

AGTIV®

EFFICACY REPORT

SPECIALTY CROPS





8.5%

ONIONS

AVERAGE YIELD INCREASE

17 sites over 9 years, Canada and Europe

9.8%

CARROTS

AVERAGE YIELD INCREASE

11 sites over 5 years, Canada and Europe

10.1%

GREEN PEAS

AVERAGE YIELD INCREASE

12 sites over 3 years, Canada

6.8%

PEPPERS

AVERAGE YIELD INCREASE

5 sites over 3 years, Canada

7.7%

**GREEN
BEANS**

AVERAGE YIELD INCREASE

6 sites over 2 years, Europe

EFFICACY REPORT

SUMMARY – MYCORRHIZAL INOCULANT



NOINO

► GROWER SPLIT FIELDS AND PLOT TRIALS¹

Table 1. **Average increase of marketable yields² (t/ha) with AGTIV[®] REACH[™] for different years (2014-2022)**

Year	Number of sites	Yield Untreated	Yield AGTIV [®]	Yield increase	Yield increase (%)
2014	2	67.7	73.2	5.4	8.0
2015	4	44.3	47.6	3.3	8.7
2016	1	60.7	64.1	3.4	5.6
2017	1	18.2	20.4	2.2	12.2
2018	2	40.0	46.1	6.2	20.3
2019	6	50.3	52.6	2.2	3.3
2022	1	25.8	29.9	4.1	15.9
Total	17 sites	47.0^a	50.5^b	3.5 t/ha	8.5 %

¹ Split fields and trials conducted in North America and Europe

² Yields without the same letter are statistically different based on a Tukey HSD test ($p \leq 0.05$).

Table 2. **Average increase of marketable yields² (lb/ac) with AGTIV[®] REACH[™] for different years (2014-2022)**

Year	Number of sites	Yield Untreated	Yield AGTIV [®]	Yield increase	Yield increase (%)
2014	2	60 400	65 307	4 817	8.0
2015	4	39 523	42 467	2 944	8.7
2016	1	54 155	57 188	3 033	5.6
2017	1	16 237	18 200	1 962	12.2
2018	2	35 687	41 129	5 531	20.3
2019	6	44 876	46 928	1 962	3.3
2022	1	22 970	26 620	3 650	15.9
Total	17 sites	41 845^a	44 961^b	3 116 lb/ac	8.5 %

¹ Split fields and trials conducted in North America and Europe

² Yields without the same letter are statistically different based on a Tukey HSD test ($p \leq 0.05$).

EFFICACY REPORT

2019 – MYCORRHIZAL INOCULANT



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► PLOT TRIAL

Research department: Antédis

Research site: Issé, Loire-Atlantique department, France

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

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

Onion variety: Santero F1

Previous crop: Spring barley

Seeding details: Seeded April 1 at 80 seeds/m² with 32 cm row spacing.

*Products applied according to manufacturer's recommended rate.

Table 1. Summary of onions marketable yields per treatment.

Treatment	Marketable yield (lb/ac)	Marketable yield (t/ha)
Untreated	55 315	62.0
AGTIV® SPECIALTY CROPS • Powder	56 474	63.3

Plot operational notes and rain fall

- Fertilization:
 - Liquid Solution N 39 (19-03-19)
 - AVF K4 (from 20/08 to 25/08 2019)
- Pesticides:
 - In April – Baroud SC and Lentagran
 - In May – Challenge 600, Lentagran 200 and Satarne 200
 - In June - Challenge 600, Satarne 200, Hacrobat M DG, DEFI, Bordeaux mixture and Caiman WP
 - In July – Bordeaux mixture, Dithane M 45, Scala, Acrobat M DG,
 - In August – Bordeaux mixture, Acrobat M DG, Dithane M45
 - In September – ITCAN SL 270
- Harvested September 24, 2019.

Month	Precipitations (mm)
April	36.4
May	90.6
June	34.4
July	10.6
August	42.9
September	4.6
TOTAL	219.5



Better growth on the right with AGTIV®.

EFFICACY REPORT

2018 – MYCORRHIZAL INOCULANT

► PLOT TRIAL

Research partner: Black Creek Research

Research site: Bright (ON), Canada

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

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

Onion variety: Catskill

Previous crop: Soybean

Seeding details: Seeded June 7 with Clean seeder at 40 seeds/m of row with 30 cm row spacing.



NOINO

Table 1. Summary of onion yields per treatment.

Treatment	Yield		Marketable Yield	
	(lb/ac)	(t/ha)	(lb/ac)	(t/ha)
Untreated	20 434	22.9	18 467	21.0
AGTIV® REACH™ P for Seed Encrusting	29 179	32.7	26 644	29.8

Plot operational notes and rain fall.

