DPH Biologicals™

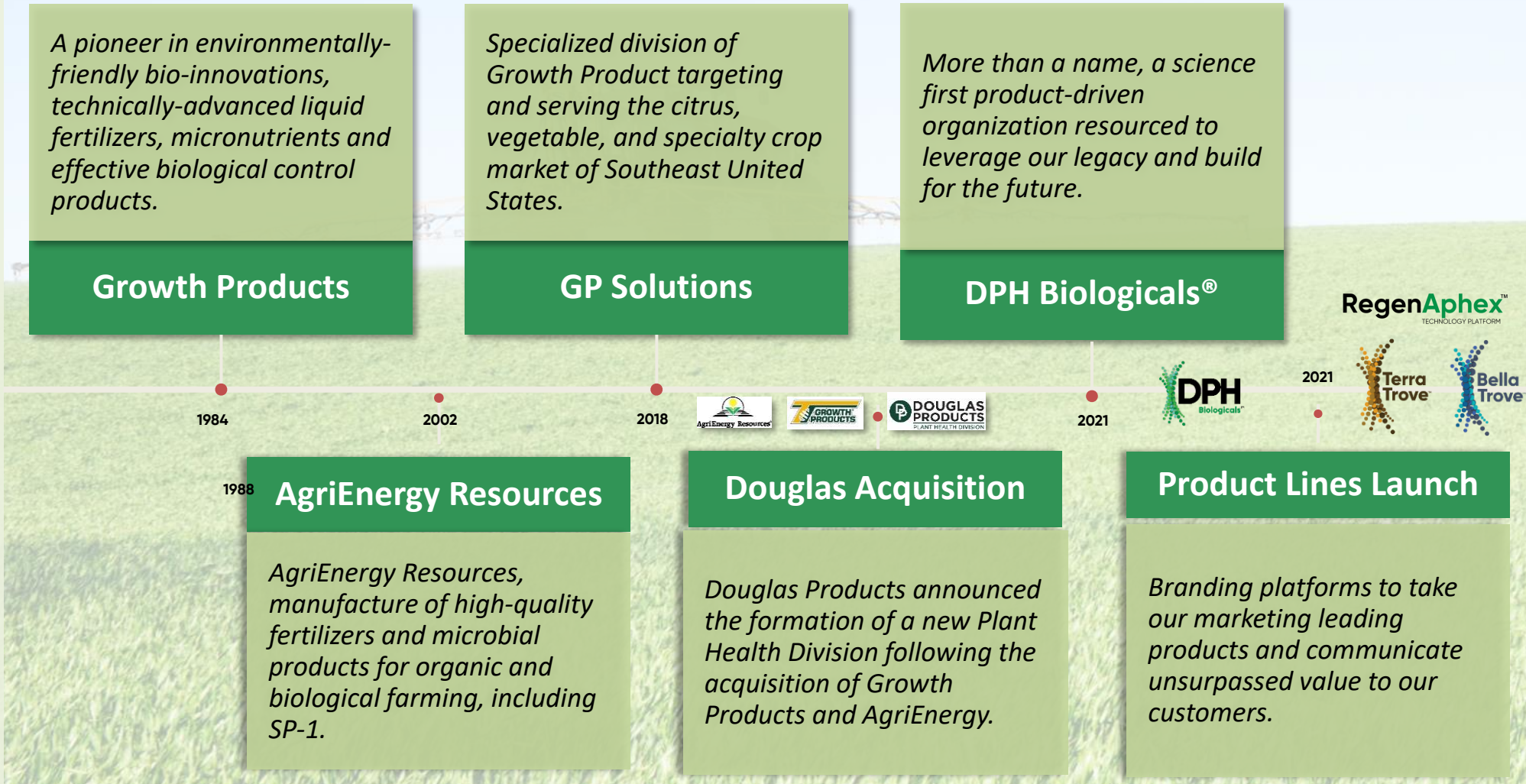
Product Overviews

Product Overviews

- Introduction to DPH Biologicals
- Biological Portfolio Summary
  - TerraTrove SP-1 Classic
  - TerraTrove Residuce Complete
  - TerraTrove MST
  - BellaTrove Companion Maxx WP
  - BellaTrove Companion Maxx ST

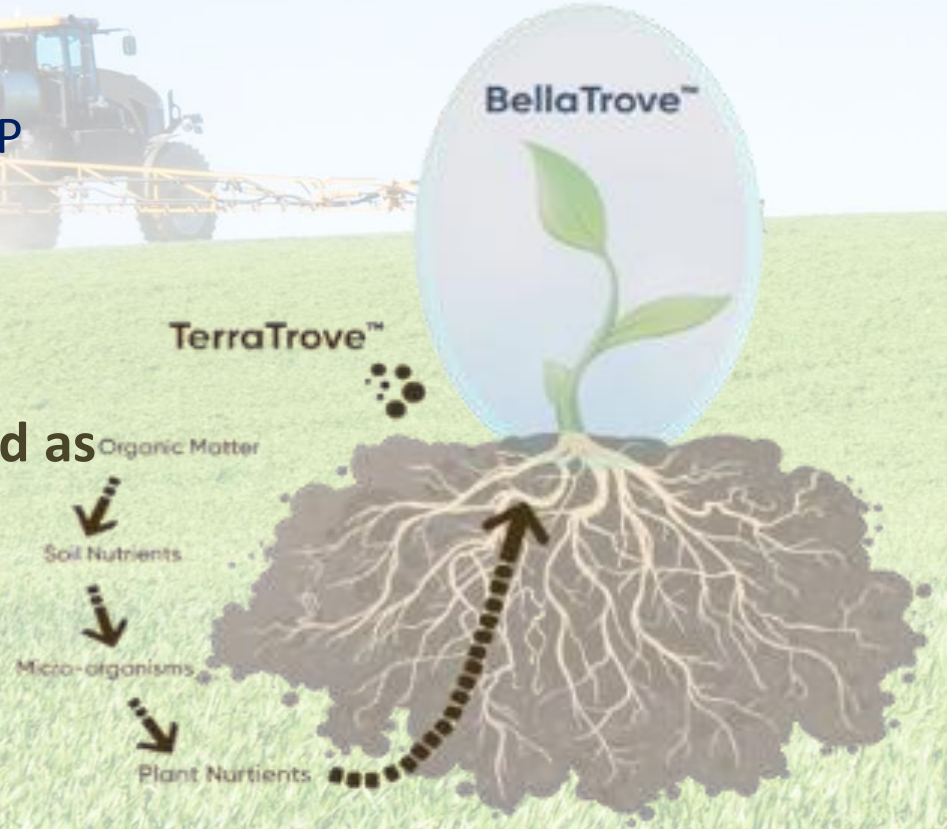
Our Legacy

- For the past 3 decades, our legacy companies have delivered value to targeted segments in Ag and T&O.
- In 2018 Douglas Plant Health was formed through the acquisition of AgriEnergy Resources and Growth Products.
- To further build on our heritage and bring focus to our core Biological platform of products, in 2021 we introduced our new name, DPH Biologicals.



Our Brands

- **Portfolio of EPA registered bio-control products**
  - BellaTrove Companion Maxx WP
  - BellaTrove Companion Maxx ST
- **Portfolio of biologicals registered as fertilizers**
  - TerraTrove SP-1 Classic
  - TerraTrove Residuce Complete
  - TerraTrove MST



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DPH Biologicals™

TerraTrove® SP-1 Classsic®

POWERZED BY RegenAphex™ TECHNOLOGY PLATFORM

THE COMPLETE BIOFERTILIZER

What it is and How it Works

- Trial Data
- Label & Use

INCREASES YIELD & PRODUCTIVITY

IMPROVES SOIL TILTH & STRUCTURE

ENHANCES NUTRIENT UPTAKE & AVAILABILITY

IMPROVES PLANT ROOT VIGOR

INCREASES WATER USE EFFICIENCY

- Replace up to 50% of starter fertilizer when used in-furrow when planting.
- Easy-to-use liquid formulation seamlessly integrates into broad acre application practices, including broadcast, in-furrow, drip, foliar and fertigation.
- Enhances microbial populations which break down organic matter, captures nitrogen, solubilizes phosphorus, & cycles nutrients - ultimately making nutrients more available to the plant.

THE COMPLETE BIOFERTILIZER comprised of a diverse community of microbes, plant-based humus extracts and algae, that work together to improve soil structure, make more nutrients available and ultimately increase yield.

Terra Trove™
SP-1 Classic™
POWERZED BY
RegenAphex™
TECHNOLOGY PLATFORM

DPH Biologicals

TerraTrove™
SP-1 Classic™

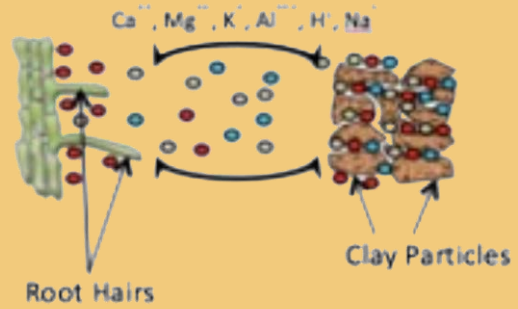
The Complete BioFertilizer

Liquid biofertilizer comprised of a diverse community of Microbes, Plant Based Humus Extracts and Algae, that work together to improve soil structure, make more nutrients available and ultimately increase yield.

RegenAphex™
TECHNOLOGY PLATFORM

1. Proprietary Plant-Based Humus Extract
Creates an Ecosystem for Water, Nutrients and Microbes, building a symbiotic environment that is conducive to the exchange of essential nutrients, ultimately attaching them to the roots for uptake.

Humus Extract Improves CEC



2. Plant Growth Promoting Rhizobacteria (PGPR) - Free-living bacteria that colonize the Rhizosphere, breaking down organic matter, fixing Nitrogen, solubilizing phosphorus and cycling nutrients to become more available for the plant.

