipitation (mm)
June	103.0
July	85.8
August	28.4
September	80.8
TOTAL	**298.0**

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

Treatment	Yield (cwt/ac)	Yield increase (cwt/ac)
Untreated check	313.1	-
AGTIV REACH® L POTATO	320.3	7.2
AGTIV REACH® L POTATO + AGTIV STIMULATE® POTATO	319.3	6.2

EFFICACY REPORT

2021 – MYCORRHIZAL AND BACILLUS INOCULANT

POTATO

AGTIV REACH + AGTIV STIMULATE

► PLOT TRIALS

Research partner: New-Marc Research Inc.

Research site: Saint-Marc-sur-Richelieu, QC

Treatments:
a) Untreated check;
b) AGTIV REACH® L POTATO*;
c) AGTIV REACH® L POTATO + AGTIV STIMULATE® POTATO*.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Latin Square, 6 repetitions, 22 m^2 plots.

Variety: Chieftain

Previous crop: Soybean

Seeding details: Seeded on June 4, at a rate of 2 200 kg/ha.

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 16.9-22.2-12.7: June 1
Urea (46-0-0): June 5

Pesticides: Coragen: June 10 and July 22
Delegate: August 27

Harvesting: September 30, 2021

Month	Precipitation (mm)
May	15.9
June	56.3
July	47.4
August	49.2
September	55.0
TOTAL	**223.8**

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

Treatment	Yield (cwt/ac)	Yield increase (cwt/ac)
Untreated check	103.1	-
AGTIV REACH® L POTATO	107.8	4.7
AGTIV REACH® L POTATO + AGTIV STIMULATE® POTATO	112.8	9.8

EFFICACY REPORT

2021 – MYCORRHIZAL AND BACILLUS INOCULANT

POTATO

AGTIV REACH + AGTIV STIMULATE

► PLOT TRIALS

Research partner: Atlantic AgriTech Inc.

Research site: New Glasgow, IPE

Treatments:
a) Untreated check;
b) AGTIV REACH® L POTATO*;
c) AGTIV REACH® L POTATO + AGTIV STIMULATE® POTATO*.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Latin Square, 6 repetitions, 16 m^2 plots.

Variety: Russet Burbank

Previous crop: Oat

Seeding details: Seeded on May 21, at a rate of 1 900 kg/ha.

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 15-15-15-4 (S)-2 (Mg): May 1

Pesticides:
- Lorox: June 2
- Sencor: June 2
- Pencozed 75DF: June 28, July 12, 28 and August 9
- Zampro: July 5
- Coragen: July 5
- Revus: July 19
- Delegate: July 19
- Echo: August 25
- Reglone: September 8

Harvesting: October 4, 2021

Month	Precipitation (mm)
May	96.8
June	45.8
July	142.4
August	39.2
September	217.2
TOTAL	**541.4**

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

Treatment	Yield (cwt/ac)	Yield increase (cwt/ac)
Untreated check	236.9	-
AGTIV REACH® L POTATO	242.1	5.2
AGTIV REACH® L POTATO + AGTIV STIMULATE® POTATO	247.4	10.5

EFFICACY REPORT

2021 – MYCORRHIZAL AND BACILLUS INOCULANT

POTATO

AGTIV REACH + AGTIV STIMULATE

► PLOT TRIALS

Research partner: Tall Pines Agricultural Research Ltd.

Research site: Rockwood, ON

Treatments:
a) Untreated check;
b) AGTIV REACH® L POTATO*;
c) AGTIV REACH® L POTATO + AGTIV STIMULATE® POTATO*.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Latin Square, 6 repetitions, 18 m^2 plots.

Variety: Chieftain Red

Previous crop: Fallow

Seeding details: Seeded on May 21, at a rate of 26 000 seed pieces/ha.

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 120-60-90 (590 kg/ha): April 20

Pesticides:
- Boundary LQD: May 28
- Bravo Zn: July 15
- Coragen: July 28

Harvesting: November 9, 2021

Month	Precipitation (mm)
May	28
June	95.5
July	128.4
August	28.2
September	142.6
TOTAL	**422.7**

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

Treatment	Yield (cwt/ac)	Yield increase (cwt/ac)
Untreated check	266.7	-
AGTIV REACH® L POTATO	279.7	13.0
AGTIV REACH® L POTATO + AGTIV STIMULATE® POTATO	322.3	55.6

EFFICACY REPORT

2021 – MYCORRHIZAL AND BACILLUS INOCULANT

POTATO

AGTIV REACH + AGTIV STIMULATE

► PLOT TRIALS

Research partner: Wellington Agricultural Research.

Research site: Elmira, ON

Treatments:
a) Untreated check;
b) AGTIV REACH® L POTATO*;
c) AGTIV REACH® L POTATO + AGTIV STIMULATE® POTATO*.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Latin Square, 6 repetitions, 22 m^2 plots.

Variety: Chieftain Red

Previous crop: Canola

Seeding details: Seeded on June 17, at a rate of 27 778 seed pieces/ha.

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

Treatment	Yield (cwt/ac)	Yield increase (cwt/ac)
Untreated check	298.2	-
AGTIV REACH® L POTATO	320.7	22.5
AGTIV REACH® L POTATO + AGTIV STIMULATE® POTATO	343.9	45.7

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: None

Pesticides:
- Sencor DF: July 1
- Bravo: July 26, August 5, 7, 13, 19, 23 and September 9
- Revus: July 26, August 5, 7, 13, 19, 23 and September 9

Harvesting: October 9, 2021

Month	Precipitation (mm)
June	136.4
July	79.9
August	49.9
September	177.8
TOTAL	**444**

ONION

AVERAGE YIELD INCREASE

AGTIV® REACH **2766** lb/ac

6.8%

20 sites over 9 years

Canada and Europe

EFFICACY REPORT

SUMMARY – MYCORRHIZAL INOCULANT

ONION AGTIV REACH

► PLOT TRIALS

Research partners:
- Agricultural Development Group Inc. Reseach;
- Antedis;
- BlackCreek Research Inc.;
- Bröring;
- Prisme

Research sites:
- North America;
- Europe.

Treatments*:
a) Untreated;
b) AGTIV REACH®.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design: 9 trials

► GROWER DEMONSTRATIONS

Experimental design: Split field: 11 demos

Table 1. **Summary of marketable yields (t/ha) per trial and demo.**

Year	Location	Seed variety	Yield Untreated	Yield AGTIV®
2014	Holland Marsh, ON	N/A	67.7	74.5
		N/A	67.7	71.8
2015	La somme, France	N/A	23.9	27.9
		N/A	54.8	55.7
		N/A	54.8	60.5
		N/A	43.6	46.4
2016	Bonneval, France	N/A	60.7	64.1
2017	Bright, ON	Norstar	8.1	6.8
	Napierville, QC	Trailblazer	16.2	17.4
2018	Issé, France	Santero F1	32.2	34.9
	Earl du Meurisier, France	N/A	59.9	66.2
	Bright, ON	Catskill	20.9	30.9
	Napierville, ON	Catskill	68.6	66.1
2019	Boisseaux, France	Santero F1	46.1	44.4
	Issé, France	Santero F1	62	63.3
	Yèvres la Ville, France	Santero F1	40.8	36.2
	Cézarville, France	Santero F1	47.4	44.2
	Allemagne	N/A	48.2	53
	Loiret, France	N/A	57.4	74.3
2022	Hoerdt, France	Hybound	25.8	29.9
Total	**20 sites**		**45.3**	**48.4**

EFFICACY REPORT

2019 – MYCORRHIZAL INOCULANT

ONION AGTIV REACH

► PLOT TRIAL

Research partner: Antedis

Research site: Issé, Loire-Atlantique department, France

Treatments: a) Untreated check;
b) AGTIV® SPECIALTY CROPS • Powder*.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 8 repetitions.

Variety: Santero F1

Previous crop: Spring barley

Seeding details: Seeded April 1 at 80 seeds/m^2 with 32 cm row spacing.

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: Liquid Solution N 39: March 19
AVF K4: August 20 to 25

Pesticides:

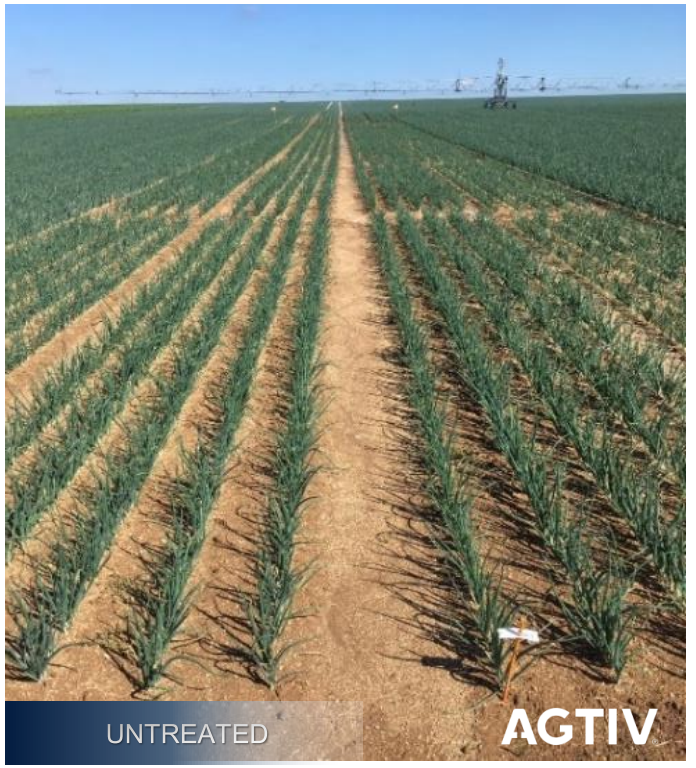
- Acrobat M DG : June, July and August
- Baroud SC :April
- Bordeaux mixture: June, July and August
- Caiman WP and DEFI : June
- Challenge 600 : May, June
- Dithane M 45 : June and August
- ITCAN SL 270 : September
- Lentagran : Aril and May
- Satarne 200 : May, June
- Scala : July

Harvesting: September 24, 2019

Month	Precipitation (mm)
April	36.4
May	90.6
June	34.4
July	10.6
August	42.9
September	4.6
TOTAL	**219.5**

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

Treatment	Yield (lbs/ac)	Yield (t/ha)
Untreated check	55 315	62.0
AGTIV® SPECIALTY CROPS • Powder	56 474	63.3



EFFICACY REPORT

2018 – MYCORRHIZAL INOCULANT

ONION

AGTIV REACH

► PLOT TRIAL

Research partner: BlackCreek Research Inc.

Research site: Bright, ON

Treatments: a) Untreated check;
b) AGTIV REACH® P for Seed Encrusting.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 8 repetitions.

Variety: Catskill

Previous crop: Soybean

Seeding details: Seeded June 7 with Clean seeder at 40 seeds/m of row with 30 cm row spacing. Conventional till.

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: MAP (70 kg/ha)
Potash (98 kg/ha)
KMag (125 kg/ha)
Urea (112 kg/ha)

Pesticides:
- Venture L: June 20
- Pardner: June 25 and July 5
- Prowl H2O: June 29 and July 15

Harvesting: October 18, 2018

Month	Precipitation (mm)
June	91
July	63.1
August	116.6
September	57.8
TOTAL	**328.5**

Table 2. **Summary of marketable yields per treatment**

Treatment	Yield (lb/ac)	Yield (t/ha)
Untreated check	18 650	20.9
AGTIV REACH® P for Seed Encrusting	27 574	30.9

More developed root system on the right, and plants are larger with AGTIV®.