- Fertilization:
 - MAP - 70 kg/ha
 - Potash - 98 kg/ha
 - KMag - 125 kg/ha
 - Urea - 112 kg/ha
- Conventional till
- Pesticides:
 - Venture L (18-06-20)
 - Pardner (18-06-25)
 - Prowl H₂O (18-06-29)
 - Pardner (18-07-05)
 - Prowl H₂O (18-07-15).
- Harvested on October 18, 2018.

Month	Precipitation (mm)
June	91
July	63.1
August	116.6
September	57.8
TOTAL	328.5



More developed root system on the right, and plants are larger with AGTIV®.

EFFICACY REPORT

2018 – MYCORRHIZAL INOCULANT

► GROWER SPLIT FIELDS

Research site: France, Europe

Treatments: a) Untreated;
b) AGTIV® mycorrhizal inoculant.

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

Variety: Hytunes

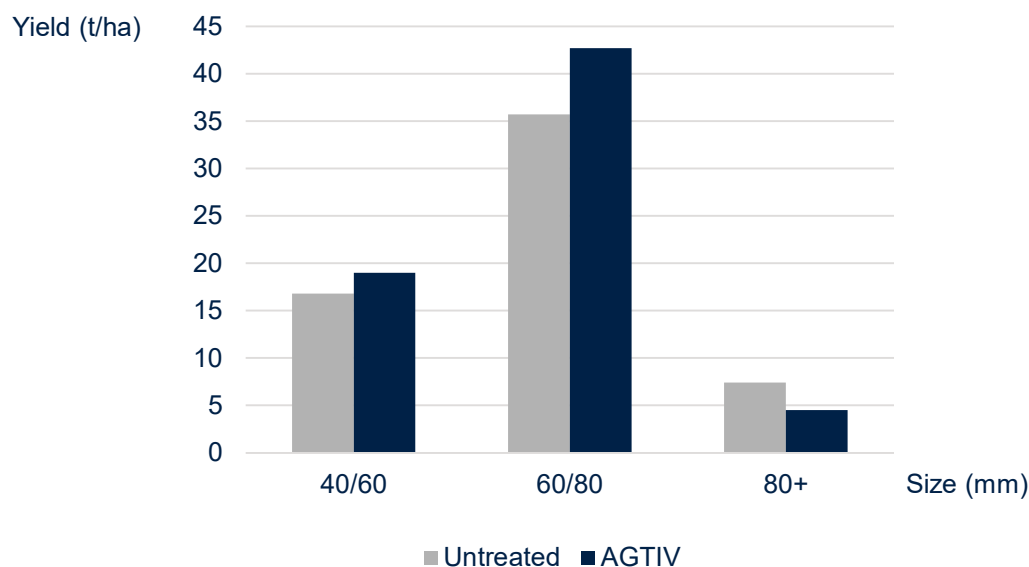


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Table 1. Marketable onion yields per treatment.

Treatment	Yield (lb/ac)	Yield (t/ha)	Bulb number / ha	Difference (%) AGTIV® vs untreated
Untreated	53 441	59.9	531 667	
AGTIV® mycorrhizal inoculant	59 062	66.2	616 667	+10.5%

Figure 1. Onion yield (t/ha) by marketable size (mm)



EFFICACY REPORT

2017 – MYCORRHIZAL INOCULANT

► PLOT TRIALS

Research partners: Black Creek Research and Prisme

Research sites: Bright (ON), Canada – Sandy loam soil
and Napierville (QC), Canada – Black soil, organic

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

Experimental design: Randomized complete block design, 8 replicates.



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Table 1. 2017 summary of onion yields and % difference.

Location	Year	Variety	Untreated		AGTIV® REACH™ P for Seed Encrusting		% Yield difference
			(lb/plot)	(kg/plot)	(lb/plot)	(kg/plot)	
Ontario	2017	Frontier	32.2	14.6	34.0	15.4	+5.5%
Quebec	2017	Trailblazer	23.8	10.8	25.4	11.5	+6.3%
Average	2017		28.0	12.7	29.8	13.5	+6.2%



Onion split field with AGTIV® vs untreated.
Plant growth and health is enhanced on the right.

EFFICACY REPORT

2017 – MYCORRHIZAL INOCULANT

► GROWER SPLIT FIELDS

Research site: France, Europe

Treatments: a) Untreated;
b) AGTIV® mycorrhizal inoculant.