Consortium of Microbes including PGPRs

3. Algae – Green Manure which quickly breaks down and releases Nitrogen into soil becoming a Food Source for the Microbes & as well as the Plant

4. Fermented Plant Extract - Diverse blend which impact microbial diversity and stabilize overall formulation.

Improving Soil Health with Proprietary, Plant-Based and Regenerative Humus Technology

RegenAphex™
TECHNOLOGY PLATFORM

- **RegenAphex serves as the chassis for SP-1 Classic and provides a home for biological activity, improving CEC and delivering 30 PPM of readily available Organic Carbon.**
- **It is a Unique 100% Plant Based Humus Extract which has shown to be a superior & more sustainable alternative to the well-known Humic Acids prevalent in the market.**

v/s

Humus Plant Extract

Production Process

Raw Material

Finished

100% Plant based water extract of humified plant compost

Delivers a host of micro-organisms designed to improve soil health & increase nutrient uptake

Introduces organic carbon to the soil which is readably available to the plant and the microbial community

OMRI listed for Organic Production

OMRI LISTED For Organic Use

Humic Acid Leonardite

Production Process

Raw Material

Finished

A sticky, black, caustic product made from oxidized coal (leonardite) that can improve soil, especially sandy and low organic matter soils

Very poor food source for micro-organisms but can improve microbe habitat

Non-organic, Stains Equipment & can plug sprayer screens

DPH Biologicals

The Breakdown

RegenAphex™
TECHNOLOGY PLATFORM

Plant-Based Humus Extract

Creates an Ecosystem for Water, Nutrients and Microbes, building a symbiotic environment that is conducive to the exchange of essential nutrients, ultimately attaching them to the roots for uptake.

PGPR

Free-living bacteria that colonize the Rhizosphere, breaking down organic matter, fixing Nitrogen, solubilizing phosphorus and cycling nutrients to become more available for the plant.

Algae

Green Manure which quickly breaks down and releases Nitrogen into soil becoming a Food Source for the Microbes & as well as the Plant.

Fermented Plant Extract

Diverse blend which impact microbial diversity and stabilize overall formulation.

Our flagship product, TerraTrove® SP-1 Classic®, maximizes your crops' horsepower by freeing up untapped nutrients in your soil for uptake.

Increase

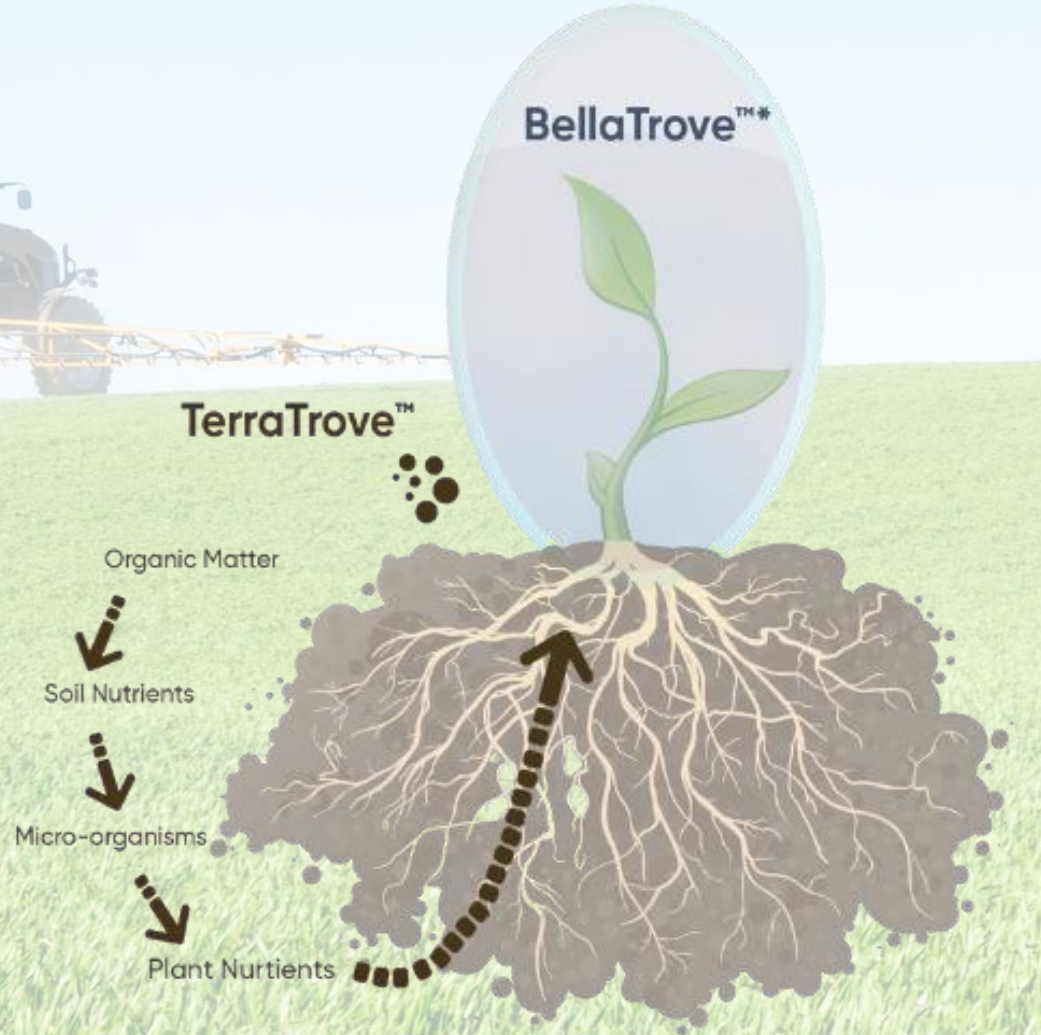
A diverse collection of microbes, plant extracts and algae that work in harmony to improve soil structure, make more nutrients available and ultimately increase yield.

Replace

Replace up to 50% of synthetic starter fertilizer when used in-furrow at planting.

Integrate

Easy-to-use liquid formulation seamlessly integrates into broad acre application practices, including broadcast, in-furrow, drip, foliar and fertigation.



DPH Biologicals™

What it is and How it Works

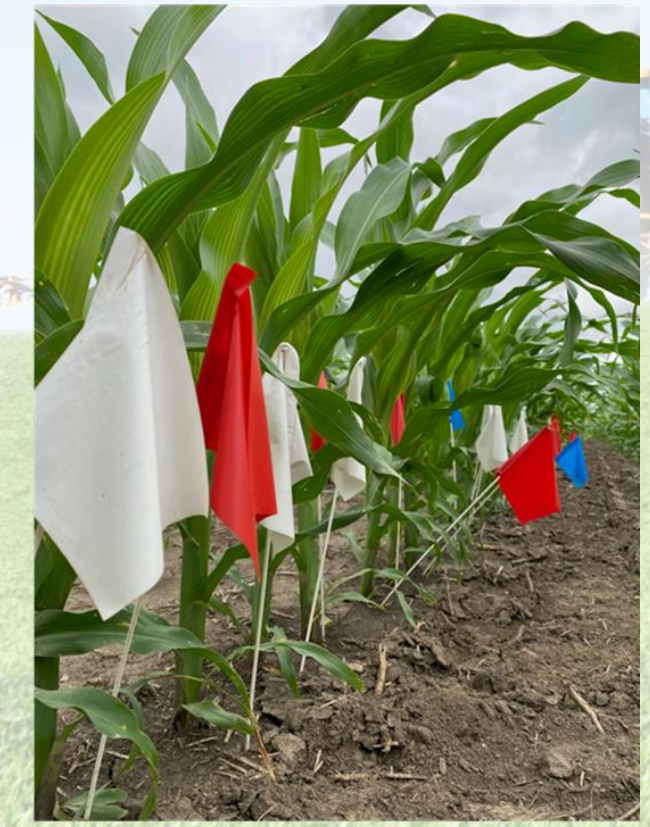
Trial Data

Label & Use

SP-1 Classic®

Uniform Crop Establishment

SP-1 Classic



Starter Only

First Day Stand Count
Second Day
Third Day

Earlier and more uniform emergence and higher stands = Greater Yield Potential

		Plant Stand (#/RowFt)			Plant Stand (#/A)		
Trt	Treatment						
No.	Name	Mean		Count	Mean		Count
1	SP-1™ + Standard (2+3 Gallons)	19.1	a	9	33214.5	a	9
2	Grower Standard (5 Gallons)	18.5	b	9	32288.8	b	9
LSD P=.20		0.5			838.5		
Standard Deviation		1.5			2542.1		
CV		7.76			7.76		

Cross Trial Analysis of SP-1 Small Plot Replicated Studies – IA/NE

SP-1 Classic®

Supports Healthier, More Robust Roots

In field comparison shared by GROWMARK FS – SP-1 Classic supports healthier, more robust root systems.

SP-1 Classic®

Improved Soil Tilth

14-days after planting - Nebraska

"The modification of soil structure is a benefit that assists in crop development with the use of SP-1, both root penetration and nutrient recovery through greater root exploration is valid.

In the work that we are doing with SP- 1, we have shown that SP-1 shows benefit of infiltration"

Dean Collamer
Senior Research Agronomist,
Growmark FS

SP-1 Classic®

Less Soil Compaction

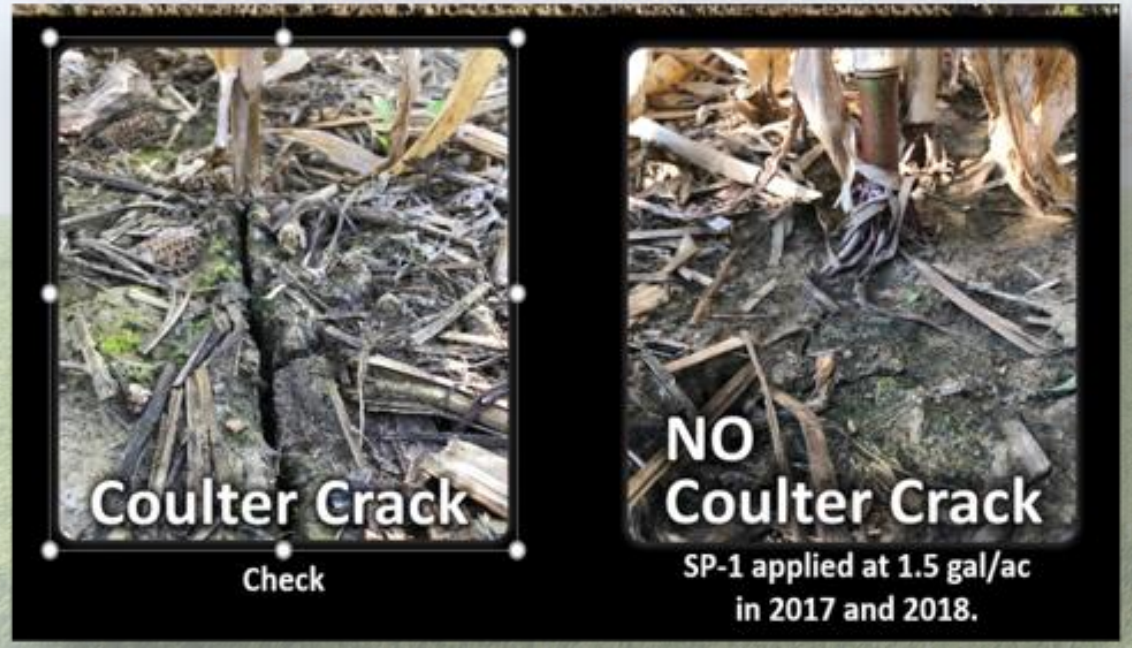
SP-1 Classic® Foliar Wheat Application 2023, Central Kansas

Competitor Product

SP-1 Classic®

SP-1 Classic®

Water Use Efficiency



- Higher water holding capacity and drainage
- Doubles infiltration so the soil can absorb 1" of water 2x faster
- 70% better stability as aggregate integrity remains intact in wet conditions
- Resulting in up to 33% less water required

SP-1 Classic®

Water Use Efficiency

BETTER Water Management

"Soils drain quicker, yet they won't dry out as quick."

