PREMIER TECH

AGTIV®

EFFICACY REPORT 2024

SPECIALTY CROPS

ONION

AVERAGE YIELD INCREASE

AGTIV REACH

3.5 t/ha

7.4%

17 sites over 10 years

Canada and Europe

EFFICACY REPORT

2019 – MYCORRHIZAL INOCULANT

ONION

AGTIV REACH

► PLOT TRIAL

Research partner: Antédis

Research site: Issé, Loire-Atlantique department, France

Treatments: a) Untreated check;
b) AGTIV® SPECIALTY CROPS • Powder*.

*Products applied according to manufacturers recommended rate.

Experimental design: 8 replicated plots per treatment in randomized complete block design.

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:

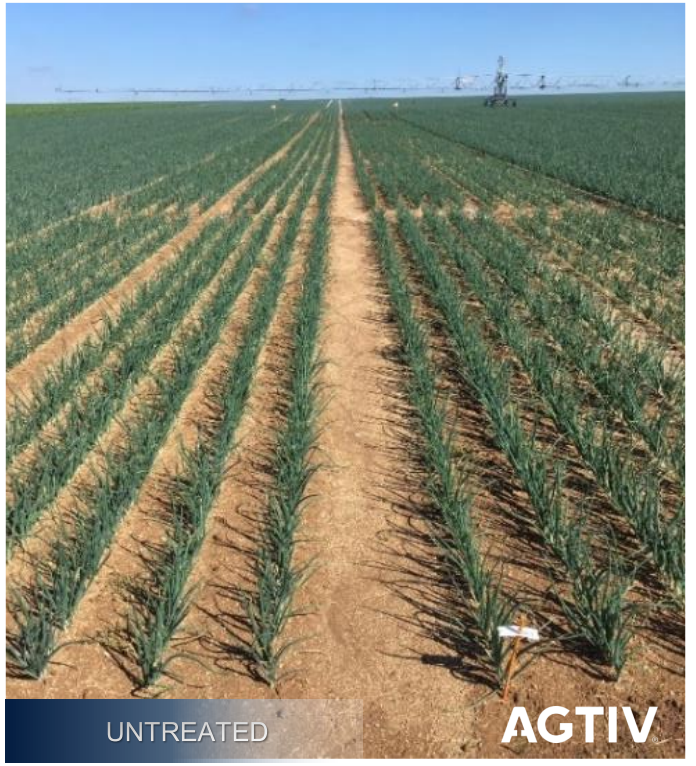
- Acrobat M DG : June, July and August
- Baroud SC :April
- Bordeaux mixture: June, July and August
- Caiman WP and DEFI : June
- Challenge 600 : May, June
- Dithane M 45 : June and August
- ITCAN SL 270 : September
- Lentagran : Aril and May
- Satarne 200 : May, June
- Scala : July

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 (cwt/ac)	Yield increase (%)
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

Research site: Bright, ON

Treatments: a) Untreated check;
b) AGTIV® REACH™ P for Seed Encrusting.

*Products applied according to manufacturers recommended rate.

Experimental design: 8 replicated plots per treatment in randomized complete block design.

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

Treatment	Yield (lb/ac)	Yield (t/ha)
Untreated check	20 434	22.9
AGTIV® REACH™ P for Seed Encrusting	29 179	32.7

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

Treatment	Yield (lb/ac)	Yield (t/ha)
Untreated check	18 467	21.0
AGTIV® REACH™ P for Seed Encrusting	26 644	29.8

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 manufacturers recommended rate.

Experimental design: Every data point per field consists in an average of 3 samples each (untreated and AGTIV®).

Variety Hytunes

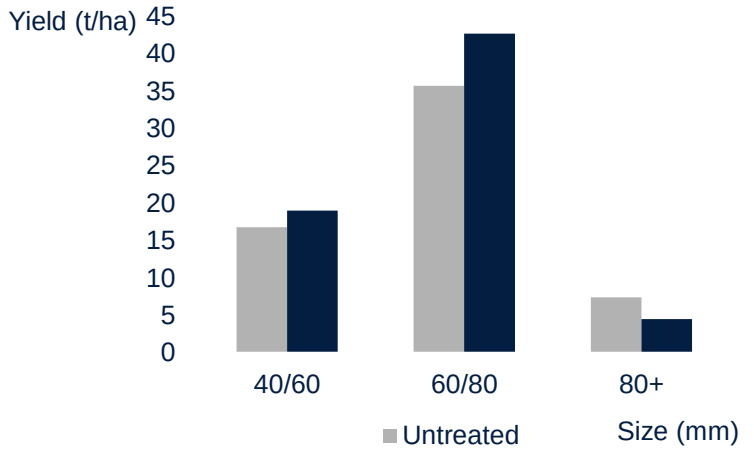
Table 1. **Marketable onion yields per treatment**