EFFICACY REPORT
2018 – MYCORRHIZAL INOCULANT

ONION AGTIV REACH

► GROWER SPLIT FIELD TRIAL

Research Sites: France, Europe

Treatments: a) Untreated;
b) AGTIV® mycorrhizal inoculant.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Every data point per field consists in an average of 3 samples each (untreated and AGTIV®).

Variety Hytunes

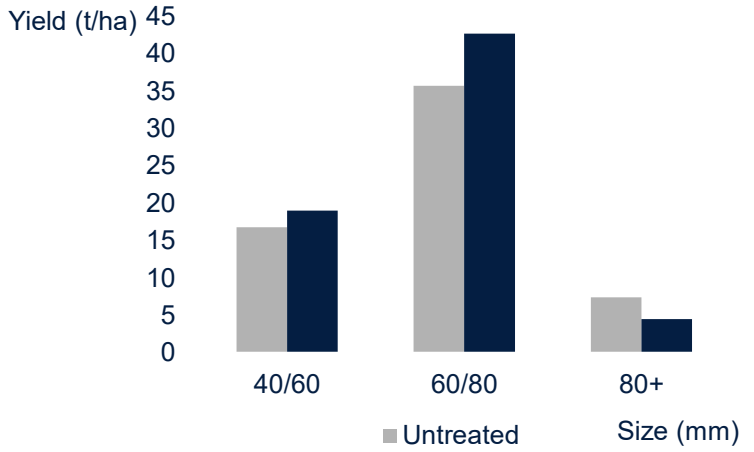
Table 1. **Marketable onion yields per treatment**

Treatment	Yield (lb/ac)	Yield (t/ha)
Untreated check	53 441	59.9
AGTIV® mycorrhizal inoculant	59 062	66.2

Table 2. **Marketable onion yields per treatment**

Treatment	Bulb number / ha	Difference (%) AGTIV® vs untreated
Untreated check	531 667	
AGTIV® mycorrhizal inoculant	616 667	+10.5%

Figure 1. **Onion yield (t/ha) by marketable size (mm)**



EFFICACY REPORT

2017 – MYCORRHIZAL INOCULANT

ONION

AGTIV REACH

► PLOT TRIAL

Research partners:
- BlackCreek Research Inc.;
- Prisme.

Research Sites:
- Bright, ON – Sandy loam soil;
  Napierville, QC – Black soil, organic.

Treatments:
a) Untreated;
b) AGTIV REACH® P for Seed Encrusting.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 8 replicates.

Variety:
Frontier: Ontario
Trailbrazer: Quebec

Table 2. **Summary of yields per treatment and % difference**

Location	Untreated (t/ha)	AGTIV REACH® P for Seed Encrusting (t/ha)	Yield difference %
Ontario	6.8	8.1	+19.1%
Quebec	16.2	17.4	+7.4%
Average	**11.5**	**12.8**	**+11.3%**

Onion split field with AGTIV® vs untreated.
Plant growth and health is enhanced on the right.

EFFICACY REPORT

2017 – MYCORRHIZAL INOCULANT

ONION AGTIV REACH

► GROWER SPLIT FIELD TRIAL

Research Sites: France, Europe

Treatments: a) Untreated;
b) AGTIV® mycorrhizal inoculant.

*Products applied according to the manufacturer's recommended rate.

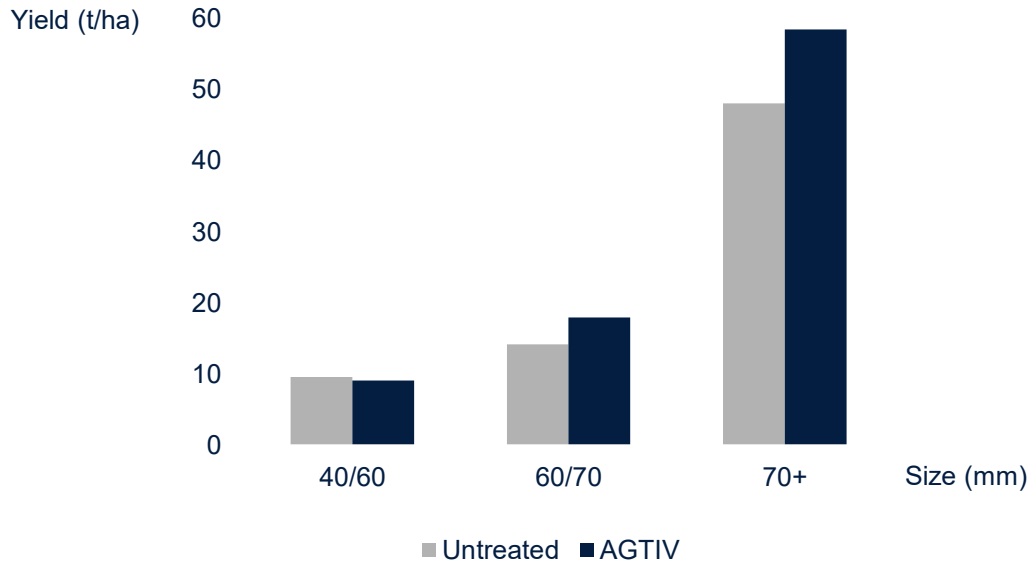
Experimental design: Every data point per field consists in an average of 3 samples each (untreated and AGTIV®).

Variety SPIRIT

Table 1. **Marketable onion yields per treatment and difference (%)**

Treatment	Yield (t/ha)	Bulb number / ha
Untreated check	71.9	409 877
AGTIV® mycorrhizal inoculant	85.7	459 259
Difference (%) AGTIV® vs untreated	+19.2%	+12.0%

Figure 1. **Onion yields (t/ha) by marketable size (mm).**



EFFICACY REPORT

SUMMARY – MYCORRHIZAL & BACILLUS INOCULANT

ONION

AGTIV REACH + AGTIV STIMULATE

► PLOT TRIALS

Research partners:
- Agricultural Development Group Inc. Reseach;
- BlackCreek Research Inc.;
- Prisme.

Research sites:
- Quebec;
- Ontario;
- Washington.

Treatments*:
a) Untreated;
b) Commercial seed encrusting with AGTIV REACH® P and AGTIV STIMULATE® L.

*Products applied according to the manufacturer's recommended rate.

Experimental design:
Randomized Complete Block Design:
4 trials

Table 1. **Summary of marketable yields (t/ha) per trial.**[1]

Year	Sites	Variety	Untreated check yield (t/ha)	AGTIV® yield (t/ha)	Yield increase (t/ha)	Yield increase (%)
2017	**Bright, ON**	Frontier	8.1	9.9	1.8	22.2
2017	**Napierville, QC**	Trailblazer	16.2	17	0.8	5
2018	**Napierville, QC**	Catskill	68.6	68	-	-
2018	**Bright, ON**	Catskill	20.9	29.1	8.2	39.2
Total	**4 sites**		**28.5[a]**	**31[b]**	**2.5 t/ha***	**8.8%**

*Summary of means are significantly different following a combined site ANOVA and a Tukey test (p<05) p = 036

CARROT

AVERAGE YIELD INCREASE

AGTIV REACH **3837** lb/ac

9.4%

9 sites over 6 years
Canada

EFFICACY REPORT

SUMMARY – MYCORRHIZAL INOCULANT

CARROT

AGTIV REACH

► PLOT TRIALS

Research partners:
- Agricultural Development Group Inc. Reseach;
- Antedis;
- BlackCreek Research Inc.;
- Eurofins Agroscience services;
- Prisme.

Research sites:
- France;
- USA;
- Canada.

Treatments*:
a) Untreated check;
b) AGTIV REACH®.

*Products applied according to the manufacturer's recommended rate.

Experimental design:
Randomized Complete Block Design:
8 trials (8 repetitions each)

► GROWER DEMONSTRATION

Experimental design:
Split field: 1 demo

Table 1. **Summary of yields (lb/ac) per trial and demo.**

Year	Location	Seed variety	Untreated check	AGTIV REACH®
2019	Ploërmel, France	Bolero F1	87 450	96 285
	Meneac, France	Bolero F1	79 062	84 773
	Onesse-Laharie, France	Bolero F1	44 975	45 510
2018	Eltopia, WA	Envy	12 493	16 955
	Bright, ON	Envy	24 450	27 217
	Napierville, QC	Envy	25 789	24 004
2017	Napierville, QC	Olympus	29 269	35 069
	Bright, ON	Bolero	36 586	38 550
2014	Saint Simon, QC	Olympus	28 823	34 445

Table 2. **Summary of yields (t/ha) per trial and demo.**

Year	Location	Seed variety	Untreated check	AGTIV REACH®
2019	Ploërmel, France	Bolero F1	98	107.9
	Meneac, France	Bolero F1	88.6	95
	Onesse-Laharie, France	Bolero F1	50.4	51
2018	Eltopia, WA	Envy	14	19
	Bright, ON	Envy	27.4	30.5
	Napierville, QC	Envy	28.9	26.9
2017	Napierville, QC	Olympus	32.8	39.3
	Bright, ON	Bolero	41	43.2
2014	Saint Simon, QC	Olympus	32.3	38.6

EFFICACY REPORT

2019 – MYCORRHIZAL INOCULANT

CARROT

AGTIV REACH

► PLOT TRIAL

Research partner: Antedis

Research site: Ploërmel, Morbihan department, France

Treatments: a) Untreated check;
b) AGTIV® SPECIALTY CROPS • Powder*.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 8 repetitions.

Variety: Bolero F1

Previous crop: Ray-grass

Seeding details: Seeded May 24 at 850,000 seeds/ha.

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

Treatment	Yield [1] (lb/ac)	Yield [1] (t/ha)	Yield increase (%)
Untreated check	87 450 [a]	98.0 [a]	
AGTIV® SPECIALTY CROPS • Powder	96 285 [b]	107.9 [b]	+10.1%

[1] Yields with same letter are not statistically different following a Tukey HSD test at p≤0.05.

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 30 m^3 of cattle manure: May 21

Pesticides:
- Baroud SC: June 2
- Centium 36 CS: June 2
- Racer ME: June 2
- Challenge 600: June 26 and August 01
- DEFI: June 26 and August 01
- Heliosoufre: August 13
- Switch: August 13

Harvesting: October 28, 2019

Month	Precipitation (mm)
May	3.0
June	144.4
July	18.4
August	57.4
September	67.8
October	172.5
TOTAL	**463.5**

EFFICACY REPORT

2019 – MYCORRHIZAL INOCULANT

CARROT

AGTIV REACH

► PLOT TRIALS

Research partners: Eurofins Agroscience services

Research sites: Meneac, Morbihan department, France

Treatments: a) Untreated check;
b) AGTIV® SPECIALTY CROPS • Powder*.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 8 repetitions.

Variety: Bolero F1

Previous crop: Barley

Seeding details: Seeded May 24 at 600,000 seeds/ha with 60 cm row spacing.

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

Treatment	Yield [1] (lb/ac)	Yield [1] (t/ha)	Yield increase (%)
Untreated check	79 062 [a]	88.6 [a]	
AGTIV® SPECIALTY CROPS • Powder	84 773 [b]	95.0 [b]	+7.2%

[1] Yields with same letter are not statistically different following a Tukey HSD test at p≤0.05.

OPERATIONAL NOTES AND RAIN FALL

Fertilisation:
- Chicken manure (2200 kg/ha): April 15
- Ammonitrate (180 kg/ha): February 23
- Ammonitrate (150 kg/ha): March 15

Pesticides:
- Cherokee: April 19
- Keynote: May 8
- Baroud: May 25
- Racer Centium: May 25
- Signum: June 25
- Heliosoufre: June 25
- Bordeaux mixture: June 25

Harvesting: October 1, 2019

Month	Precipitation (mm)
June	181.1
July	23.3
August	53.6
September	45.7
TOTAL	**303.7**

EFFICACY REPORT

2018 – MYCORRHIZAL INOCULANT

CARROT

AGTIV REACH

► PLOT TRIALS

Research partners: Agricultural Development Group Inc.