MACRO pores provide more air space, which allows faster percolation in WET conditions.

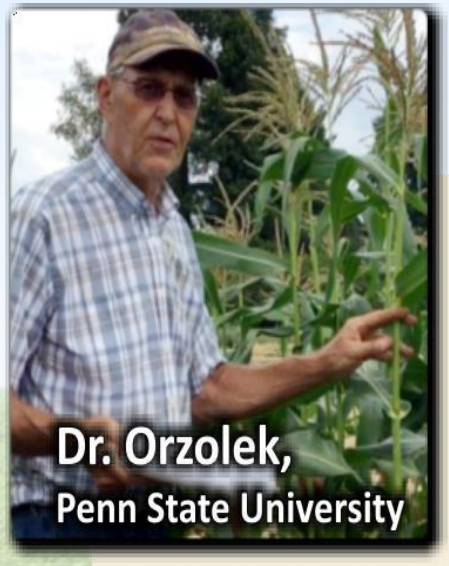
The **MICRO** pores work like sponges to retain moisture in DRY conditions.

"Better Drainage coming into harvest – think about that…….get into the field quicker"

Don Jones
Senior Agronomist
Growmark FS

SP-1 Classic®

Nutrient Uptake



ENHANCED
Nutrient Uptake

In response to the comment that "fertility programs just don't work like they used to", Dr. Orzolek replied, "Without biology we have no fertility"

- Supercharged ecosystem, significantly increasing microbial activity that breaks down organic mater, fixes nitrogen, solubilizes phosphorus and cycles nutrients, ultimately making nutrients more available to the plant

Terra Trove™
SP-1 Classic™

Trial Results

SP-1 has been tested on over 15 crops throughout the major growing regions in the US

SP-1 Classic®

In-Furrow Corn Trials

Across 10 large scale commercial trials SP-1 had an 80% win-rate with a mean increase of 2% with the top-end being 18 bu/A more than the grower's standard practice

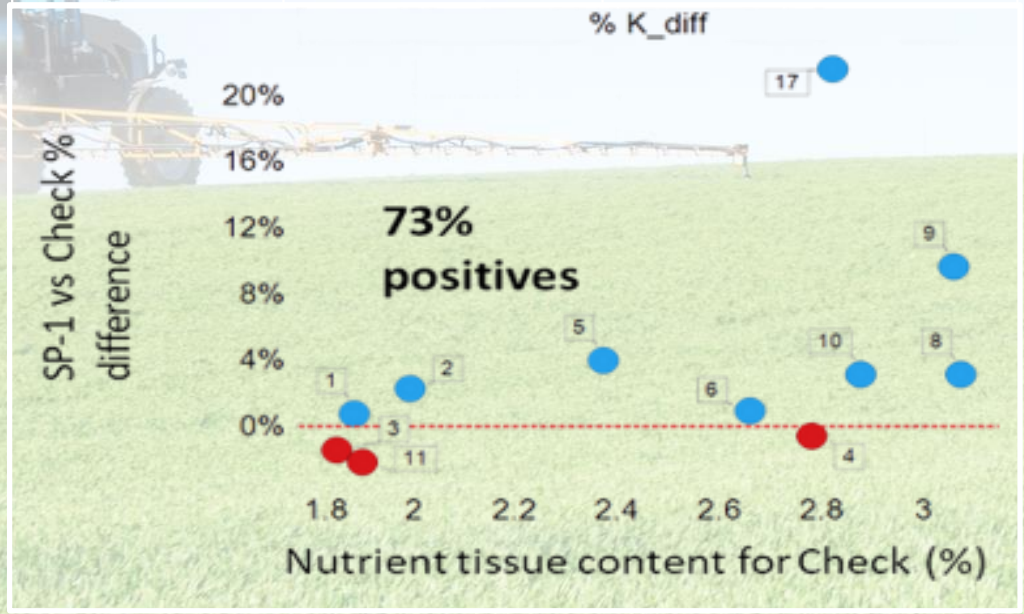
SP-1 Classic®

Microbiology Function

Nutrient	% Functionality
N Release	75%
P Solubilitzation	36%
K Solubilization	36%
Fe	95%
Zinc	56%
Mn	94%
S	99%
Ca	64%
Mg	64%

SP-1 Classic utilizes multiple microorganisms to support plant nutrition. This table outlines what percentage of organisms contribute to specific nutrient cycling.

Mean diff	% Wins	Significance
4%	**72.7%**	**Statistical**



Statistical increase in K leaf tissue, positive effects in 73% of sites.

SP-1 Classic®

Corn Trials 2022 – TrialWerx

SP-1 Corn Trial Biomass- 2022

Objective:

Evaluate biomass differences of SP-1 applied in-furrow across 8 corn trial sites in grower fields

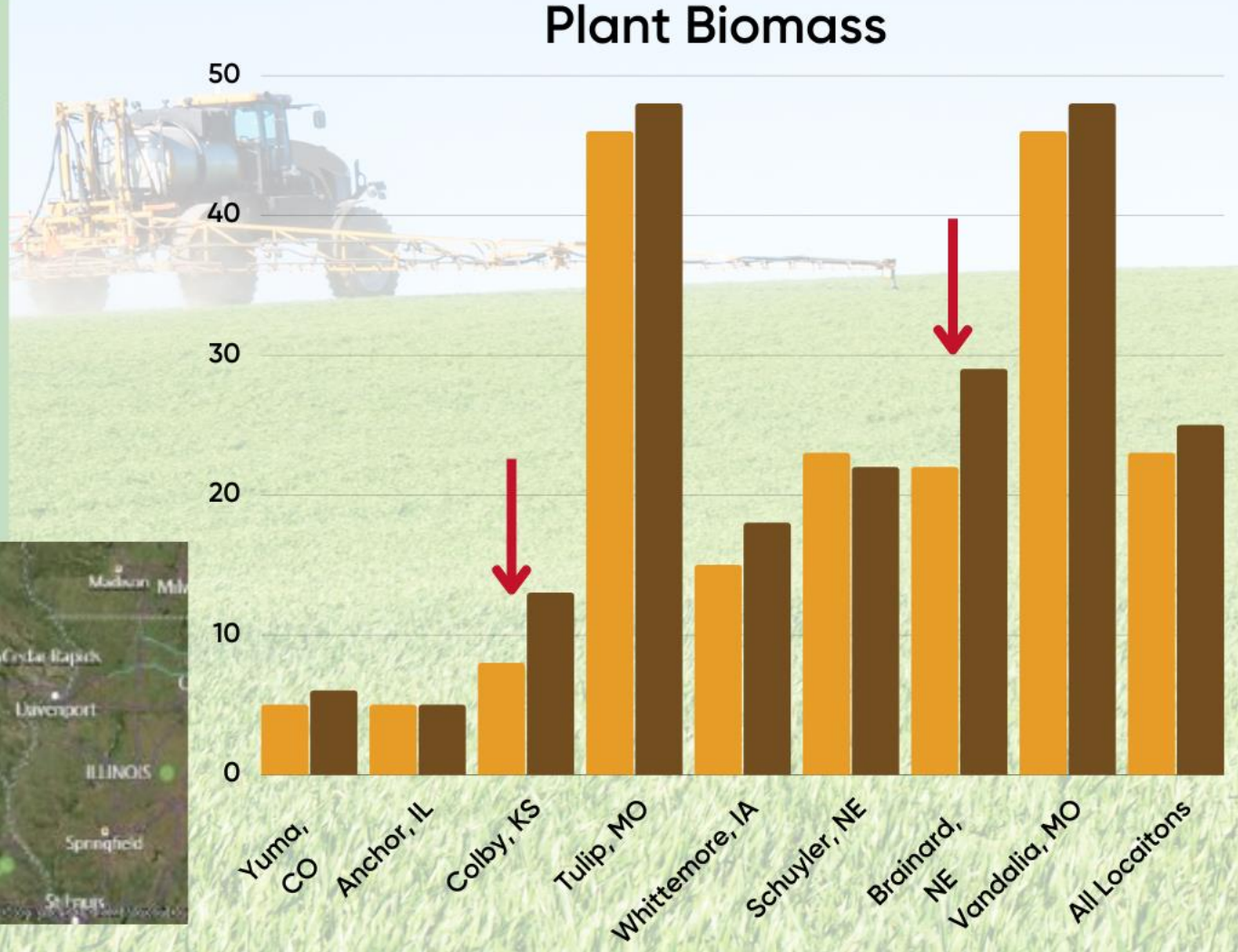
- Grower Standard with starter
- Grower Standard with starter + SP-1
- Biomass was sampled for analysis at growth stage V5-V7

Key Learnings:

- At 7 of the 8 sites, starter + SP1 had either a positive or significantly greater biomass than starter alone.
- SP1 at 2 gpa boosts the benefit of starter- "Better Together"

At the Colby KS trial high July night temps led to corn ear "tip-back"- where ear development becomes aborted.