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

Variety: SPIRIT

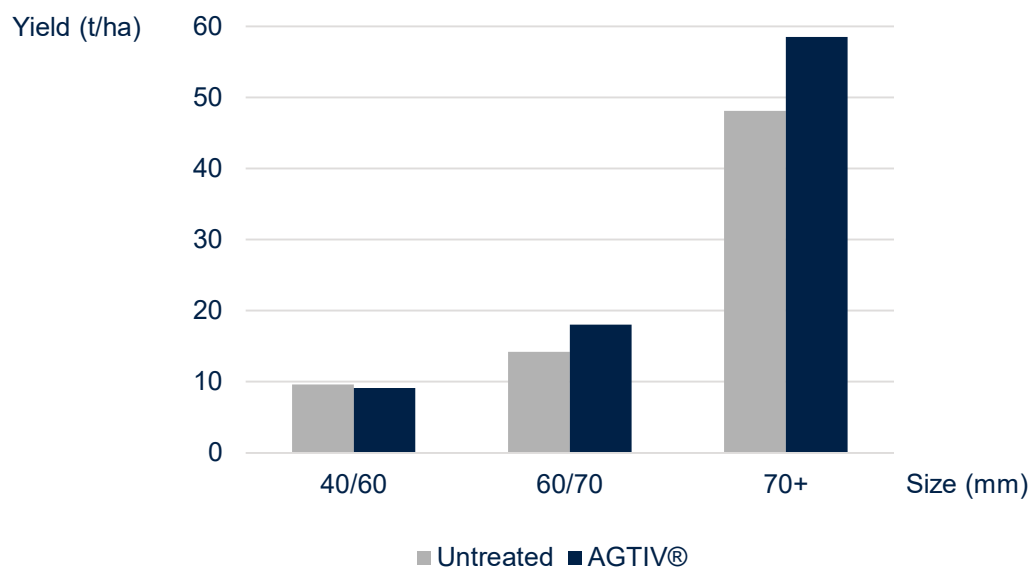


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Table 1. Marketable onion yields per treatment.

	Untreated	AGTIV® mycorrhizal inoculant	Difference (%) AGTIV® vs untreated
Yield (t/ha)	71.9	85.7	+19.2%
Bulb number / ha	409 877	459 259	+12.0%

Figure 1. Onion yields (t/ha) by marketable size (mm).



EFFICACY REPORT

2019 – MYCORRHIZAL INOCULANT



CARROTS

► PLOT TRIAL

Research partner: Antédis

Research site: Ploërmel, Morbihan department, France

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

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

Carros variety: Bolero F1

Previous crop: Ray-grass

Seeding details: Seeded May 24 at 850,000 seeds/ha.

*Products applied according to manufacturer's recommended rate.

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

Treatment	Marketable yield (lb/ac)	Marketable yield (t/ha)	Increase
Untreated	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 $p \leq 0.05$.

Plot operational notes and rain fall

- Fertilization:
 - 30 m³ of cattle manure (19-05-21)
- Pesticides
 - Racer ME, Baroud SC and Centium 36 CS (19-06-02)
 - Challenge 600 and DEFI (19-06-26 et 19-08-01)
 - Switch and Heliosoufre (19-08-13)
- Harvested October 28, 2019.

Month	Precipitations (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



CARROTS

► PLOT TRIAL

Research partner: Eurofins Agrosience services

Research site: Meneac, Morbihan department, France

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

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

Carrot variety: Bolero F1

Previous crop: Barley

Seeding details: Seeded May 24 at 600,000 seeds/ha with 60 cm row spacing.

*Products applied according to manufacturer's recommended rate.

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

Treatment	Marketable yield ¹ (lb/ac)	Marketable yield ¹ (t/ha)	Increase
Untreated	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 test at $p \leq 0.05$

Plot operational notes and rainfall

- Fertilization:
 - Chicken manure 2200 kg/ha (19-04-15)
 - Ammonitrate (19-02-23; 180 kg/ha and 19-03-15; 150 kg/ha)
- Pesticides:
 - Cherokee (19-04-19)
 - Keynote (19-05-08)
 - Baroud, Racer Centium (19-05-25)
 - Signum, Heliosoufre and Bordeaux mixture (19-06-25)
- Harvested October 1, 2019.

Month	Precipitations (mm)
June	181.1
July	23.3
August	53.6
September	45.7
TOTAL	303.7

EFFICACY REPORT

2018 – MYCORRHIZAL INOCULANT

► PLOT TRIAL

Research partner: Agricultural Development Group Inc.

Research site: Eltopia (WA), USA

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

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

Carrot variety: Envy

Previous crop: Squash

Seeding details: Direct seeded May 24 at 20 seeds/m of row;
1.3 million seeds per hectare.