Research sites: Eltopia (WA), USA

Treatments: a) Untreated check;
b) AGTIV REACH® P for Seed Encrusting.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 8 repetitions.

Variety: Envy

Previous crop: Squash

Seeding details: Direct seeded May 24 at 20 seeds/m of row; 1.3 million seeds per hectare. Conventional till.

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: None

Pesticides:
- Lorox: July 13
- Nortron: August 23

Harvesting: October 8, 2019

Month	Precipitation (mm)
May	9.9
June	15.25
July	0
August	0
September	0.5
October	20.8
TOTAL	**46.45**

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

Treatment	Yield (lb/ac)	Yield (t/ha)	Marketable yield (%)
Untreated check	12 493	14.0	92
AGTIV REACH® P for Seed Encrusting	16 955	19.0	92

EFFICACY REPORT

2018 – MYCORRHIZAL INOCULANT

CARROT

AGTIV REACH

► PLOT TRIALS

Research partners: BlackCreek Research Inc.

Research sites: Bright, ON

Treatments: a) Untreated check;
b) AGTIV REACH® P for Seed Encrusting.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 8 repetitions.

Variety: Envy

Previous crop: Soybean

Seeding details: Seeded June 11 with Clean seeder at 50 seeds/m of row; 3.3 million seeds per hectare. Conventional till.

OPERATIONAL NOTES AND RAIN FALL

Fertilisation:
- MAP (70 kg/ha)
- Potash (98 kg/ha)
- KMag (125 kg/ha)
- Urea (112 kg/ha)

Pesticides:
- Lorox FL (480 g/L, 3.25 L/ha): June 1
- Venture L (125g/L, 2l/ha): July 10

Harvesting: September 24, 2018

Month	Precipitation (mm)
June	91
July	63.1
August	116.6
September	57.8
TOTAL	**328.5**

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

Treatment	Yield (lb/ac)	Yield (t/ac)
Untreated check	24 450	27.4
AGTIV REACH® P for Seed Encrusting	27 217	30.5

Table 2. **Summary of yields percentage per treatment**

Treatment	Marketable yield (%)
Untreated check	66.5%
AGTIV REACH® P for Seed Encrusting	85.5%

EFFICACY REPORT

2017 – MYCORRHIZAL INOCULANT

CARROT

AGTIV REACH

► PLOT TRIALS

Research partners:
- BlackCreek Research Inc.;
- Prisme.

Research sites:
- Bright, ON – Sandy loam soil;
- Napierville, QC – Black soil, organic.

Treatments:
a) Untreated check;
b) AGTIV REACH® P for Seed Encrusting.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 8 replicates.

Variety:
Bolero: Ontario
Olympus: Quebec

Carrot split field with AGTIV® vs untreated.
Bigger plants and quicker row closure on the right.

Table 1. **Summary of marketable yields for untreated check**

Location	Yield (lb/ac)	Yield (t/ha)	Total % Yield difference
Ontario	36 579	41	+5.4%
Quebec	29 269	32.8	+19.8%
Average	**32 653**	**36.6**	**+11.7%**

Table 2. **Summary of marketable yields for AGTIV REACH® P for Seed Encrusting**

Location	Yield (lb/ac)	Yield (t/ha)	Total % Yield difference
Ontario	38 542	43.2	+5.4%
Quebec	35 069	39.3	+19.8%
Average	**36 490**	**40.9**	**+11.7%**

EFFICACY REPORT

SUMMARY – MYCORRHIZAL & BACILLUS INOCULANT

CARROT

AGTIV REACH + AGTIV STIMULATE

► PLOT TRIALS

Research partners:

- Agricultural Development Group Inc. Reseach;
- BlackCreek Research Inc.;
- Prisme.

Research sites:

- Quebec;
- Ontario;
- Washington.

Treatments*:

a) Untreated;
b) Commercial seed encrusting with AGTIV REACH® P and AGTIV STIMULATE® L.

*Products applied according to the manufacturer's recommended rate.

Experimental design:

Randomized Complete Block Design:
5 trials (8 repetitions each)

Table 1. **Summary of marketable yields (t/ha) per trial.**[1]

Year	Sites	Variety	Untreated check yield (t/ha)	AGTIV® yield (t/ha)	Yield increase (t/ha)	Yield increase (%)
2017	**Bright, ON**	Bolero	41	47.3	6.3	15.4
2017	**Napierville, QC**	Olympus	32.8	36.2	3.9	10.4
2018	**Bright, ON**	Envy	27.4	31.4	4	14.6
2018	**Napierville, QC**	Envy	28.9	28.1	-	-
2018	**Eltopia, WA**	Envy	14	17.2	3.2	22.9
Total	**5 sites**		**28.8[a]**	**32.0[b]**	**3.2 t/ha***	**11.1%**

*Summary of means are significantly different following a combined site ANOVA and a Tukey test (p<05) p = 03

EFFICACY REPORT

SUMMARY – MYCORRHIZAL INOCULANT

SWEET CORN

AGTIV REACH

► PLOT TRIALS

Research partners:
- BlackCreek Research Inc.;
- Sandy Knolls Research Inc.

Research sites: Ontario

Treatments*:
a) Untreated check;
b) AGTIV REACH® film coating.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design:
2 trials (8 repetitions each)

Table 1. **Summary of yields (lb/ac) per trial**

Year	Location	Seed variety	Untreated check	AGTIV REACH®	Yield increase
2023	Vienna, ON	Fast Lane SE	3 022.6	3 274.8	252.2
2023	Bright, ON	Fast Lane SE	12 618	13 347	729

EFFICACY REPORT
2023 – MYCORRHIZAL INOCULANT

SWEET CORN

AGTIV REACH

► PLOT TRIAL

Research partner: BlackCreek Research Inc.

Research site: Bright, ON

Treatments*: a) Untreated check;
b) AGTIV REACH® film coating.

*Products applied according to the manufacturer's recommended rate.

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

Variety: Fast Lane SE treated with Dividend Extreme and Vibrance Cinco

Previous crop: Soybean

Seeding details: Seeded on May 11 with a cone planter at a rate
27 000 seeds/ acre in a sandy loam soil (pH: 6.8, OM: 3.5%).
Emergence on May 22.

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 24.3-10.8-14.6 -2.2S-1Mg (725 lb/ac): pre plant incorporate

Pesticides: Primextra II Magnum (4 L/ha) and Callisto (0.3 L/ha): May 16

Harvesting: August 11, 2023

Month	Precipitation (mm)
May	47
June	92.8
July	227
August	130.2
TOTAL	**497**

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

Treatment	Yield (lb/ac)	Yield increase (lb/ac)
Untreated check	12 618	-
AGTIV REACH® film coating	13 347	729

EFFICACY REPORT

2023 – MYCORRHIZAL INOCULANT

SWEET CORN

AGTIV REACH

► PLOT TRIAL

Research partner: Sandy Knolls Research Inc

Research site: Vienna, ON

Treatments*: a) Untreated check;
b) AGTIV REACH® film coating.

*Products applied according to the manufacturer's recommended rate.

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

Variety: Fast Lane SE treated with Dividend Extreme and Vibrance Cinco

Previous crop: Fallow

Seeding details: Seeded on July 20 with a finger pickup planter at a rate of 32 000 seeds/ac in loamy sand soil (pH: 7.5, OM: 1.4%). Emergence on July 24.

OPERATIONAL NOTES AND RAIN FALL

Fertilisation:
- 0-0-60 (150 lb/ac) and 46-0-0 (450 lb/ac): May 8
- Corn Starter (250 lb/ac): July 20

Pesticides: None

Harvesting: October 2, 2023

Month	Precipitation (mm)
July	192.2
August	117.8
September	32.6
TOTAL	**342.6**

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

Treatment	Yield (lb/ac)	Yield increase (lb/ac)
Untreated check	3 022.6	-
AGTIV REACH® film coating	3 274.5	251.9

EFFICACY REPORT

2019 – MYCORRHIZAL & BACILLUS INOCULANT

SWEET CORN

AGTIV REACH + AGTIV STIMULATE

► PLOT TRIALS

Research partners: Schreiber & Sons

Research sites: Eltopia (WA), USA

Treatments:
a) Untreated check;
b) AGTIV REACH® P for Seed Film Coating + AGTIV STIMULATE® L*.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Randomized Complete Block Design, 8 repetitions.

Variety: Nirvana

Previous crop: Fallow (2017) and wheat (2018)

Seeding details: Seeded June 4, at 30 000 seeds/ac with 75 cm row spacing.

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

Treatment	Yield [1] (lb/ac)	Yield [1] (t/ha)	Yield increase (%)
Untreated check	17 854.0 [a]	20.0 [a]	
AGTIV REACH® P (Seed Film Coating) + AGTIV STIMULATE® L	21 067.7 [b]	23.6 [b]	+18%

[1] Yields with same letter are not statistically different following a LSD test at p≤0.05.

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: Plots were irrigated and fertilized.

Pesticides: Atrazine: June 22
Atrazine + Impact: July 22

Harvesting: September 16, 2019

Month	Precipitation (mm)
June	1.95
July	2.44
August	25.62
September	11.94
TOTAL	**41.95**

AVERAGE YIELD INCREASE

AGTIV REACH

GREEN BEAN

7.8 %

6 sites over 1 year
Europe

AGTIV THRIVE

GREEN PEA

5.3 %

12 sites over 3 years
Canada

AGTIV REACH

PEPPER

6.8 %

5 sites over 3 years
Canada

EFFICACY REPORT

SUMMARY – MYCORRHIZAL INOCULANT

GREEN BEAN

AGTIV REACH

► SPLIT FIELDS DEMONSTRATIONS

Research partners: Growers

Research sites: France

Treatments*: a) Untreated;
b) AGTIV REACH®.

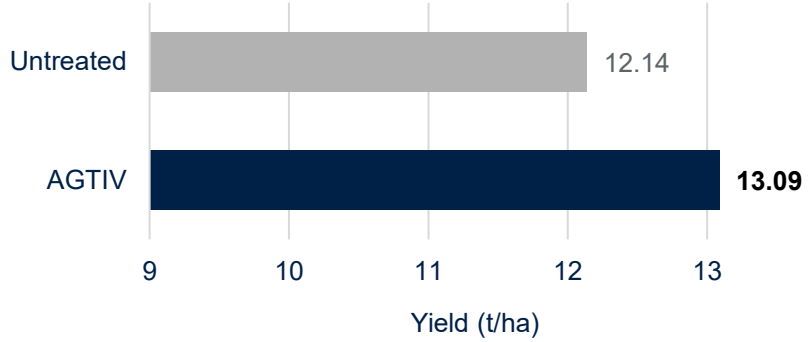
*Products applied according to the manufacturer's recommended rate.

Experimental design: Split field: 6 demos

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

Variety	Untreated		AGTIV® mycorrhizal inoculant		Increase (%) AGTIV® vs untreated
	(lb/ac)	(t/ha)	(lb/ac)	(t/ha)	
Stanley	13 561	15.16	14 810	16.56	9.2
Costal	11 865	13.31	12 668	14.24	7
Bamaco	15 167	16.98	16 594	18.57	9.4
Compass	8 297	9.27	9 635	10.8	16.5
Paloma	9 546	10.73	9 367	10.47	-2.4
Linex	6 512	7.33	6 959	7.83	6.8
Average	**10 825**	**12.14**	**11 672**	**13.09**	**7.8%**

Figure 1. **Yield increase with AGTIV® mycorrhizal inoculant.**



EFFICACY REPORT

SUMMARY – MYCORRHIZAL & RHIZOBIAL INOCULANT

GREEN PEA

AGTIV THRIVE

► SPLIT FIELDS DEMONSTRATIONS

Research partners: Growers

Research sites:
- Ontario;
- Quebec.