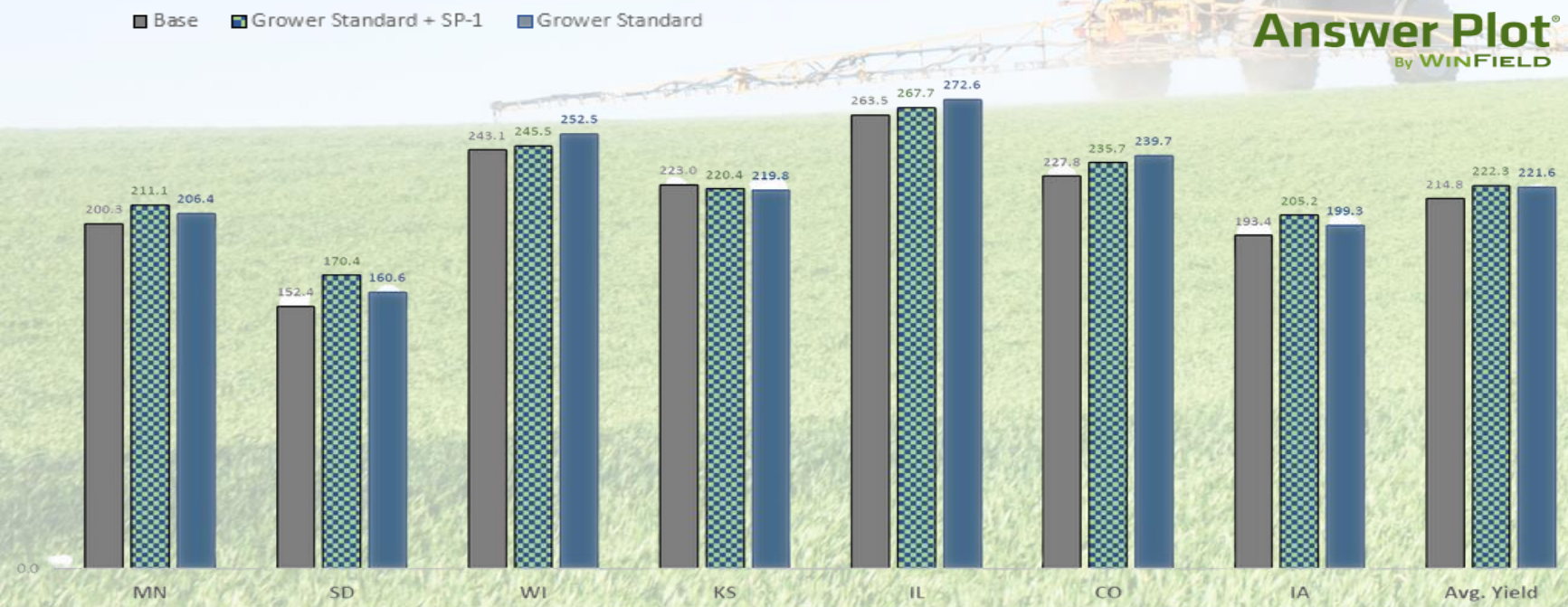
Ear on left is Grower standard
Ear on right is SP-1+ starter- SP-1+starter showed less tip-back across the trial.



SP-1 Classic®

Answer Plot – Starter Replacement Trials

When TerraTrove SP-1 Classic is applied with starter fertilizer, growers have reliably replaced up to 50% of their starter fertilizer needs when planting, without sacrificing performance and in many cases improving crop yield and on-farm profitability. When combined with starter the products perform Better Together.

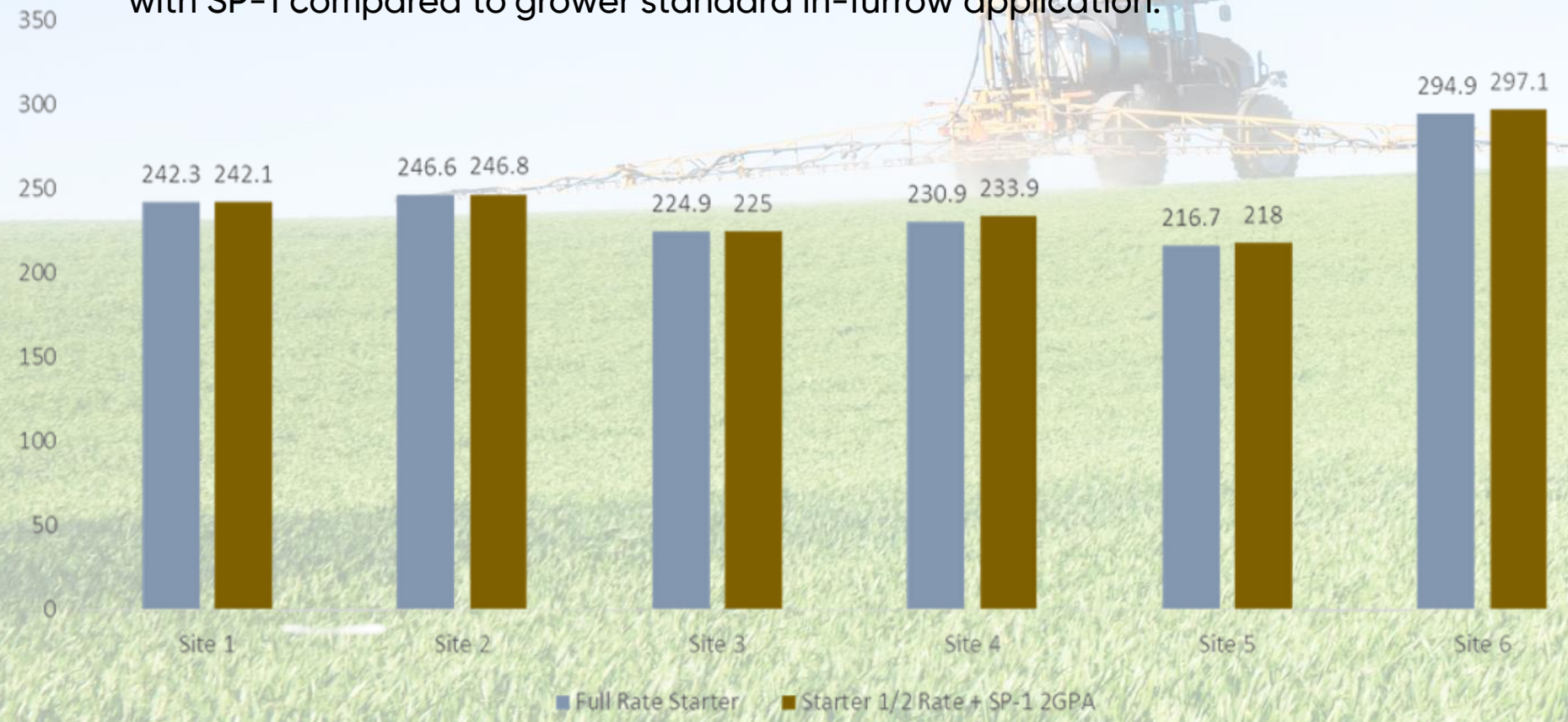


- Across 7 locations, when Starter was replaced with 2G of SP-1, the combination of 2G Starter + 2G SP-1, while not individually statistically significant, 4 of those locations out yielded the growers standard practice of 4 GPA of starter.
- Average Yield for SP-1 Classic at 2 GPA + 2 GPA of Starter was 222.3 Bu/A va. 221.6 Bu/A for the grower standard of 4 GPA of starter.
- When analyzed across all locations, SP-1 and the Grower Standard where statistically different from the Base Treatment.

SP-1 Classic®

Starter Replacement Trials

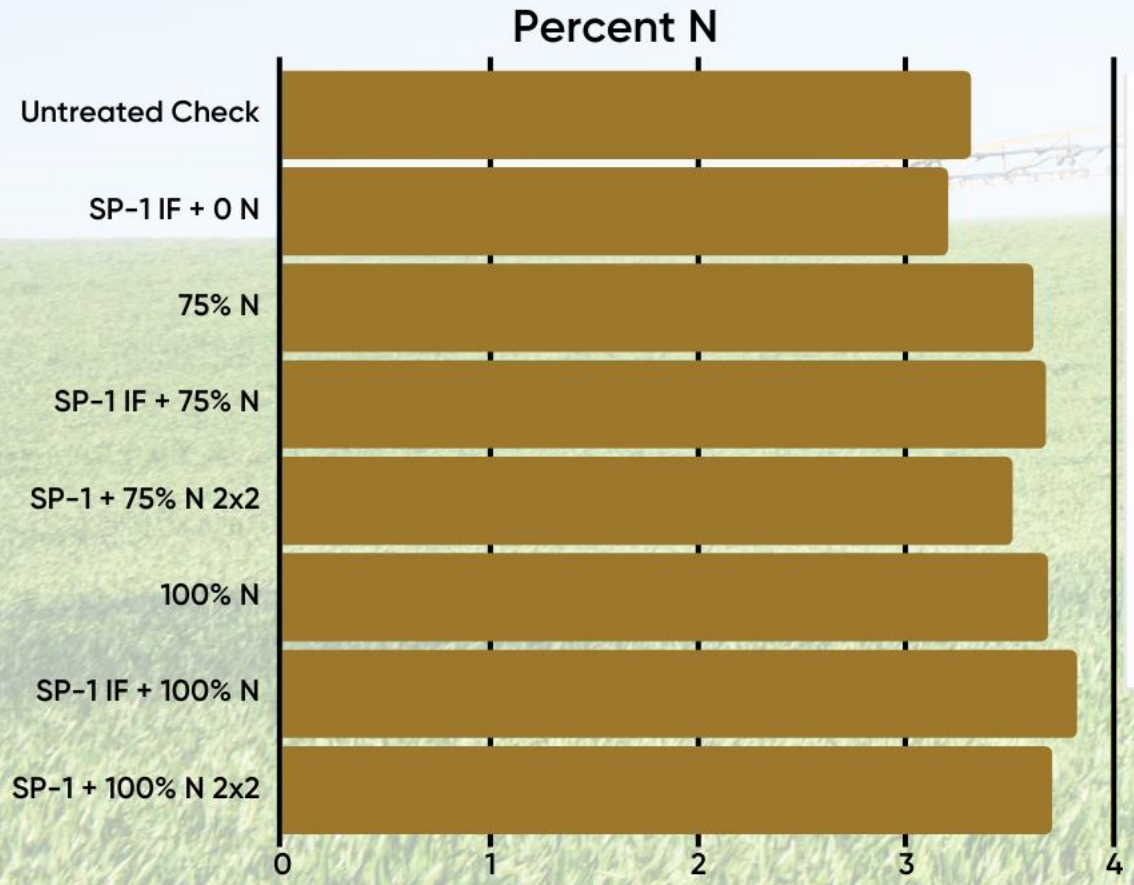
Large scale on farm replicated testing in-furrow applications replacing 2 gallons of starter with SP-1 compared to grower standard in-furrow application.