CARROTS

Table 1. Summary of carrot marketable yields per treatment.

Treatment	Marketable Yield (lb/ac)	Marketable Yield (t/ha)	Marketable Yield (%)
Untreated	12 499	14.0	92
AGTIV® REACH™ P for Seed Encrusting	16 941	19.0	92

Plot operational notes and rain fall.

- Conventional till
- Herbicide:
 - Two maintenance herbicide applications were made on July 13 with Lorox and August 23 with Nortron
- Harvested on October 8, 2018.

Month	Precipitation (mm)
May	9.9
June	15.25
July	0
August	0
September	0.5
October	20.8
TOTAL	46.45

EFFICACY REPORT

2018 – MYCORRHIZAL INOCULANT

► PLOT TRIAL

Research partner: Black Creek Research

Research site: Bright (ON), Canada

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

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

Carrot variety: Envoy

Previous crop: Soybean

Seeding details: Seeded June 11 with Clean seeder at 50 seeds/m of row;
3.3 million seeds per hectare.



CARROTS

Table 1. Summary of carrot marketable yields per treatment.

Treatment	Marketable Yield (lb/ac)	Marketable Yield (t/ha)	Marketable Yield (%)	Reject (%)
Untreated	20 488	23.0	64%	4.75%
AGTIV® REACH™ P for Seed Encrusting	23 244	26.0	69%	3.13%

Plot operational notes and rain fall.

- Conventional till
- Fertilization:
 - MAP - 70 kg/ha
 - Potash - 98 kg/ha
 - KMag - 125 kg/ha
 - Urea - 112 kg/ha
- Herbicide:
 - Lorox FL (480 g/L, 3.25 L/ha, June 12)
 - Venture L (125g/L, 2L/ha, July 10)
- Harvested on September 24, 2018.

Month	Precipitation (mm)
June	91
July	63.1
August	116.6
September	57.8
TOTAL	328.5

EFFICACY REPORT

2017 – MYCORRHIZAL INOCULANT

► PLOT TRIALS

Research partners: Black Creek Research and Prisme

Research sites: Bright (ON), Canada – Sandy loam soil
and Napierville (QC), Canada – Black soil, organic

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

Experimental design: Randomized complete block design, 8 replicates.



CARROTS

Table 1. Summary of carrot marketable yields and % difference.

Location	Year	Variety	Untreated		AGTIV® REACH™ P for Seed Encrusting		% Yield difference
			(lb/ac)	(t/ha)	(lb/ac)	(t/ha)	
Ontario	2017	Bolero	36 579	41	38 542	43.2	+5.3%
Quebec	2017	Olympus	28 817	32.3	34 438	38.6	+19.5%
Average	2017		32 653	36.6	36 490	40.9	+11.7%



Carrot split field with AGTIV® vs untreated.
Bigger plants and quicker row closure on the right.

EFFICACY REPORT

2019 – MYCORRHIZAL & BACILLUS INOCULANT



SWEET CORN

► PLOT TRIAL

Research partner: Schreiber & Sons

Research site: Eltopia, Washington, USA

Treatments: a) Untreated;
b) AGTIV® REACH™ P for Seed Film Coating +
AGTIV® STIMULATE™ L*.

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

Sweet corn variety: Nirvana

Previous crop: Fallow (2017) and wheat (2018)

Seeding details: Seeded June 4, 2019, at 30 000 seeds/ac with 75 cm row spacing.

*Products applied according to manufacturer's recommended rate.

Table 1. Summary of sweet corn yields per treatment.

Treatment	Yield (lb/ac)	Yield (t/ha)	Increase
Untreated	17 854.0 ^a	20.0 ^a	
AGTIV® REACH™ P for 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 $p \leq 0.05$.

Plot operational notes and rain fall

- Herbicides application on June 22 (Atrazine) and July 22 (Atrazine + Impact)
- Plots were irrigated and fertilized
- Harvested on September 16, 2019.

Month	Precipitation (mm)
June	1.95
July	2.44
August	25.62
September	11.94
TOTAL	41.95