Treatments*:
a) Untreated;
b) AGTIV THRIVE®.

*Products applied according to the manufacturer's recommended rate.

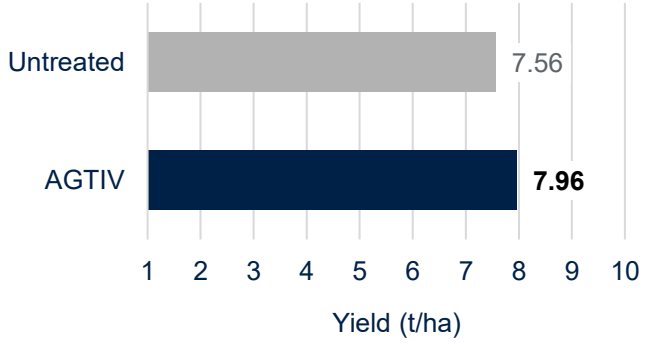
Experimental design: Split field: 12 demos

Plant growth and health is enhanced on the right, and the leaf area is increased with AGTIV®.

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

Year	Number of sites	Average increase (t/ac)	Average increase (t/ha)	Average increase (%)
2015	4	0.31	0.77	23.3
2016	7	08	0.20	3.5
2017	1	0.12	0.30	3.7
Total	**12 sites**	**0.16 t/ac**	**0.40 t/ha**	**5.3%**

Figure 1. **Average yield increase**



TRIALS PICTURES

Pepper split field with AGTIV® vs untreated.
Plant growth and health is enhanced, and row closure occurs sooner on the right.

Bigger root system with more fibrous roots, and more fruits per plant with AGTIV®.

EFFICACY REPORT

SUMMARY – MYCORRHIZAL INOCULANT

PEPPER AGTIV REACH

► SPLIT FIELDS DEMONSTRATIONS

Research partners: Growers

Research sites:
- Ontario;
- Quebec.

Treatments*: a) Untreated;
b) AGTIV REACH®.

*Products applied according to the manufacturer's recommended rate.

Experimental design: Split field: 5 demos

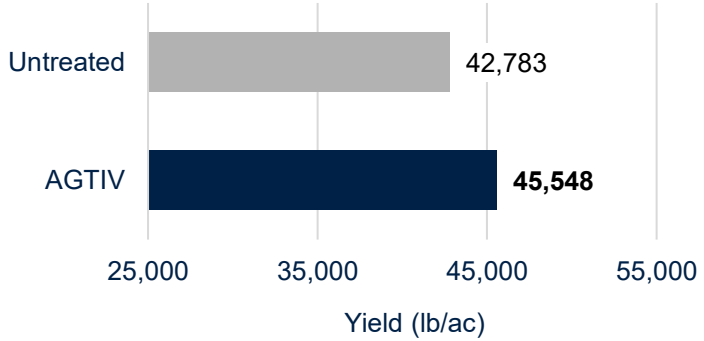
More developed root system, more leaves and bigger fruits with AGTIV®.

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

Year	Number of sites	Average increase		
		(lb/ac)	(t/ha)	(%)
2002	2	*	*	5.1
2015	2	2 840	3.18	10
2016	1	2 617	2.93	3.7
Total	**5 sites**	**2 766 lb/ac ****	**3.1 t/ha****	**6.8%**

* Plot trial data for 2002: average increase of 95 g/plant.
** The 2766 lb/ac average refers only to 2015-2016 data.

Figure 1. **Average yield increase**



EFFICACY REPORT

2016 – MYCORRHIZAL INOCULANT

STRAWBERRY

AGTIV REACH

► PLOT TRIALS

Research site: Saint-Eustache, QC

Treatments: a) Untreated;
b) AGTIV REACH®.

*Products applied according to the manufacturer's recommended rate.

Experimental design: 3 fields. 3 plots of 7 plants per field.
New strawberry establishment.

Table 1. **Strawberry yields (number of fruits/plot) per treatment**

Treatment	Ripe fruits	Marketable fruits	Unmarketable fruits
Untreated	16.0	13.6	2.4
AGTIV REACH®	18.4	17.1	1.3
% difference AGTIV® vs untreated	**+ 15%**	**+ 26%**	**- 47%**

Larger and bigger plants with AGTIV® on the right.

PREMIER TECH

Making a difference, this is what we are all about at Premier Tech. One team driven by a shared passion to deliver solutions that will better the lives of people, businesses and communities.

At Premier Tech, People and Technologies connect in lasting, transformative ways, giving
life to products and services that help feed, protect and improve our world.

We are committed to creating sustainable solutions that help bring beautiful gardens to life, increase crop yields, improve the efficiency of manufacturing facilities, treat and recycle water, and much more as we keep innovating.

We are Premier Tech

PEOPLE AND TECHNOLOGIES
MAKING A DIFFERENCE

Driving changes to make a difference in 5 industries

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Premier Tech Systems and Automation

CHRONOS KOCKUMS™ SLOOTWEG

PRAIRIE™ TOMA™

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CALONA EPARCO

Premier Tech Digital

liveLINE OpRize Necton SyncRun MIREGO

Premier Tech Life Sciences

At Premier Tech, innovation is in everything we do. Every day, we invest the time and the energy necessary to master the science and technology behind the products we offer. This knowledge allows us to connect our technologies with real market needs, creating products that are relevant today — and for years to come.

Here, we not only seek to create new products, but we also redefine the very process of innovation to deliver upon our ambitions. It's no longer only about delivering transformative solutions; it's about pushing our technologies forward to bring meaningful solutions to life. Ones that can truly make a difference for our clients.

PREMIERTECH.COM

INNOVATION

AN INTEGRAL PART OF PREMIER TECH COLLECTIVE DNA

At Premier Tech, Innovation goes beyond the concept of research and development. More than a process leading to the creation of new products, it is a **state of mind that is strongly embedded in our corporate DNA**. Always seeking to **create unique and addictive experiences** for our clients, we simply never cease to push the boundaries of our abilities, competencies and technological platforms.

Creativity is a mix of knowledge, expertise and passion for unprecedented efficient solutions. Innovation, Research & Development and biological active ingredients have combined forces to put commercial offers to the agricultural market.

We first structured our Innovation efforts and approach back in 1983, driven by the ambition of developing value-added products derived from peat moss through technological advances. Today, **more than 260 Premier Tech team members** are devoted full-time to mastering the technologies behind the next leading-edge solutions that will make a difference to our clients, helping them stand out in their marketplaces.

Driven by a collective Culture and rooted in Values which revolve around our tradition of Innovation, the entire Premier Tech team holds a restless ambition to shake up the status quo and shift industry paradigms. Through the current innovation program IPSO: Innovation in Products-Processes, Services and commercial Offers, we are **constantly challenging the way we do business and how we can improve everything we do**.

This mindset is key to how we operate on a daily basis. Contributing to the loyalty of our clients around the world, it sets the ground rules for how collaborating with Premier Tech turns out to be a contagious experience they are willing to share with others.

We deeply believe that in order to continue to be sustainable and grow our market share, it is essential to never let our innovative spirit rest — to keep pushing forward and eliminate any barriers on the path to bringing new technologies, products and services to life in the marketplace. With the agility to truly make a difference by tapping into our full potential, **we make a difference for our clients' profitability**, and ultimately ensure our continued relevance as a strategic partner.

PTAGTIV.COM/**en/innovation**

EXPERTISE, AUTONOMY, AND RELIABILITY
AT EVERY STEP

As an established manufacturer and marketer, Premier Tech offers reliable, high-quality inoculants through innovation and collaboration with local partners and growers. From the lab to the field, our team transforms research into impactful, results-driven solutions.

Our recent innovation, Premier Tech peat granules for AGTIV® inoculants, is engineered to be robust and free-flowing, ensuring biological viability and delivering excellent agronomic performance. From peat harvest to production, we guarantee consistent quality at every step, supported by a fully controlled, dependable supply chain.

Every day, we deliver products that enhance crop performance and profitability.

PTAGTIV.COM/**en/expertise**

PRODUCTION

In 2000, Premier Tech set up a world-first endomycorrhizal inoculum plant, developing a new mycoreactor process for industrial scale production. Backed by more than 40 years of expertise in active ingredients, Premier Tech constantly develops and innovates in terms of production of MYCORRHIZAE, RHIZOBIUM, BACILLUS, SERENDIPITA and other active ingredients:

- No contamination through a strictly controlled and aseptic environment
- Large-scale manufacturing production
- Adapted quality control for each step of the production processes, ensuring consistent high-quality inoculum

FORMULATION

Premier Tech's know-how makes it possible to adapt formulations with multiple active ingredients, concentrations and carriers tailored to different crops and application methods. Because a quality inoculant makes all the difference, our proven formulations are based on these important elements:

- Carriers compatible with the active ingredients
- Formulations that guarantee active ingredient viability until use
- Quality control at several key points ensuring the performance of active ingredients
- Various formulations tailored for organic production

APPLICATION

Caring about our clients' crop performance, each recommendation for product use takes into consideration validation by our field experts and by farmers themselves, which ensures:

- Effective application rates, at the right time and place, with the right inoculant
- Products adapted to growers' equipment
- Easy integration into farming practices
- Validation of compatibility with other agricultural inputs

SERVICE

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- Technical support for product application, equipment compatibility and field demonstration
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PREMIER TECH

RENOWN **BRANDS**

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AGTIV® TECHNOLOGIES

MORE THAN **40** years OF EXPERTISE IN ACTIVE INGREDIENTS

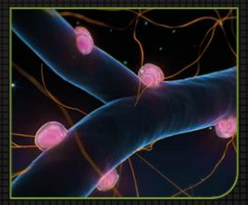
AGTIV. THRIVE.

AGTIV THRIVE® POWERS PLANTS BY BOOSTING NITROGEN FIXATION, NUTRIENT AND WATER ABSORPTION THANKS TO **MYCORRHIZAE** & **RHIZOBIUM**

+ MYCORRHIZAE + RHIZOBIUM

PTB297 Technology
+
PTB160 (pea & lentil)
PTB162 (soybean)
PTB161 (chickpea)

- Enhances P uptake
- Provides more energy for better nitrogen fixation
- Increases photosynthesis



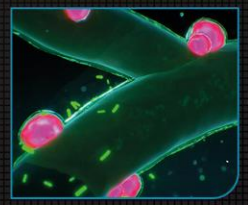
AGTIV. ENRICH.

AGTIV ENRICH® STRENGTHENS LEGUME NITROGEN FIXATION AND PROVIDES A VIGOROUS ROOT SYSTEM THANKS TO **RHIZOBIUM** & **BACILLUS**

+ RHIZOBIUM + BACILLUS

PTB162 Technology
+
PTB180 Technology

- Increases nodulation and nitrogen fixation
- Improves rooting environment
- Enhances plant vigor and productivity



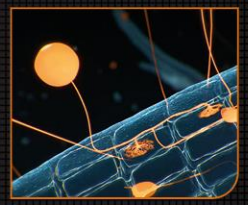
AGTIV. REACH.