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;
- 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 manufacturers 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	41	43.2	+5.5%
Quebec	32.3	38.6	+6.3%
Average	**36.7**	**40.9**	**+6.2%**

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 manufacturers recommended rate.

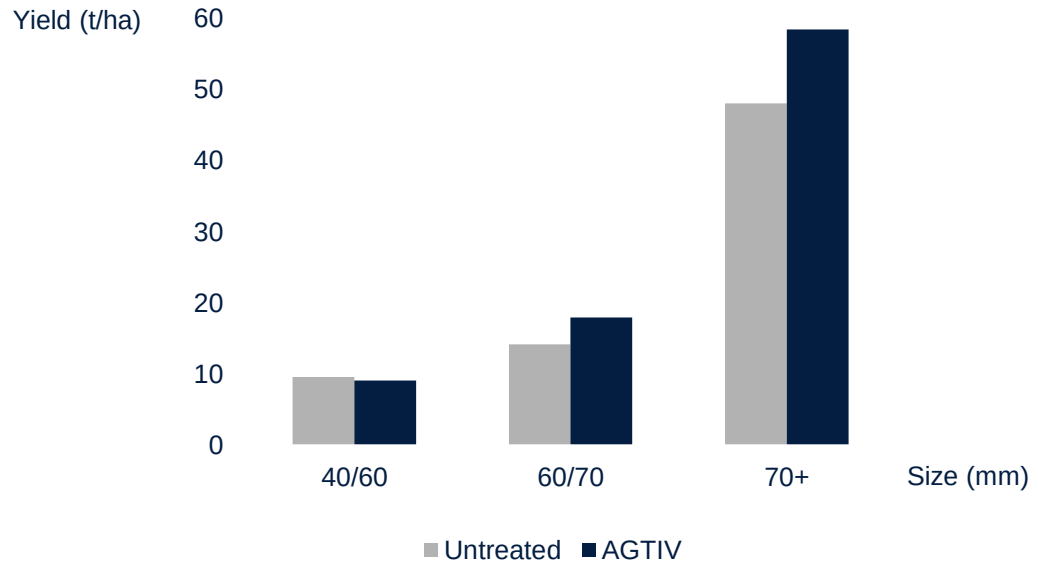
Experimental design: Every data point per field consists in an average of 3 samples each (untreated and AGTIV®).

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).**



CARROT

AVERAGE YIELD INCREASE

AGTIV REACH

3.7 t/ha

7.7%

11 sites over 6 years
Canada

EFFICACY REPORT

2019 – MYCORRHIZAL INOCULANT

CARROT AGTIV REACH

► PLOT TRIAL

Research partner: Antédis

Research site: Ploërmel, Morbihan department, France

Treatments: a) Untreated check;
b) AGTIV® SPECIALTY CROPS • Powder*.

*Products applied according to manufacturers recommended rate.

Experimental design: 8 replicated plots per treatment in randomized complete block design.

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	87 433 [a]	98.0 [a]	
AGTIV® SPECIALTY CROPS • Powder	96 266 [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 manufacturers recommended rate.

Experimental design: 8 replicated plots per treatment in randomized complete block design.

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	79 047 [a]	88.6 [a]	
AGTIV® SPECIALTY CROPS • Powder	84 757 [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

2019 – 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 manufacturers recommended rate.

Experimental design: 8 replicated plots per treatment in randomized complete block design

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	12 499	14.0	92
AGTIV® REACH™ P for Seed Encrusting	16 941	19.0	92

EFFICACY REPORT

2018 – MYCORRHIZAL INOCULANT

CARROT

AGTIV REACH

► PLOT TRIALS

Research partners: BlackCreek Research

Research sites: Bright, ON

Treatments: a) Untreated check;
b) AGTIV® REACH™ P for Seed Encrusting.