Across 6 large scale commercial trials, SP-1 with a ½ rate of starter, outperformed the full rate of starter.

SP-1 Classic®

N Rate in SP-1 Corn Trails, IL – CropSmith



SP-1 plus 100%N rate resulted in significantly higher %N in plant

SP-1 Classic®

McGregor Winter Wheat Trials

Starters in Winter Wheat | Pomeroy, WA
Planted 10/14/2021 | 1M seed/acre
TMC M-Pire| Test Wgt - 62.4 | Moisture - 9.4% | Protein

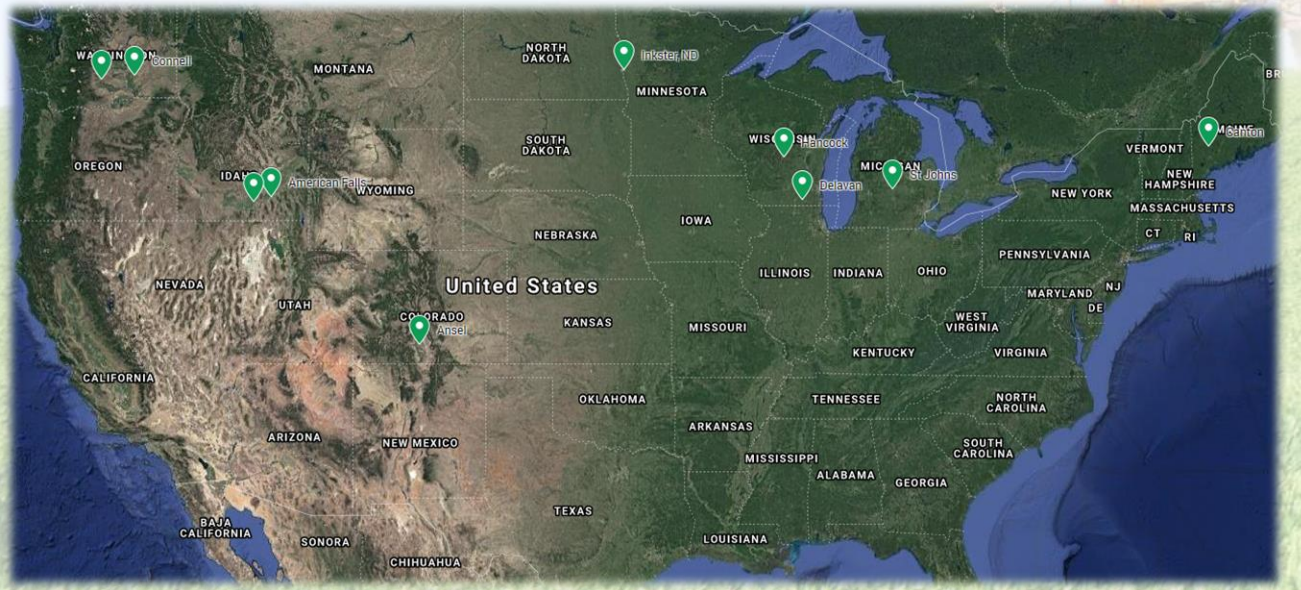
In-Furrow Treatments* (applied in furrow directly on seed)	Yield^ (bu/a)	
7.5 gal KS Base + SP1 (DPH)	157	a
7.5 gal KickStarter + Solubilizing Microbes (Custom Agronomics)	157	a
7.5 gal KickStarter	155	ab
7.5 gal KickStarter + MicoRRhiza (MycoGuru)	154	abc
7.5 gal KickStarter + 3.5 oz Gramax NP (BioLevel)	153	bc
7.5 gal New KickStarter	153	bc
7.5 gal KickStarter + MicroSpark (TerraForm)	152	c
No KickStarter	147	d
	153.7	avg
^ Groupings done using Fisher's LSD, 95% confidence level	0.9%	cv
	1.4	sd

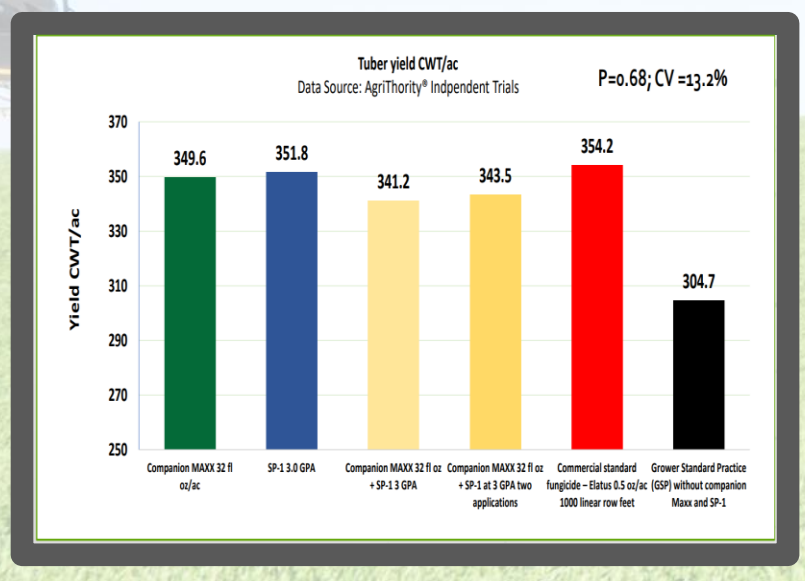
Managing Higher Yield in Winter Wheat | Craigmont, ID
Planted 10/7/2021 | @ 800K seed/acre
TMC M-Pire | Test Wgt - 59.5 | Moisture - 8.5% | Protein X.X%

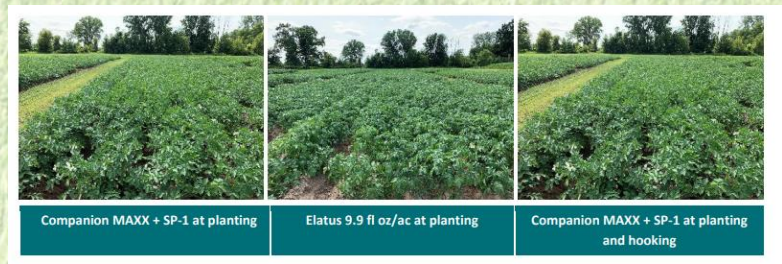
Treatments (rates given by acre)	Yield^ (bu/a)	
3 Gal Rally + 7 oz Nexicor + 16 oz VOYAGRO @ Flag	134	a
3 Gal Rally + 7 oz Nexicor + 1 Gal SP1 @ Flag	127	b
3 Gal Rally + 7 oz Nexicor @ Flag	126	b
7.5 Gal KickStarter + 64 oz CA Microbes (In-Furrow)	124	bc
KickStarter (In-Furrow) - No Flag	122	c
40# N streamed @ Feekes 4/5	120	cd
No KickStarter	117	de
3 Gal 7-21-4 Organic Acids + 1 Gal MicroSpark (In-Furrow)	114	e
	avg	123.1
^ Groupings done using Fisher's LSD, 95% confidence level	cv	2.3%
All treatments but 'No KickStarter' has kickstarter	sd	2.8

Potato Trials & Results

SP-1 Shows Exceptional Performance on Potatoes







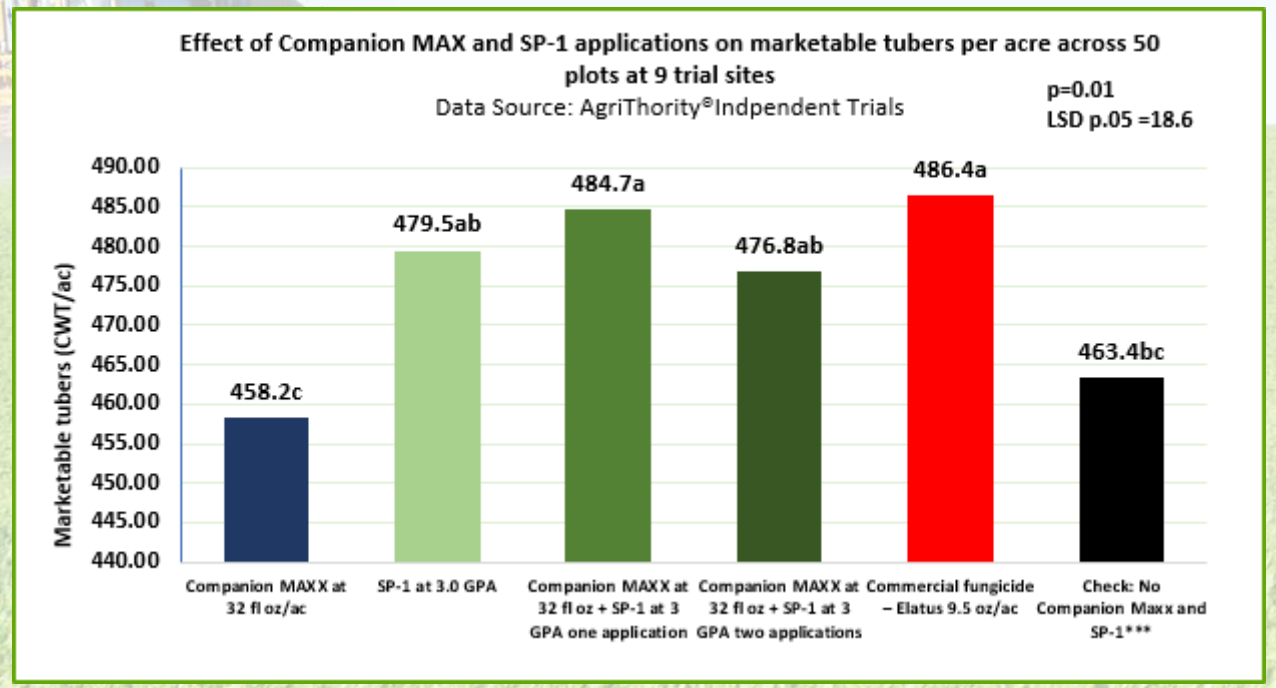
- **Up to 20% yield increase and improved quality in potatoes**
- **Able to harvest faster and soil comes off much easier, resulting in less transportation of dirt and a higher ROI**