AGTIV REACH® HELPS PLANTS REACH AND ABSORB MORE NUTRIENTS AND WATER THANKS TO **MYCORRHIZAE**

M MYCORRHIZAE

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

- Expands root system
- Enhances nutrient and water uptake
- Promotes plant robustness and vigor



AGTIV. IGNITE.

AGTIV IGNITE® IMPROVES PHOTOSYNTHESIS AND MITIGATES IMPACT OF ENVIRONMENTAL STRESSES THANKS TO **SERENDIPITA**

S SERENDIPITA

PTB299 Technology, *Serendipita indica*

- Mitigates abiotic stresses
- Increases photosynthesis rate
- Enhances plant establishment, growth and yield

AGTIV. FUEL.

AGTIV FUEL® FEEDS LEGUMES BY FIXING ATMOSPHERIC NITROGEN THANKS TO **RHIZOBIUM**

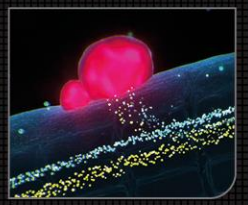
R RHIZOBIUM

PTB160 Technology (pea & lentil) *Rhizobium leguminosarum* biovar *viciae*

PTB162 Technology (soybean) *Bradyrhizobium japonicum*

PTB161 Technology (chickpea) *Mesorhizobium onobrychidis*

- Increases nodulation
- Fixes nitrogen
- Provides nutrients to pulses



AGTIV. STIMULATE.

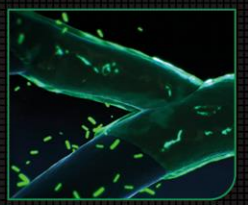
AGTIV STIMULATE® REINFORCES PLANTS WITH A HEALTHY ROOT ZONE THANKS TO **BACILLUS**

B BACILLUS

PTB180 Technology, *Bacillus pumilus*

PTB185 Technology, *Bacillus inaquosorum*

- Stimulates rooting environment
- Improves plant establishment
- Increases plant vigor and productivity



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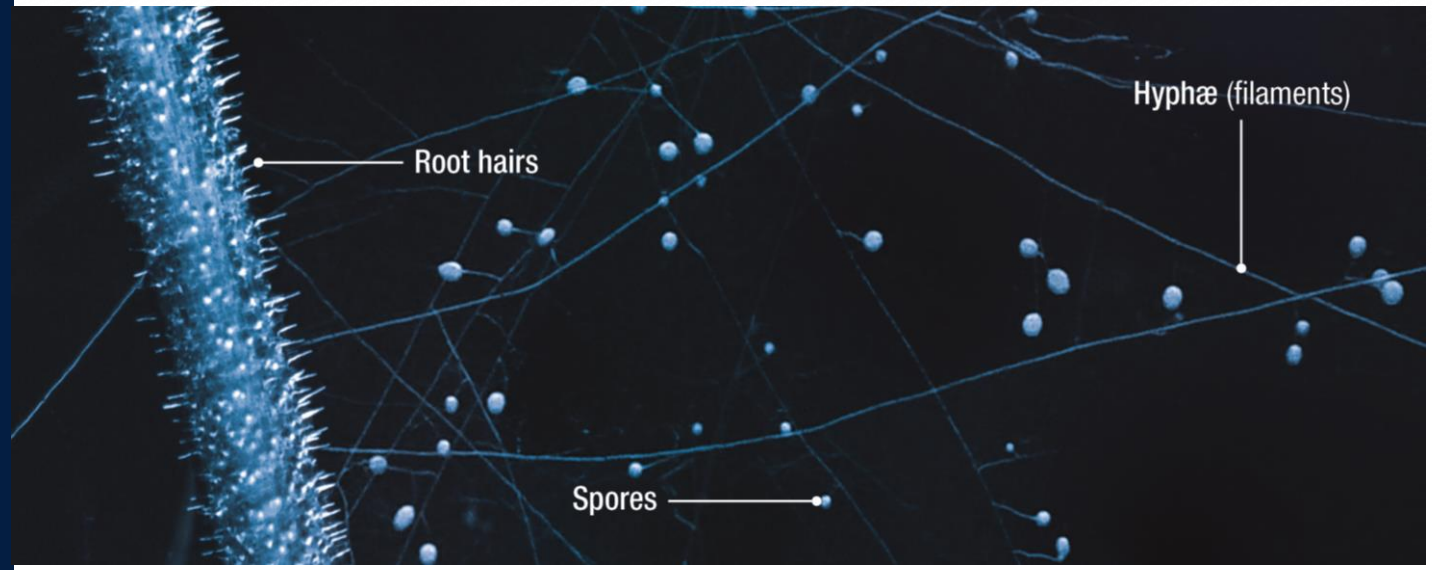

MYCORRHIZAE

EFFICACY – VERSATILITY – COLLABORATION

Why use Premier Tech's mycorrhizae?

Mycorrhizal fungi have existed since the first plants appeared on dry land more than 450 million years ago. AM (Arbuscular Mycorrhizae) symbiosis applies to over 80% of all plants and plays a major role in plant nutrition and productivity. "Over the last 35 years, numerous scientific studies have clearly highlighted the fundamental role that mycorrhizal fungi play in natural eco-systems, and in those managed by man." [A]

Absorption capacity

Premier Tech's mycorrhizal technology makes P more available in the soil, and actively absorbs and transfers it via its filament network (hyphae) directly to the root. The filaments in the soil also have the ability to absorb water and elements such as Cu, Zn, B, Fe, Mn which are important in nodule formation and grain filling.

Mycorrhizae have been shown to improve soil structure by releasing a "biological glue" called glomalin and to increase the presence of other beneficial micro-organisms in the root environment.

"Although mycorrhizal fungi do not fix nitrogen, they transfer energy, in the form of liquid carbon to associative nitrogen fixers." [B]

"Mycorrhiza deliver sunlight energy packaged as liquid carbon to a vast array of soil microbes involved in plant nutrition and disease suppression." [C]

"The absorptive area of mycorrhizal hyphae is approximately 10 times more efficient than that of root hairs and about 100 times more efficient than that of roots." [D]

How does the technology work?

Mycorrhizae develop a network that explores the soil and accesses more nutrients and water to transfer to the plant. The beneficial alliance between mycorrhizal fungi and roots accelerates root development and stimulates plant growth.

Efficient P uptake and transfer

Thonar et al. (2010)[E] compared three species of AMF and observed "*Glomus intraradices*, *Glomus claroideum* and *Gigaspora margarita* were able to take up and deliver P to the plants from maximal distances of 10, 6 and 1 cm from the roots, respectively. *Glomus intraradices* most rapidly colonized the available substrate and transported significant amounts of P towards the roots."

Cavagnaro et al. (2005)[F] found that "*Glomus intraradices* was found to be one of the arbuscular mycorrhizal fungi that was able to control nutrient uptake amounts by individual hyphae depending on differing phosphorus levels in the surrounding soils."

Collaborating Species

The mycorrhizal species used in Premier Tech products (*Glomus intraradices*) is among the most 'collaborative' species in various articles.

According to the article by Kiers et al. (2011)[G], it has been shown that the different species of mycorrhizae are not equally effective when it comes to transferring nutrients from the soil to the plant. Under controlled conditions, certain species of mycorrhizae have been shown to be more 'cooperative' and to transfer most of the phosphorus absorbed from the soil to the root, while other mycorrhizae species use it or store it as reserve.

"[…] Moreover, when host plants were colonized with three AM fungal species, the RNA of the cooperative species (*G. intraradices*) was again significantly more present than that of the two less-cooperative species (*G. aggregatum* and *G. custos*)" [B]. "This illustrates key differences in fungal strategies, with *G. intraradices* being a 'collaborator' and *G. aggregatum* a less-cooperative 'hoarder'." [G]

Glomus intraradices' versatility in different conditions

There are more than 200 species of AMF (Arbuscular Mycorrhizae Fungi) and Premier Tech offers a versatile species. Selected more than 35 years ago, it has been tested continuously under various conditions and has performed well in a range of soil pH from 5.2 to 8.1.

"*G. intraradices* has turned out to be a "great fungus" in several surveys, and field trials so far has shown it to be equal or superior to mixtures of other fungi." [H]

Indigenous Populations

Some articles demonstrate that mycorrhizal populations in agricultural soils are highly heterogeneous or not sufficient to have the desired beneficial effect.

A survey conducted by Hamel et al. (2008)[I] reported low biodiversity and occurrence of AM fungi in cultivated soils of Saskatchewan. The survey was conducted for 3 years. Dai, M. et al. (2013)[J] noticed that the relative abundance as well as diversity of AM fungal communities is lower in cropland soils of the prairies compared to the roadsides environments which favors diversity.

The recommendation of Premier Tech, approved by Agriculture Canada, to add a mycorrhizal inoculant at the time of seeding stands on 4 points:

- ✓ **The right mycorrhizae for the plant**
  At least 80% of plants can be colonized with *Glomus intraradices*, a collaborative species
- ✓ **Available in the right place**
  On or close to the seed in order to trigger the symbiosis quickly
- ✓ **In the right quantity**
  The proven and registered mycorrhizal rate
- ✓ **At the right time**
  At seeding time to trigger the symbiosis quickly after seed germination

Quick colonizer

It has been shown that plants favour certain species according to their effectiveness.

"We show that order of arrival can influence the abundance of AMF species colonizing a host. These priority effect can have important implications for AMF ecology and the use of fungal inoculant in sustainable agriculture." [K]

Duan et al. (2011)[L] using our *Glomus intraradices* isolate (DAOM181602) with *G. margarita* (WFVAM 21), wrote "Furthermore, *G. margarita* developed slowly compared with G. intraradices when they were inoculated separately and it seems likely that the latter fungus dominated the symbiosis with medic when both fungi were inoculated together." He adds "The positive effect of *G. intraradices* was probably enhanced by its ability to colonize quickly and it may well have contributed a much larger fraction of fungal biomass than *G. margarita*, when both were inoculated together". In conclusion, he writes "When inoculated together *G. intraradices* may have dominated the activity of symbiosis, both in terms of rapidity of early colonization and functionality, including tolerance to disturbance."

Drought resistance

Mycorrhizae increase tolerance to various environmental stresses (diseases, drought, compaction, salinity, etc.), and play a major role in the soil particle aggregation process and contribute to improving soil structure which leads to better water penetration, better aeration, less erosion and leaching.

Benjamin Jayne and Martin Quigley of the University of Denver mentioned that "[…] our meta-analysis reveals a quantifiable corroboration of the commonly held view that, under water-deficit conditions, plants colonized by mycorrhizal fungi have better growth and reproductive response than those that are not." [K] "Most measures of growth are augmented by the symbiosis when plants are subjected to water stress; […]." [M]

It has been found that plants with AMF association display greater hydraulic conductivity in roots and reduced transpiration rate under drought stress. This may be due to their capacity to regulate their ABA levels (abscisic acid – a plant hormone) better and faster than non-AM plants. This establishes a greater balance between leaf transpiration and root water movement in drought situations and drought recovery.[N]

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RHIZOBIUM

FERTILITY – PRODUCTIVITY – COLLABORATION

Why is rhizobium important?

Peas, lentils and soybeans play a big role in a crop rotation by promoting nitrogen fixation (the conversion of nitrogen gas to plant-available ammonium) and returning some nitrogen to the soil. However, these crops can't take all the credit: because it's only possible thanks to a symbiotic relationship between select legumes and rhizobium bacteria.