*Products applied according to manufacturers recommended rate.

Experimental design: 8 replicated plots per treatment in randomized complete block design.

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 12
- 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	20 488	23.0
AGTIV® REACH™ P for Seed Encrusting	23 244	26.0

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

Treatment	Marketable yield (%)	Reject (%)
Untreated check	64%	4.75%
AGTIV® REACH™ P for Seed Encrusting	69%	3.13%

EFFICACY REPORT

2017 – MYCORRHIZAL INOCULANT

CARROT

AGTIV REACH

► PLOT TRIALS

Research partners:
- BlackCreek Research;
- 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 manufacturers 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	28 817	32.3	+19.5%
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	34 438	38.6	+19.5%
Average	**36 490**	**40.9**	**+11.7%**

EFFICACY REPORT

SUMMARY – MYCORRHIZAL INOCULANT

SWEET CORN

AGTIV REACH

► PLOT TRIALS

Research partners:
- BlackCreek Research;
- Sandy Knolls Research Inc.

Research sites:
- Ontario

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

*Products applied according to manufacturers recommended rate.

Experimental design:
2 randomized Complete Block (RCB), 8 repetitions each.

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

Location	Year	Seed variety	Untreated check	AGTIV® REACH™	Yield increase
Vienna, ON	2023	Fast Lane SE	3022.6	3274.8	252.2
Bright, ON	2023	Fast Lane SE	12618.0	13347.0	729.0

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™.

*Products applied according to manufacturers recommended rate.

Experimental design: Randomized Complete Block (RCB), 8 repetitions, 18.0 m^2 plots

Variety: Fast Lane SE treated with Dividend Xtreme + Vibrance Cinco

Previous crop: Fallow

Seeding details: Seeded on July 20 with a finger pickup style planter at a rate of 32 000 seeds/ac in a loamy sand soil (pH: 7.5, OM: 1.4%). Emergence on July 24.

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

Treatment	Yield (lb/ac)	Yield increase (lb/ac)
Untreated check	3022.6	-
AGTIV® REACH™	3274.8	252.2

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 0-0-60 (150 lb/ac): May 8
46-0-0 (450 lb/ac): May 8
Corn Starter (250 lb/ac): July 20

Pesticides: None

Harvesting: October 2, 2023

Month	Precipitation (mm)
May	21.8
June	81.2
July	192.2
August	117.8
September	32.6
TOTAL	**445.6**

EFFICACY REPORT

2023 – MYCORRHIZAL INOCULANT

SWEET CORN

AGTIV REACH

► PLOT TRIAL

Research partner: BlackCreek Research

Research site: Bright, ON

Treatments: a) Untreated Check
b) AGTIV® REACH™

*Products applied according to manufacturers recommended rate.

Experimental design: Randomized Complete Block (RCB), 8 repetitions, 18.0 m^2 plots

Variety: Fast Lane SE treated with Dividend Xtreme + Vibrance Cinco

Previous crop: Soybean

Seeding details: Seeded on May 11 with a cone seeder at a rate of 10.8 kg/ha in a sandy loam soil (pH: 6.8, OM:3.5%).
Emergence on May 22.

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

Treatment	Yield (lb/ac)	Yield increase (lb/ac)
Untreated check	12618.0	-
AGTIV® REACH™	13347.0	729.0

OPERATIONAL NOTES AND RAIN FALL

Fertilisation: 24.3-10.8-14.6-2.2S-1Mg (725 lb/ac): May 8

Pesticides:
- Primextra II Magnum (4.0 l/ha): May 16
- 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**

* Plots were irrigated during those months

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 manufacturers recommended rate.

Experimental design: 8 replicated plots per treatment in randomized complete block design.

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

► GROWER SPLIT FIELDS

Research partners: • Growers

Research sites: • France

Treatments: a) Untreated;
b) AGTIV® REACH™.

*Products applied according to manufacturers recommended rate.