Potato Trials & Results

SP-1 Treated Acres Produced More Marketable Potatoes

- **Marketable tubers per acre were also significantly higher in plots with one application of SP-1 at 3 GPA + Companion MAXX 32 fl oz/ ac at planting compared with the check plots and were statistically similar to the plots with SP-1 alone and together with Companion MAXX two applications and the commercial standard at p=0.05.**

- **Comparing with LSD at p=0.2, all the treatments with SP-1 alone and together with Companion MAXX had significantly higher marketable tubers compared with the check.**



SP-1 Classic®

Commercial Potato Trial- Jensen

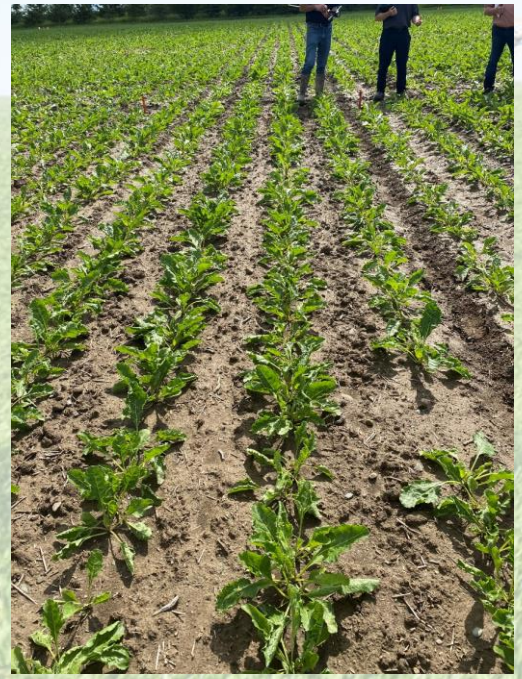
4 Ton Increase of Marketable Potatoes with SP-1 Treatment @ 3 GPA

	Untreated (Tons/AC*)		
	Culls/Undersized	Marketable	Total weights
Rep. 1	8.9*	10.4	10.4
Rep. 2	9.4	21.9	31.3
Rep.3	3.9	39.8	43.7
Ave. weights*	6.65	24.03333333	30.68333333
	(* large amount of Pythium leak)		
	SP-1 @ 3 GPA + Exceed @ 8 oz./AC (Tons/AC*)		
	Culls/Undersized	Marketable	Total weights
Rep. 1	7.9	22.4	30.3
Rep. 2	4.9	32.4	37.3
Rep.3	3.4	29.4	32.8
Ave. weights*	5.4	28.06666667	33.46666667
	(* Weights converted to Tons/AC.)		

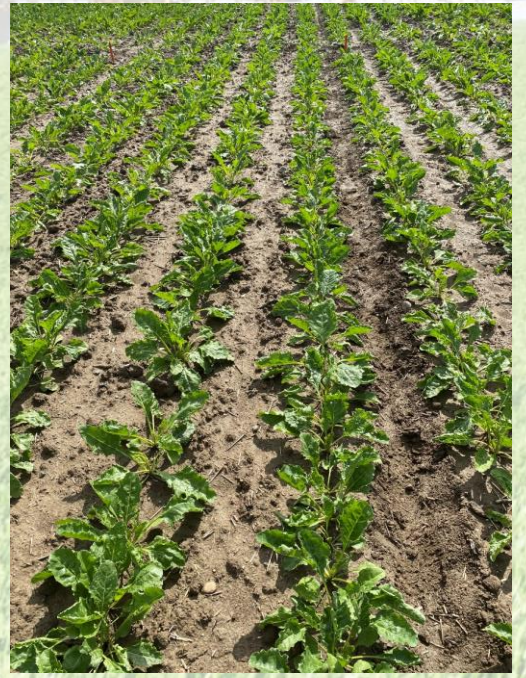
SP-1 Classic®

MI Sugar – Sugarbeet Trial

Grower Standard



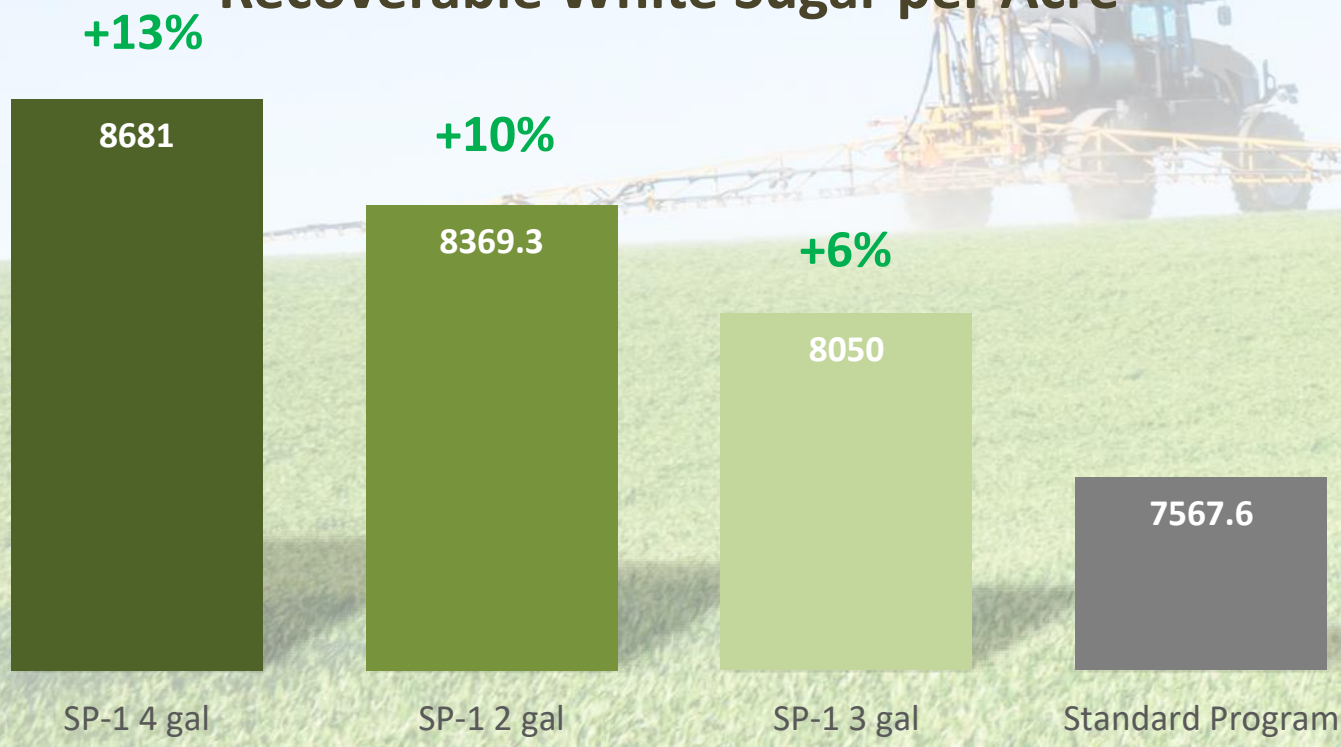
SP-1 Classic
3 Gallons in furrow



SP-1 Classic®

MI Sugar – Sugarbeet Trial Results

Recoverable White Sugar per Acre



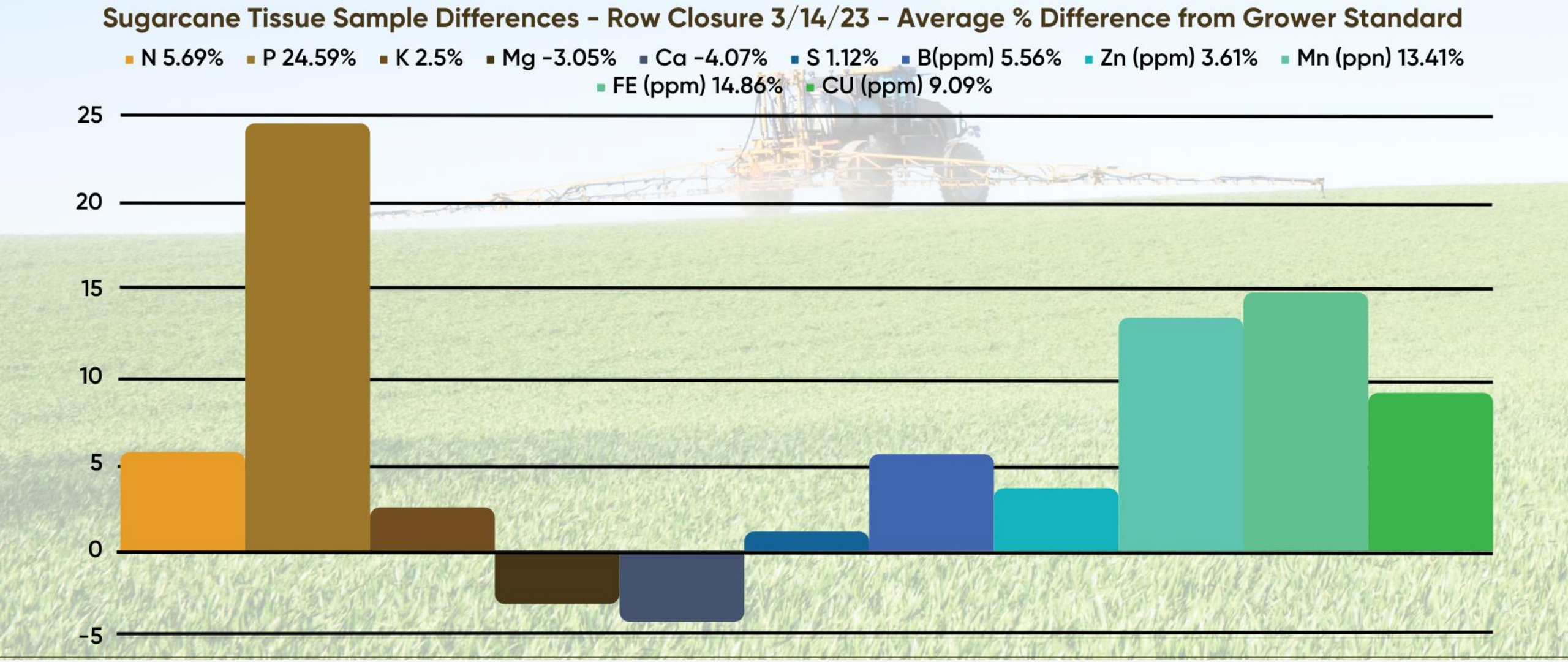
With the addition of SP-1 @ 4 GPA, treatment delivers 13% more recoverable sugar over standard treatment