These bacteria can't fix nitrogen on their own. To do so, they need to colonize the root of a host plant. As in all symbiotic relationships, both the rhizobium and the pulse or soybean plant get something of value from the relationship. For the legume, it is a readily available form of nitrogen (ammonium) as well as important amino acids. The rhizobium get three things in return:

1. **A Home** – the bacteria inhabit the nodules formed by the plant
2. **Food / energy** – provided in the form carbohydrates (heterotrophic bacteria cannot create their own food through photosynthesis)
3. **Oxygen** – which is necessary for respiration

Roots of the rhizobium relationship

Approximately 20%[A] of all legumes form mutualistic relationships with rhizobium. Soybean, peas, clover, lentils and faba beans are among them. Interestingly, Rhizobium species are very plant specific. Pulses form relationships with a rhizobium called *Rhizobium leguminosarum*, while soybeans engage with another member of the family called *Bradyrhizobium japonicum*.

When a rhizobium and a host legume are present, the plant makes the rhizobium aware of its presence by sending out a chemical signal (via flavonoids and isoflavonoids) from the root. This attracts the rhizobium bacteria, which responds by sending out signals of its own, known as Nod factors.[B]

How does the technology work? Rhizobium are a bacteria that live and thrive in symbiosis in root nodules produced by the plant. These nodules house the bacteria responsible for fixing the atmospheric nitrogen and makes it available for the plant.

Nodule formation & nitrogen fixation

The bacteria start the "invasion process" by penetrating the root-hair wall and enter the plant cells. This primes a gene within the plant that initiates the root nodulation. Within these nodules, the rhizobium differentiate into a non-motile form, which go to work fixing the raw atmospheric nitrogen (N_2) into plant accessible ammonium. They achieve this byproducing nitrogenase enzyme, which starts the conversion process, consuming a great deal of energy. Maximum N-fixation is reached when the plant is sufficiently nodulated.

Ammonium absorption / exchange of services

After the nodule formation, the plant converts the ammonium into amino acids which are exported throughout the plant. At this point, the plant releases the simple sugars and O_2 to the rhizobium bacteria, fulfilling its end of the bargain.

This last step is important, as the presence of free oxygen can stop nitrogen fixation, preventing ammonium (NH_3) synthesis and transfer to the plant.

Fortunately, the rhizobium take the oxygen and bind it using a protein called leghemoglobin (was first discovered in legumes and is very similar to the hemoglobin found in human blood). Like blood, leghemoglobins appear red in the nodules, due to the presence of iron molecules.

Legume plants are known to have a lower phosphorus use efficiency. This is a problem, because the process of nitrogen fixation is very energy-intensive for pulse and soybean plants. For this reason, they consume more phosphorus (P) than other plants.

The increased demand can be alleviated thanks to another symbiotic association, the mycorrhizal symbiosis. Mycorrhizae are symbiotic fungi that colonize the roots of most plants, and dramatically improve the plant's ability to absorb phosphorus. The plant will photosynthesize 51%[C] more and grow faster, and the rhizobium will fix more nitrogen if more phosphorus is available. For this reason, having a healthy mycorrhizal association is of particular benefit to pulses and soybeans.

What modulates / influences nodulation?

- Successful infection depends on the competitiveness, specificity, infectivity and effectiveness of the rhizobia.[D]
- Infection rate & effectiveness of rhizobia are influenced by soil low N status and is a necessary requisite to trigger symbiosis.[E]
- Successful infection requires the bacteria to actively colonize root-hair tips (motility) and reach the Quorum sensing of the rhizobium.[F]
- N fixation relies on a cascade of effector molecules – events in multi-steps series of reactions and depend on effector availability, concentration and localization, synchronization, host specificity and environmental factors.

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THE TRIPARTITE SYMBIOSIS

HELPS YOU GET BIGGER YIELD

How can the tripartite symbiosis improve crop productivity?

Each phase of the plant growth requires a lot of nutrients and energy to obtain higher yield. *"*[…] *the tripartite interactions between legumes, AMF* [Arbuscular Mycorrhizal Fungi] *and rhizobia cause increases in legume productivity, and the N:P:C supply ratio as influenced by the tripartite symbiotic associations plays a fundamental role in controlling the legume's photosynthetic rate and biomass productivity."*[A]

Help feed the plant

N and P are major nutrients for the plant. *"Tripartite associations of host plants with both rhizobia and AMF* [Arbuscular Mycorrhizal Fungi] *benefit the host plant by increased P uptake through the mycorrhizal association balancing the high input of N through rhizobial N-fixation."*[A] In addition, mycorrhizae reach more water and nutrients needed by legumes like B, Ca, Cu, Fe, K, Mn, Mo and Zn, key components for energy production.

Higher photosynthesis

When used in combination, mycorrhizae and rhizobium increase the photosynthetic rate by 51%[B]. *"The rate of photosynthesis increased substantially more than the C* [Carbon] *costs of the rhizobial and AM* [Arbuscular Mycorrhizal] *symbioses."* [B] The total increased sugar production by the plant far outweighs the cost to "house" the partners.

Better productivity

Better nutrient use efficiency and bigger biomass result in higher yield from each legume plant (harvest index). For example, *"*[…] *it has been found that pea plants coinoculated with Rhizobium leguminosarum and AMF* [Arbuscular Mycorrhizal Fungi] *has shown best results regarding plant height, plant dry mass, nodule fresh weight, number of seeds, seed weight, seed yield, number of root nodules, number of pods per plant, average pod weight and pod length* […]".[C]

How do the technologies work? Mycorrhizae develop a network that explores the soil and accesses more nutrients and water to transfer to the plant; rhizobium fixes nitrogen and makes it available to the plant. By working together, they influence positively the plant for increased yield.

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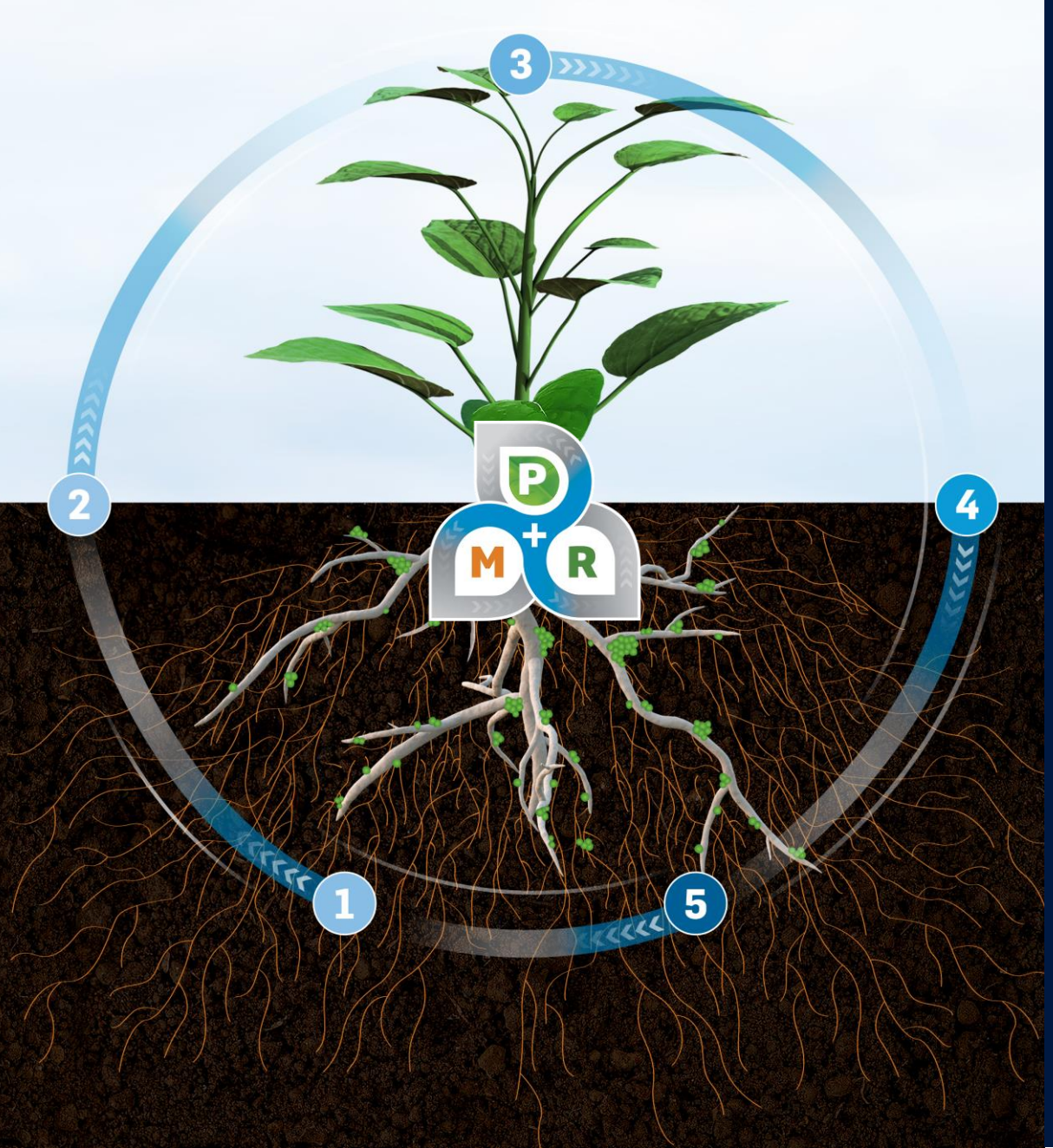
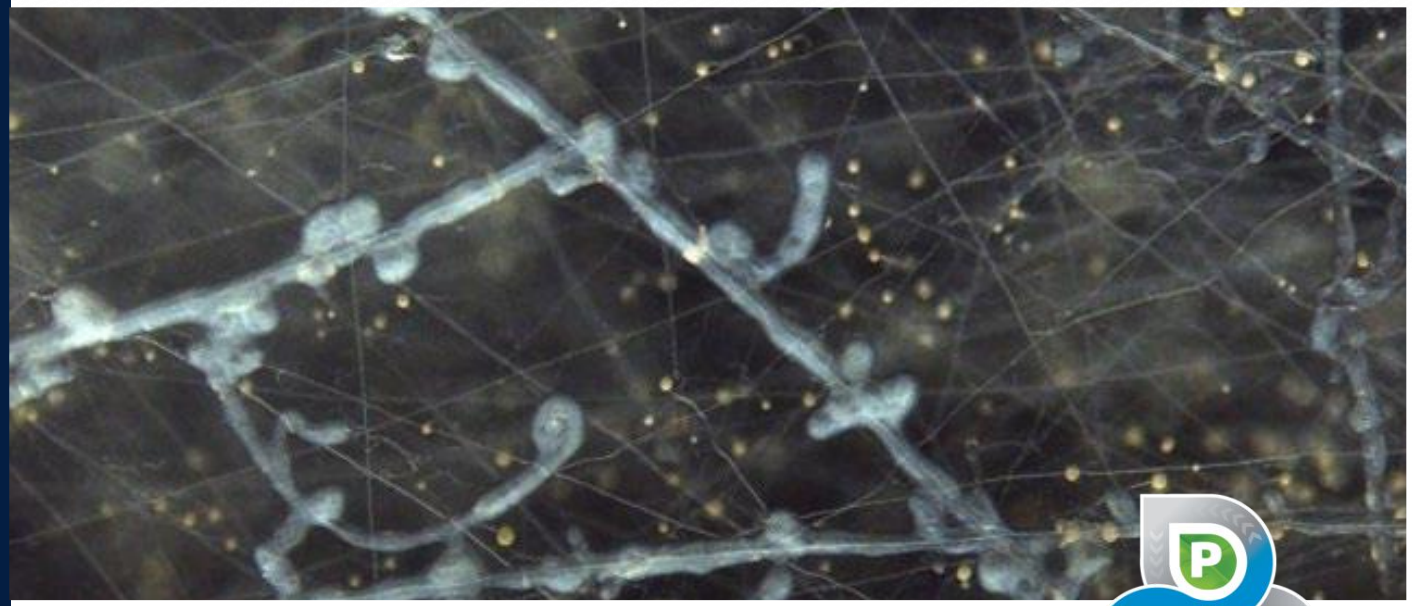


TRIPARTITE SYMBIOSIS

BIOLOGICAL INTERACTION BETWEEN MYCORRHIZAE, RHIZOBIUM & THE PLANT

1. Mycorrhizae take up P & water from soil to transfer to plant
2. Plant can give more P to rhizobium to fix more N
3. Plant will photosynthesize 51% more and grow faster
4. Plant gives carbon to its rhizobium & mycorrhizae partners
5. Mycorrhizae will propagate and spread rhizobium to other roots



THE TRIPARTITE ASSOCIATION

HELPS YOU GET BIGGER YIELD

How can the tripartite association improve potato productivity?