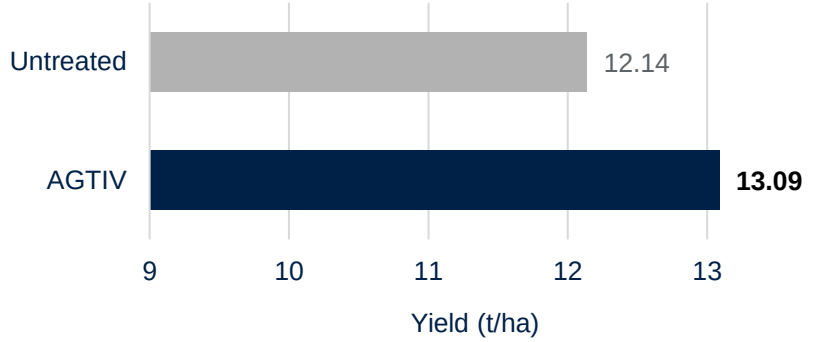
Experimental design: Split fields

Before 2022:
AGTIV® REACH™ was formerly known as AGTIV® SPECIALTY CROPS

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

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	7.0
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

► GROWER SPLIT FIELDS

Research partners:
- Growers

Research sites:
- Ontario;
- Quebec.

Treatments:
a) Untreated;
b) AGTIV® THRIVE™ P PEA & LENTIL.

*Products applied according to manufacturers recommended rate.

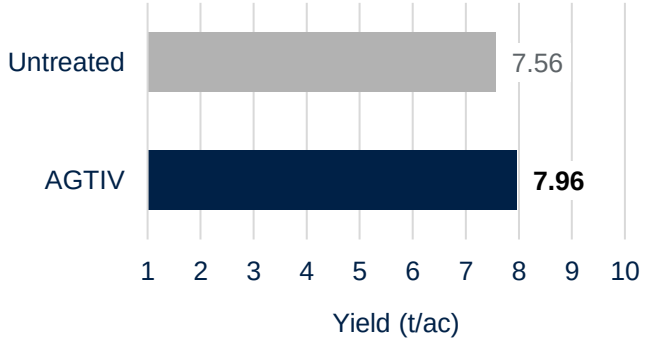
Experimental design:
Split fields

Plant growth and health is enhanced on the right, and the leaf area is increased with AGTIV®.

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

Year	Number of sites	Average increase (t/ac)	Average increase (t/ha)	Average increase (%)
2015	4	0.31	0.77	23.3
2016	7	0.08	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**



Before 2022:
AGTIV® THRIVE™ was formerly known as AGTIV® PULSES

TRIALS PICTURES

PEPPER

AGTIV REACH

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

► GROWER SPLIT FIELDS

Research partners:
- Growers

Research sites:
- Ontario;
- Quebec.

Treatments:
a) Untreated;
b) AGTIV® REACH™.

*Products applied according to manufacturers recommended rate.

Experimental design:
Split fields

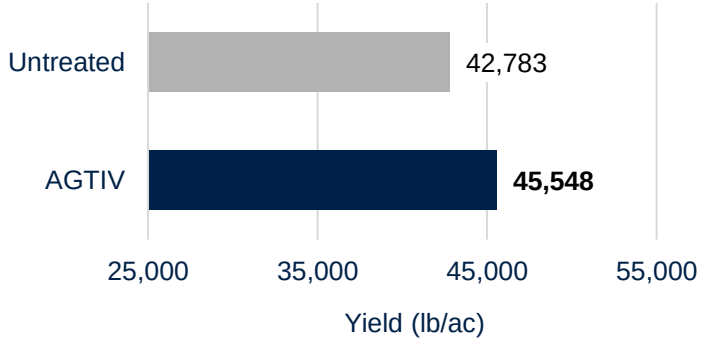
More developed root system, more leaves and bigger fruits with AGTIV®.

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

Year	Number of sites	Average increase		
		(lb/ac)	(t/ha)	(%)
2002	2	*	*	5.1
2015	2	2840	3.18	10.0
2016	1	2617	2.93	3.7
Total	**5 sites**	**2766 lb/ac ****	**3.10 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**



Before 2022:
AGTIV® REACH™ was formerly known as AGTIV® SPECIALTY CROPS

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 manufacturers 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.

EFFICACY REPORT 2024

CONTACT OUR DEDICATED TEAM TODAY.
WE CARE ABOUT YOUR SUCCESS!

PEOPLE AND TECHNOLOGIES MAKING A DIFFERENCE

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.

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