Standard Program – All treatments

UAN 28%	8 gal	2X2
10-34-0	6 gal	
Thio-Sul	4 gal	
Azteroid FC 3.3	6.3 fl oz	In-Furr
Mustang Max	4 fl oz	

SP-1 Classic®

US Sugar – Sugarcane Trial

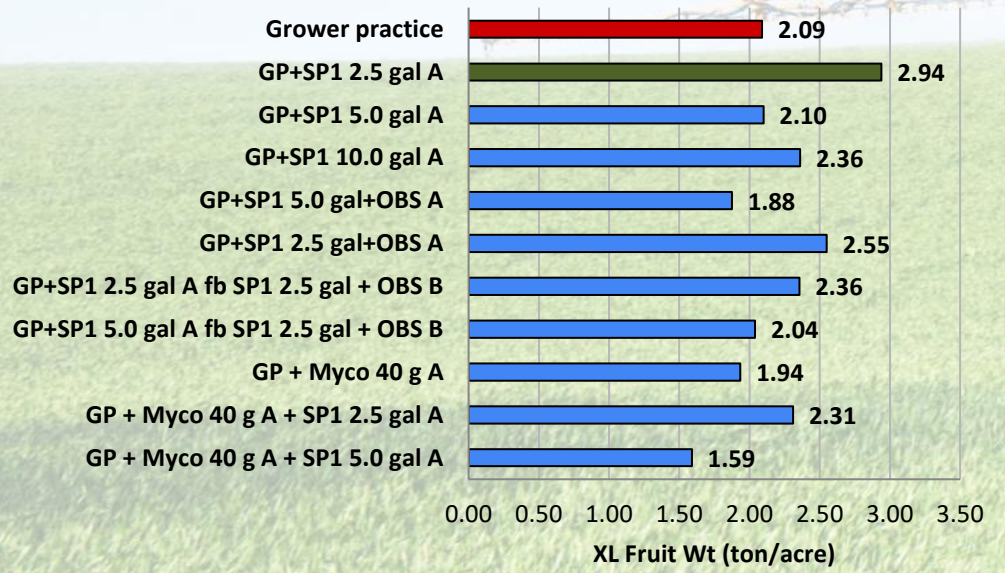


SP-1 Classic®

Tomato Trials & Results

Freedom Ag Winter 2022 Trial- Tomato

Early Extra-Large Tomato Fruit Weight (Florida, Winter 2022)



Aerial Imagery – CA Trial

aerial PLOT
automated analytics for agriculture

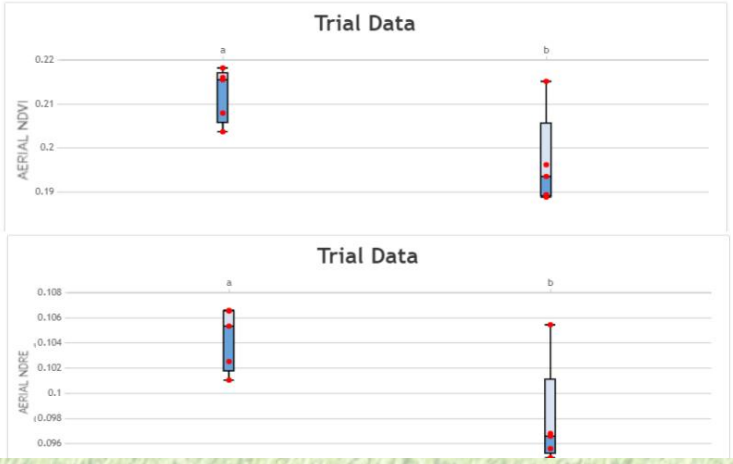
Southern Half Woolf 30-4

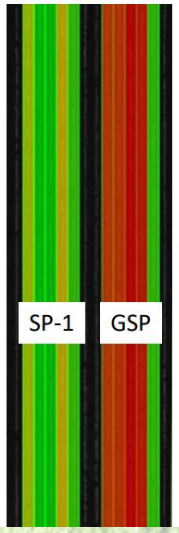
SP-1 in quantified area increased;