Mycorrhizae are soil fungi that establish a symbiosis with plant roots. This combination allows better assimilation of water, phosphorus and other mineral elements, promoting better plant growth and better resistance to biotic and abiotic stresses. By exploring the soil, the intense network of hyphae of the mycorrhizal fungus also plays a major role in the physical and microbiological characteristics of soils.

Indeed, the carbon exuded into the soil by the hyphae helps support the significant growth of bacterial communities and promotes soil aggregation.

Since 2011, 1199 validation trials in real growing conditions have been carried out in Quebec, Ontario, New Brunswick, Prince Edward Island, Maine and France. The results indicate that the application of the mycorrhizal inoculant resulted in an increase in yield in 82.3% of cases. This significant yield increase averaged 9.2%, representing an average marketable yield increase of 31.6 cwt/ac.

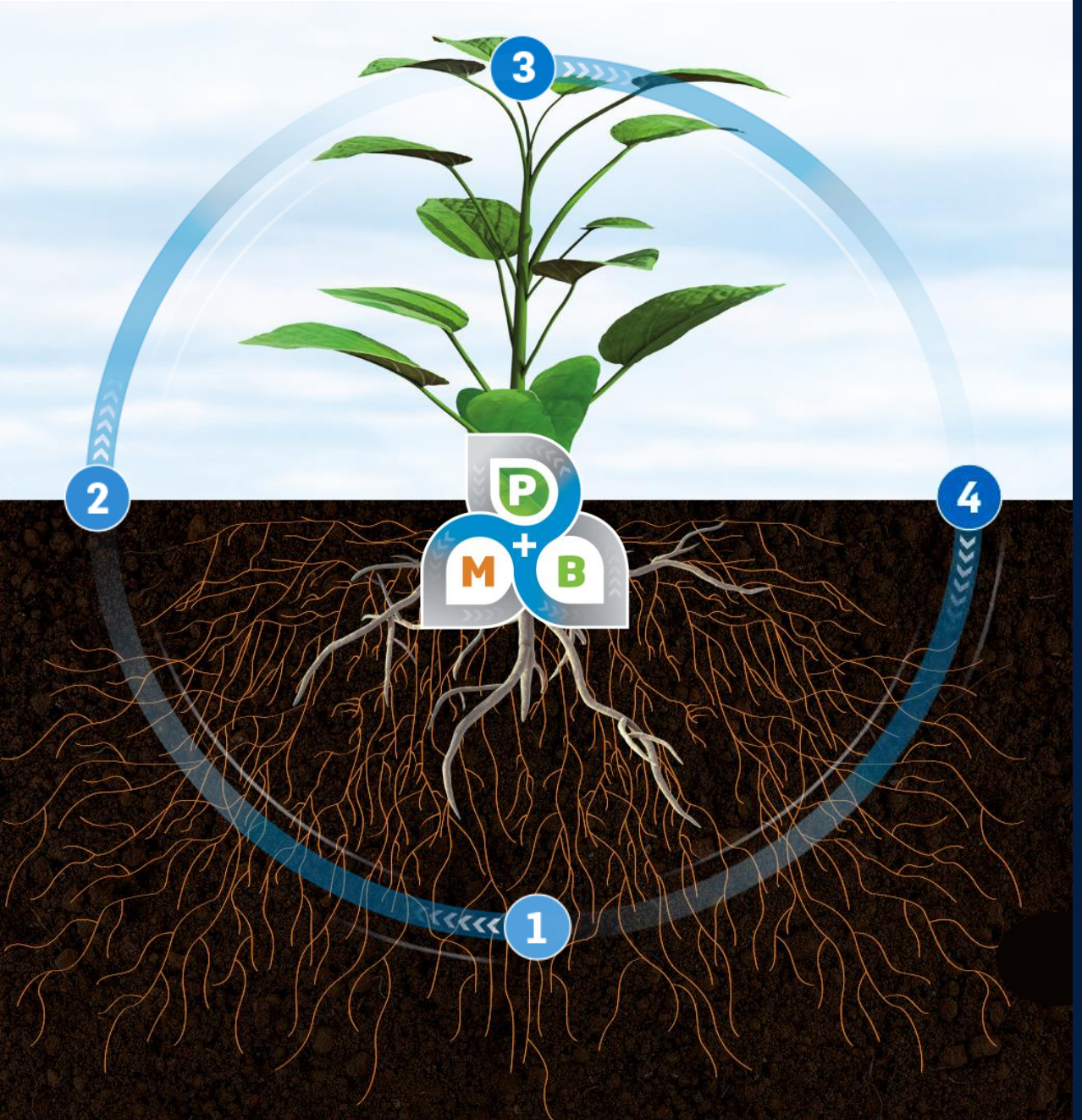
Bacillus is a bacteria that multiply by using root exudates. It forms a biofilm around the root system and secretes biostimulant molecules, such as auxin, which stimulate the plant to grow more efficiently. As the tripartite Plant-mycorrhizae-*Bacillus* has already been proven to work in the horticultural field, Premier Tech decided to test it for potato production.

Bring the research further

Between 2021 and 2024, 16 third-party trials were implemented in Quebec, Ontario and Prince Edward Island. Three treatments were applied: an untreated control, a treatment with a commercial mycorrhizal inoculant (AGTIV REACH® L POTATO), and a treatment with the same mycorrhizal inoculant supplemented with a biostimulating bacterium (AGTIV STIMULATE® L POTATO).

The results from the trials showed that inoculation with the mycorrhizal fungus resulted in a significant increase in yield. Moreover, simultaneous inoculation with the mycorrhizae and bacteria significantly doubled this increase. The two microorganisms therefore have a synergistic effect on improving marketable tuber yields.

These real growing conditions results demonstrate that it is profitable for a producer to apply mycorrhizal inoculants to their field. The use of biostimulant microorganisms in agriculture fits well with a sustainable agriculture perspective, by allowing better use of the water and nutrients present in the soil.

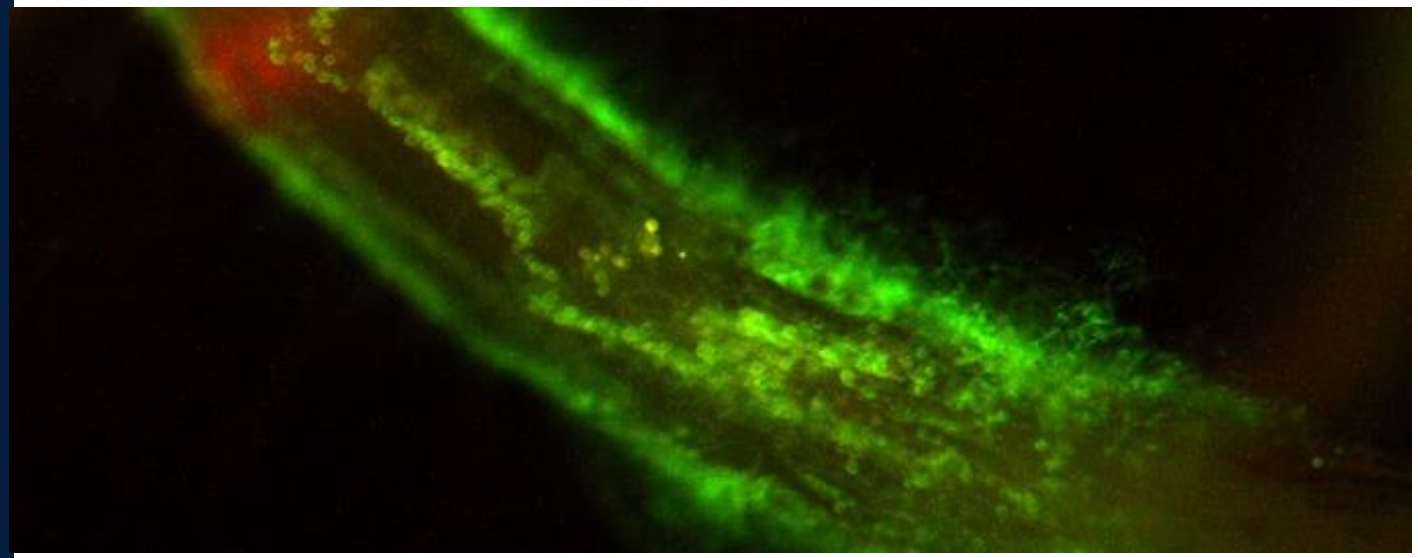


TRIPARTITE ASSOCIATION

PROPAGATION OF BACTERIUM BY THE MYCORRHIZAL HYPHAE

1. Plant gives carbohydrates to the fungi
2. The hyphae explore the soil/ growing media, exuding carbon
3. Bacteria absorb this carbon and multiply along the hyphae
4. Bacteria liberate lipopeptides and/or hormones

Resulting in
a stimulated plant



SERENDIPITA

EFFICACY – GROWTH – RESILIENCE

What is Serendipita indica?

Formerly known as *Piriformospora indica*, *Serendipita indica* is a beneficial endophytic fungus with the ability to colonize the roots of a wide range of plant species, including the Brassicaceae family (e.g., canola and mustard). When applied to seeds or directly to the soil, the spores germinate within a few days and rapidly colonize the surface of nearby roots. The hyphae of the fungus penetrate the superficial cell layer of the root (epidermis), where they activate a whole series of mechanisms in the plant.

The biostimulant effects of *Serendipita* have direct and indirect impacts on the plant. The direct effects are mainly related to better assimilation of nutrients; while the indirect effects, which are numerous, influence the transcription of specific plant genes. Thanks to the contribution of *Serendipita*, the plant becomes more efficient in performing certain functions such as nutrient absorption, water management, and photosynthesis.

Improved absorption of essential nutrients

Sulfur: Sulfur is essential for protein synthesis; a sulfur deficiency considerably reduces nitrogen efficiency and limits protein synthesis. *Serendipita* has high-affinity transporters for sulfur, allowing it to absorb sulfur from the soil[1] very efficiently, which will then be transferred to the plant, in exchange for sugar.

Phosphorus: Phosphorus, essential for energy storage and availability to cells, is also transferred directly from the fungus to the plant. On the root side, phosphate transporters are membrane proteins that allow phosphorus to enter the plant cell. Colonization by *Serendipita* stimulates higher production of these transporters by the plant, making it more efficient at absorbing phosphorus from the soil[2].

Nitrogen: Nitrogen is a key element in the plant nutrition process and is involved in protein and chlorophyll synthesis. Colonization[3] causes a higher transcription of the plant enzyme nitrate reductase. This enzyme improves the efficiency of nitrogen nutrition by the plant by promoting a more rapid conversion of nitrate to ammonia, the form of nitrogen that plants use for amino acid synthesis.