EFFICACY REPORT

SUMMARY – MYCORRHIZAL INOCULANT

► GROWER SPLIT FIELDS

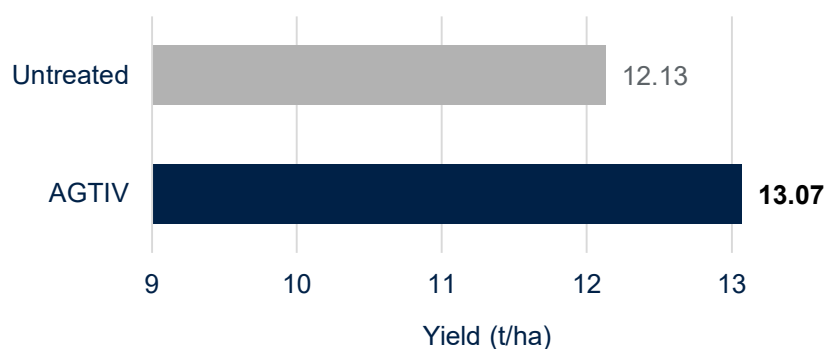
Table 1. **Average yield increase with AGTIV® mycorrhizal inoculant for different years (2017 and 2018) in France, Europe.**

Variety	Untreated		AGTIV® mycorrhizal inoculant		Difference (%) 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	+6.9
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	-2.5
Linex	6 512	7.33	6 959	7.83	+6.8
Average	10 795 lb/ac	12.13 t/ha	11 687 lb/ac	13.07 t/ha	+7.7 %



GREEN BEAN

Figure 1. **Yield increase with AGTIV® mycorrhizal inoculant.**



EFFICACY REPORT

SUMMARY – MYCORRHIZAL INOCULANT

► GROWER SPLIT FIELDS

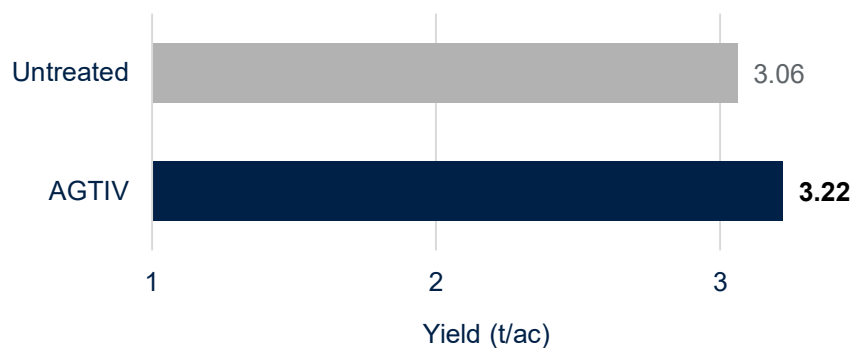
Table 1. Average yield increase with AGTIV® THRIVE™ P PEA & LENTIL for different years (2015 to 2017) in Ontario and Quebec, Canada.

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	10.1%



GREEN PEA

Figure 1. Average yield increase with AGTIV® THRIVE™ P PEA & LENTIL in Ontario and Quebec, Canada (2015 to 2017).



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

EFFICACY REPORT

SUMMARY – MYCORRHIZAL INOCULANT

► GROWER SPLIT FIELDS

Table 1. **Average yield increase with AGTIV® REACH™**
for different years (2002 to 2016) in ONTARIO & QUEBEC, Canada.

Year	Number of sites	Average increase (lb/ac)	Average increase (t/ha)	Average increase (%)
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%

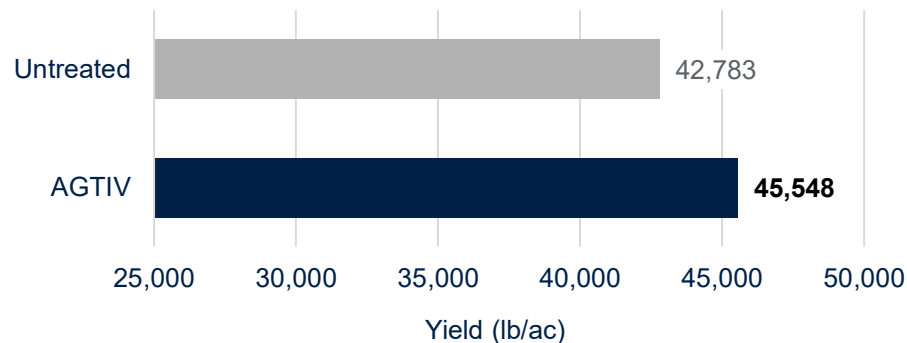
* Plot trial data for 2002: average increase of 95 g/plant.

** The 2766 lb/ac average refers only to 2015-2016 data.



PEPPER

Figure 1. **Average yield increase with AGTIV® REACH™** in Ontario, Canada (2015-2016).



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

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

2016 – MYCORRHIZAL INOCULANT

► PLOT TRIALS

Research site: Saint-Eustache (QC), Canada

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

Experimental design: 3 fields. 3 plots of 7 plants per field. – New strawberry establishment



STRAWBERRIES

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% reduction



Larger and bigger plants with AGTIV® on the right.

EFFICACY REPORT 2023

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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