Iron: Iron plays an important role in several fundamental biological processes such as photosynthesis, respiration, nitrogen fixation and assimilation, and DNA synthesis. In iron deficiency situations, *Serendipita indica* has been shown to increase its transcription of an iron transporter, allowing for better availability of iron for the plant[4].

Improvement of water management by the plant

The plant will produce more proline in its root cells[5] . This proline will help maintain the upward movement of water in the plant, thereby keeping the stomata open. The plant can therefore continue to take up water even if there is less water or higher soil salinity.

In parallel, the presence of *Serendipita* stimulates the production of aquaporins and sodium channels in the root cells[6]. These aquaporins are channels that facilitate the absorption of water, while the sodium channels allow the expulsion of excess sodium from the root cells, particularly in saline soils.

Improvement of photosynthesis

In the aerial parts of the plant (leaves), *Serendipita* will stimulate the expression of a protective enzyme, superoxide dismutase, which plays a major role in the regulation of reactive oxygen compounds[7]. These reactive oxygen compounds accumulate under water or salt stress and can damage cell membranes and chloroplasts. This accumulation leads to a reduction in photosynthesis and decreases plant growth. The overexpression of the protective enzyme allows to limit this damage.

Genes related to chlorophyll synthesis are overexpressed in the colonized plant[8], resulting in higher chlorophyll content in the leaves, and higher photosynthetic (carbon capture) capacity, which results in improved growth and health.

Improved oil content and quality in canola seeds

At the same time, certain genes in the plant's fatty acid synthase complex are transcribed to a greater extent when the fungus is present[9]. This results in greater oil synthesis in oilseed plants, such as canola. In addition, two genes responsible for the production of erucic acid are under-expressed in colonized canola plants[9]. This molecule is an anti-nutrient, which improves the quality of the oil.

What are the differences between Serendipita and mycorrhizal fungi?

Being both beneficial root endophytes, one can wonder about the difference between *Serendipita* and mycorrhiza, which is the association between a mycorrhizal fungus and a plant. Following the colonization of the root, the mycorrhiza will extend an intense network of hyphae far into the soil, drawing water and mineral elements inaccessible by the roots, which will then be transferred to the plant in exchange for carbon.

Serendipita, on the other hand, will colonize the surface and epidermis of the root, improving the plant's DNA transcription profiles, that are linked to nutrient uptake and resistance to stress. In short, while mycorrhiza takes nutrients and water from the soil to give them to the plant, *Serendipita* stimulates the plant to be more efficient on its own. This highlights the 2 different modes of action of these biological inoculants on plants.

Yields on canola and wheat crops

Between 2018 and 2022, more than 30 field trials were conducted with the new AGTIV IGNITE® L on canola and wheat crops under actual production conditions. For durum wheat, the average yield increase is 10% (or 3.8 bu/acre), while for canola, the average is 6.7% (or 2.5 bu/acre). This yield increase is coupled with an absolute 0.9% increase in the oil content of canola seed, further multiplying the gain to the grower. These increases in yield and oil content observed following the application of *Serendipita* are statistically significant when compared to the untreated plants.

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THE CANOLA ROTATION INOCULANT

HELPS YOU COUNTER REDUCED YIELD AFTER CANOLA

What affects your soil biology?

Many crop practices (tillage, fallow land, flooding and crop rotation) contribute to decreasing the beneficial biology, such as mycorrhizal fungi population, in your agricultural soils. For example, it is well known that crops following *Brassicaceae* plants (canola and mustard) in a rotation generally tend to demonstrate reduced yield, compared to results when seeded after another crop. It can largely be explained by the relationship (or lack of) between *Brassicaceae* and beneficial microorganisms, such as mycorrhizae[A].Canola roots exude a toxic compound that reducespopulations of those beneficial microorganisms in thesoil. Furthermore, the “absence of a mycorrhizal hostplant during the fallow period decreases mycorrhizalcolonization potential for the succeeding crop andresults in P deficiency symptoms in plants that aremycorrhizal dependent, such as corn, soybean,sunflower, and cotton.”[B]

Reach more nutrients and water

Sufficient nutrient and water uptake is critical for effective plant growth and ultimately to maximize your yield potential, especially for low mobility nutrients such as P and Zn.[C] By adding a mycorrhizal inoculant, the plant develops a secondary root system (mycorrhizal hyphae) allowing it a larger soil contact surface and thus better to access to nutrients and water. “The absorptive area of mycorrhizal hyphae is approximately 10 times more efficient than that of root hairs and about 100 times more efficient than that of roots.”[D]

Ensure early P uptake

“Phosphorus plays a critical role in energy reactions in the plant [such as photosynthesis. Phosphorus is also a key component in building blocs for plant.] Deficits can influence essentially all energy requiring processes in plant metabolism. Phosphorus stress early in the growing season can restrict crop growth, which can carry through to reduce final crop yield.”[E] Mycorrhizae make soil phosphorus (P) more available to the plant, and actively absorb and transfer it via the mycorrhizal filament network (hyphae) directly to the root.

Increase your yield potential

By introducing mycorrhizal inoculant close to the seed at seeding, you get the association working early with the full benefits of increased nutrient and water uptake when plants need them. Therefore, get more out of the fertilizer you have already invested into the crop.

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AGTIV® RELIABLE INOCULANTS

PEA, LENTIL & FABA BEAN

AGTIV THRIVE® P PEA & LENTIL
F: Powder (peat)
S: 4.7 kg (10.3 lb) pail – 2.4 kg (5.3 lb) pail
C: Pea & faba bean: Pail 4.7 kg: **16 ha (40 acres)** – Pail 2.4 kg: **8 ha (20 acres)**
Lentil: Pail 4.7 kg: **24 ha (60 acres)**

AGTIV THRIVE® G PEA & LENTIL
F: Granules (peat)
S: 18.2 kg (40 lb) bag – 364 kg (800 lb) tote bag
C: Pea, lentil & faba bean: Bag: **4 ha (10 acres)** – Tote bag: **80 ha (200 acres)**

AGTIV THRIVE® PEA & LENTIL
F: Liquid
S: Combo box: 8 L (8 kg) bag-in-box + 4 x 950 ml (4 x 32 fl. oz) bottles
C: Pea, lentil & faba bean: **32 ha (80 acres)**

AGTIV FUEL® P PEA & LENTIL
F: Powder (peat)
S: 4.7 kg (10.3 lb) pail
C: Pea & faba bean: **16 ha (40 acres)**
Lentil: **24 ha (60 acres)**

AGTIV FUEL® G PEA & LENTIL
F: Granules (peat)
S: 18.2 kg (40 lb) bag – 364 kg (800 lb) tote bag
C: Pea, lentil & faba bean: Bag: **4 ha (10 acres)** – Tote bag: **80 ha (200 acres)**

AGTIV FUEL® L PEA & LENTIL ✱
F: Liquid
S: 8 L (8 kg) bag-in-box
C: Pea, lentil & faba bean: **32 ha (80 acres)** or **6530 kg of seeds (240 bu)**

SOYBEAN

AGTIV THRIVE® P SOYBEAN
F: Powder (peat)
S: 4.7 kg (10.3 lb) pail
C: Soybean: **16 ha (40 acres)**

AGTIV THRIVE® G 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)**

AGTIV THRIVE® 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)**

AGTIV FUEL® G 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)**

AGTIV FUEL® L SOYBEAN ✱
F: Liquid
S: 8 L (8 kg) bag-in-box
C: Soybean: **16 ha (40 acres)** or **5680 kg of seeds (250 units)**

AGTIV ENRICH® 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)**

CANOLA, CORN & CEREAL

AGTIV IGNITE® L
F: Liquid
S: 11 L (11 kg) bag-in-box
C: Canola: **454 kg (1000 lb) of seeds or 81 ha (200 acres)**
Cereal: **9165 kg (20 205 lb) of seeds or 81 ha (200 acres)**
Corn: **3000 kg (6 614 lb) of seeds or 121 ha (300 acres)**

CHICKPEA

AGTIV THRIVE® P CHICKPEA
F: Powder (peat)
S: 4.7 kg (10.3 lb) pail
C: Chickpea: **16 ha (40 acres)**

AGTIV THRIVE® G CHICKPEA
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)**

FIELD & SPECIALTY CROPS

AGTIV REACH® P
F: Powder (peat)
S: Case of 4 x 800 g (4 x 1.75 lb) pails
C: Cereal, flax & dry bean: **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.

AGTIV REACH® G
F: Granules (peat)
S: 6 kg (13.2 lb) pail – 18.2 kg (40 lb) bag – 364 kg (800 lb) tote bag
C: Cereal, flax & dry bean: 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.

AGTIV REACH® L
F: Liquid (spores in suspension)
S: Case of 2 x 950 ml (2 x 32 fl. oz) bottles
C: Cereal, flax & bean: **16 ha (40 acres)** per case

POTATO

AGTIV REACH® L POTATO
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

AGTIV REACH® P POTATO
F: Powder
S: Case of 2 x 300 g (2 x 10.5 oz) bag
C: Potato: **16 ha (40 acres)** per case

AGTIV STIMULATE® L POTATO
F: Liquid
S: 8 L (8 kg) bag-in-box
C: Potato: **8 ha (20 acres)**

ACTIVE INGREDIENTS
- **M** **MYCORRHIZAE** — PTB297 Technology
- **R** **RHIZOBIUM** — PTB160 Technology (pea & lentil); PTB162 Technology (soybean); PTB161 Technology (chickpea)
- **B** **BACILLUS** — PTB180 Technology; PTB185 Technology
- **S** **SERENDIPITA** — PTB299 Technology

LEGEND
F: Formulation
S: Size
C: Crop/Coverage

FORMULATIONS: Liquid, Granular, Powder

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

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3.3 bu/ac 6.7%
AGTIV THRIVE® SOYBEAN
94 sites over 12 years, North America and Europe

1.8 bu/ac 3.3%
AGTIV ENRICH® SOYBEAN
11 sites over 5 years, Canada

PEA & LENTIL

FOR PEA

3.5 bu/ac 6.1%
AGTIV THRIVE® PEA & LENTIL
30 sites over 14 years, Canada

FOR LENTIL

2.7 bu/ac 8.6%
AGTIV THRIVE® PEA & LENTIL
68 sites over 16 years, Canada

POTATO

31.5 cwt/ac 9.1%
AGTIV REACH® POTATO
1202 sites over 15 years, North America and Europe

+10.3 cwt/ac
AGTIV REACH® + AGTIV STIMULATE®
16 third-party trials over 4 years, North America

BARLEY & DURUM WHEAT

FOR BARLEY

4.3 bu/ac 5.3%
AGTIV IGNITE®
7 sites over 3 years, Canada

FOR DURUM

4.1 bu/ac 8.5%
AGTIV IGNITE®
13 sites over 5 years, Canada

CANOLA & GRAIN CORN

FOR CANOLA

2.5 bu/ac 6.5%
AGTIV IGNITE®
38 sites over 8 years, Canada

FOR GRAIN CORN

7.2 bu/ac 4.2%
AGTIV IGNITE®
18 sites over 4 years, Canada

ONION & CARROT

2766 lb/ac 6.8%
AGTIV REACH®
20 sites over 9 years, Canada and Europe

3837 lb/ac 9.4%
AGTIV REACH®
9 sites over 6 years, North America and Europe

BARLEY & DURUM WHEAT

FOR BARLEY

6.4 bu/ac 7.5%
AGTIV REACH®
34 sites over 14 years, Canada and Europe

FOR DURUM

3.5 bu/ac 5.8%
AGTIV REACH®
14 sites over 12 years, Canada

EFFICACY REPORT 2026

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