NDVI (plant vigor and biomass) by 7.99%

NDRE (plant health) by 6.7%

Additional potential benefits being qualified

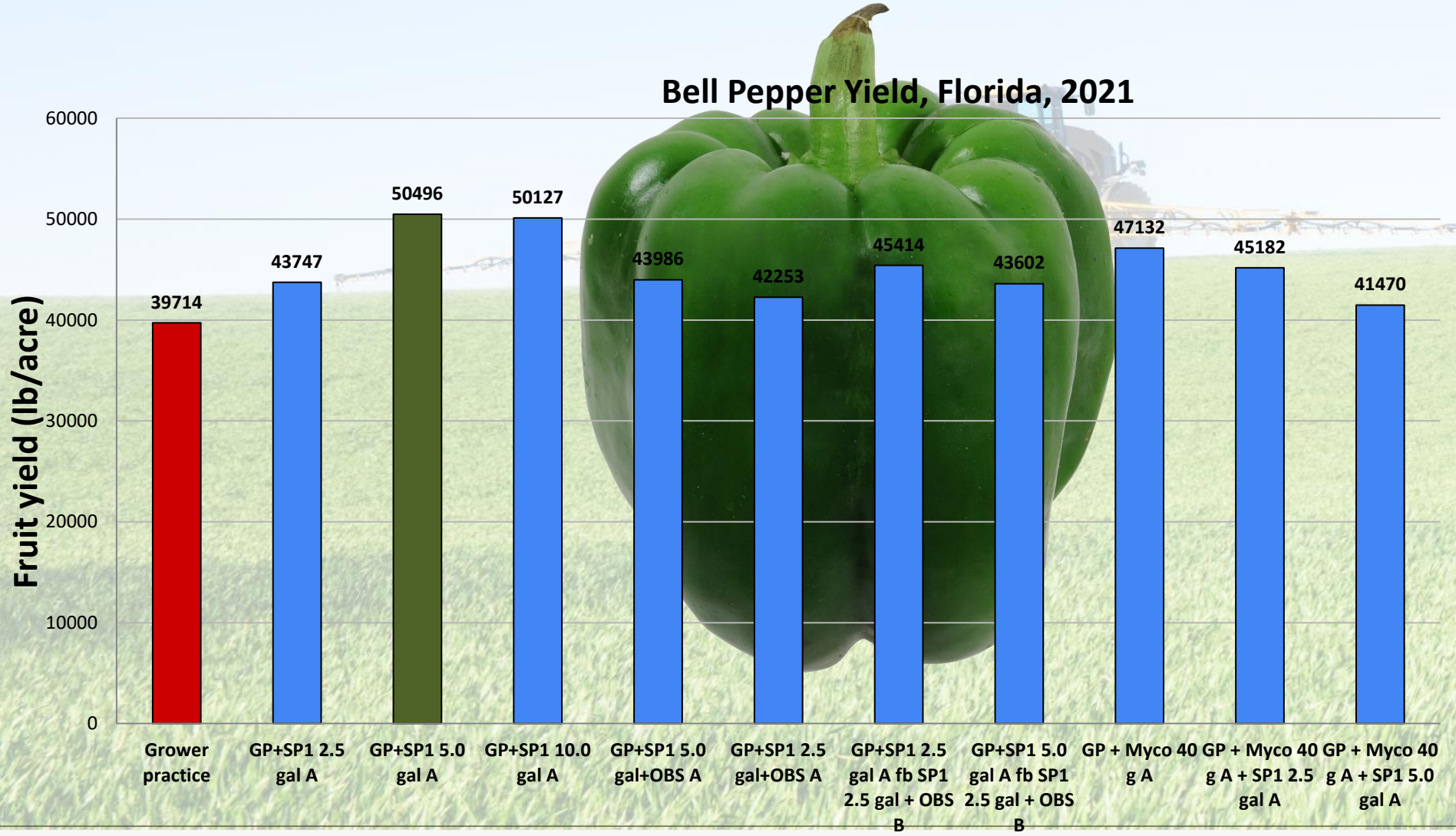




Aerial imagery – Tomato CA

SP-1 Classic®

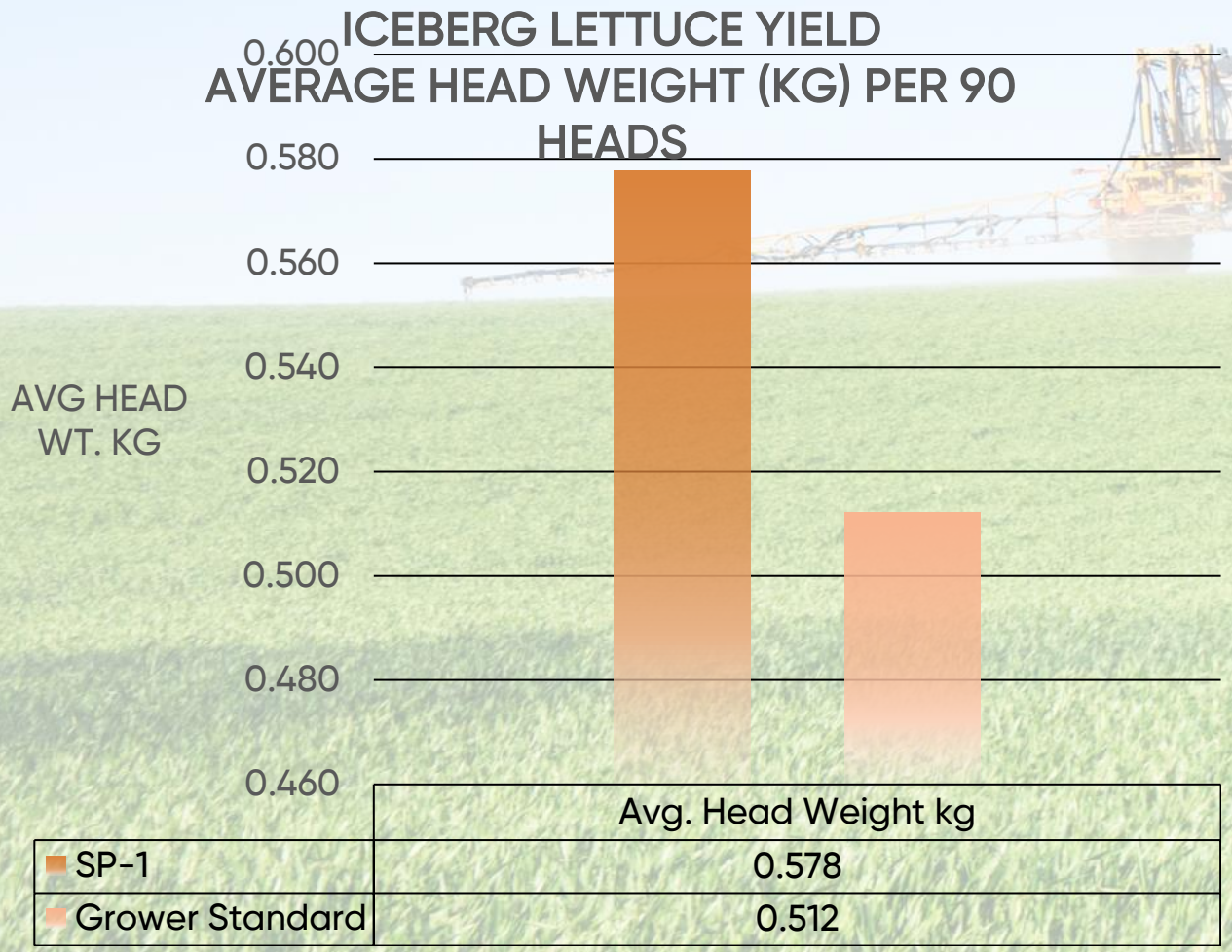
Pepper Trial & Results



SP-1 @ 5 GPA exhibited the best performance, showing a 27% increase in yield over the grower practice

SP-1 Classic®

Iceberg Lettuce Trial

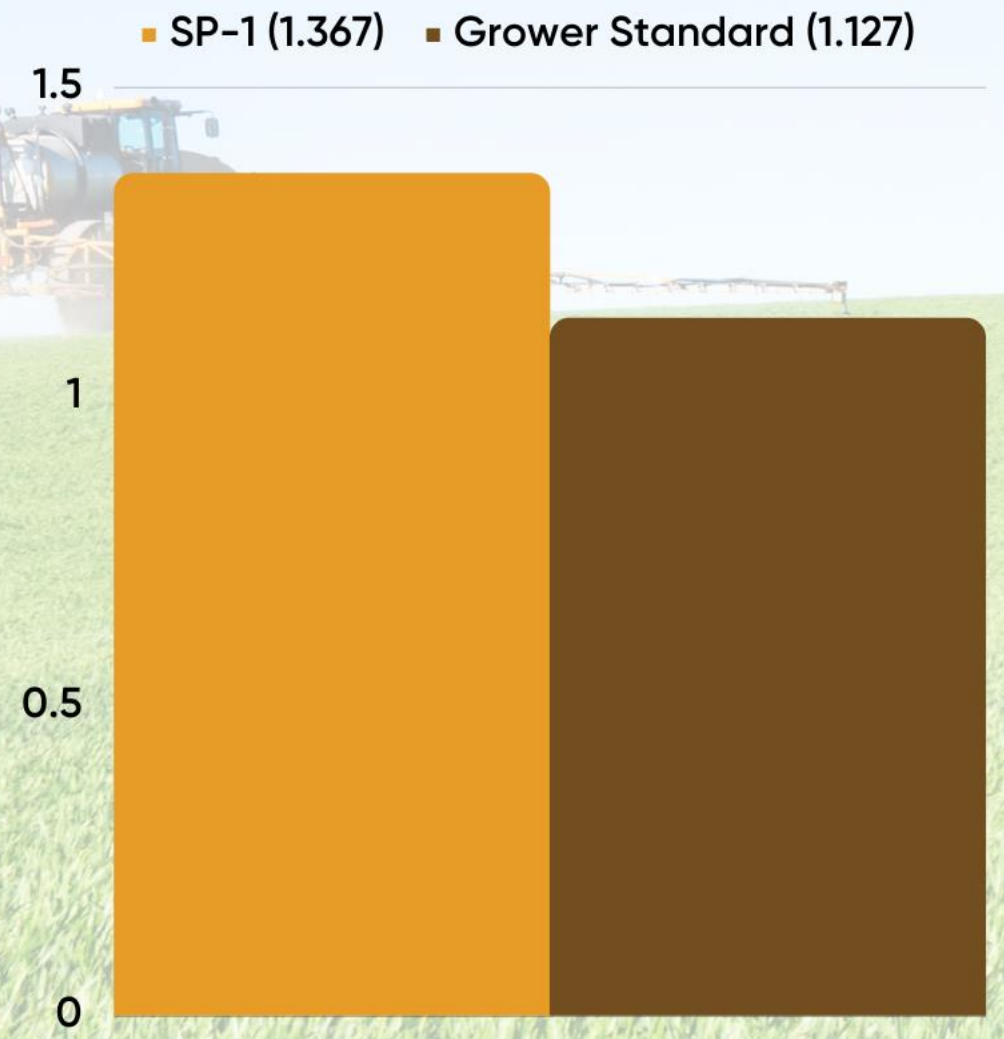


- Average head weight (kg) in the SP-1 treated portion of the field was 0.578 kg
- SP-1 treated area was **13% higher** than the average head weight (kg) in the grower standard at 0.512 kg.

SP-1 Classic®

Celery Trial 2022

Celery Yield
Average Stalk Weight (kg) per 90 Stalks



SP-1 Classic®

Blueberry Trial & Results

Cooperator: Alan Schreiber
Treatments: 3
Design: Randomized Complete Block Design (RCBD) with 4 replications per treatment. 10 bushes per plot
Plot size: 30 feet by 10 feet
Application: Irrigation injection
Agronomic practices: Standard regular irrigation, crop protection, and fertility practices.

	7/21/2022 Marketable yield tons/a	7/28/2022 Marketable yield tons/a	8/4/2022 Marketable yield tons/a	
1 **Untreated Check**	5.42	5.49	2.28	-
2 **SP-1 2gpa**	6.29	5.62	2.08	-
3 **SP-1 4gpa**	7.74	5.08	2.79	-
LSD P=.10	1.497	1.42	0.516	
Standard Deviation[38]	2.123	2.014	0.732	
CV	32.74	37.32	30.68	
Grand Mean	6.483	5.397	2.386	

Eltopia, WA

SP-1 Classic®

Seeing is Believing: Wheat Trials – Spring 2023

SP-1 Classic® + Herbicide

Herbicide Only

SP-1 Classic®

Seeing is Believing – Cotton & Cabbage

Cotton – Millwood, GA

Control | SP-1 Classic®

Cabbage – Clewiston, FL

SP-1 Classic® | Control

SP-1 Classic®

Seeing is Believing – Pistachios

SP-1 Classic – 3 Gallons injected
one Application June 13th

Grower Standard Program

The SP1 Classic treatment had 12-18” of shoot growth, while the Grower standard exhibited 6-8” shoot growth.

SP-1 Classic®
Foliar

SP-1 Classic Foliar Applications

LESSENS ABIOTIC STRESS

- HEAT
- DROUGHT
- SALINITY

FOCUSES PLANT ENERGY ON GROWTH

IMPROVES WATER USE EFFICIENCY

While SP-1 is not a PGR, the ingredients within SP-1 work together to produce Phytohormones such as Auxins, Gibberellins, Cytokinins & ACC-deaminase that are known to lessen abiotic stress allowing the plant to focus its energy on growth.

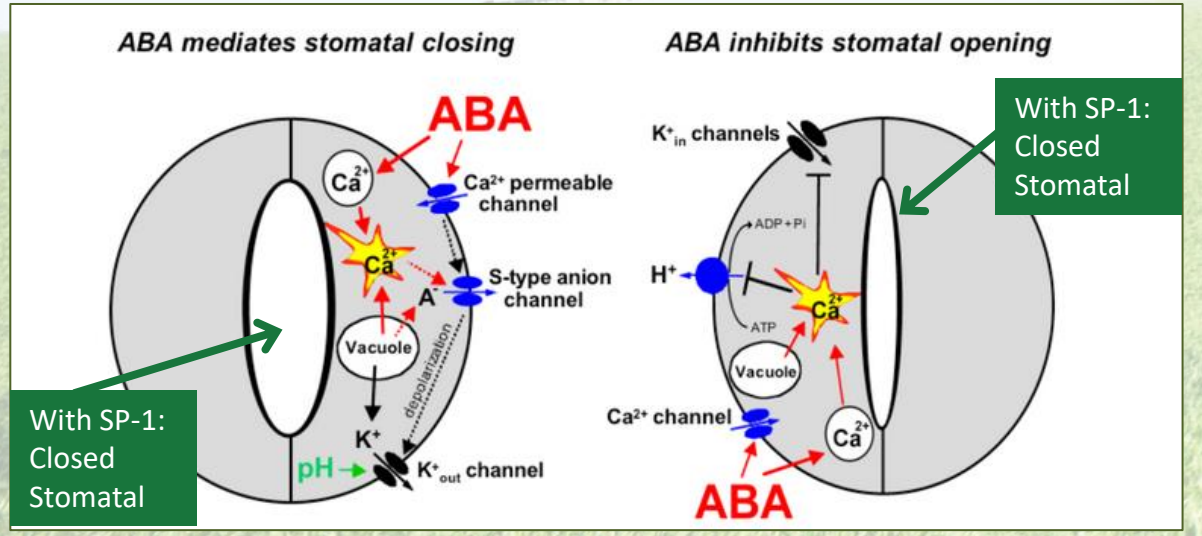
- Easy-to-use, tank-mix friendly liquid formulation seamlessly integrates into broad acre, foliar application practices.
- Produces phytohormones such as Auxins, Gibberellins & Cytokinins, & ACC-deaminase that are known to lessen Abiotic stresses such as Salinity, Heat, and Drought.
- Encourages healthier plant and faster recovery from herbicide applications and ensures optimum nutrient uptake during grain fill.
- Ideal tank mix partner with post herbicide, broadly compatible with adjuvants.
- For best results add SP-1 to tank mix first.

SP-1 Classic®
Foliar

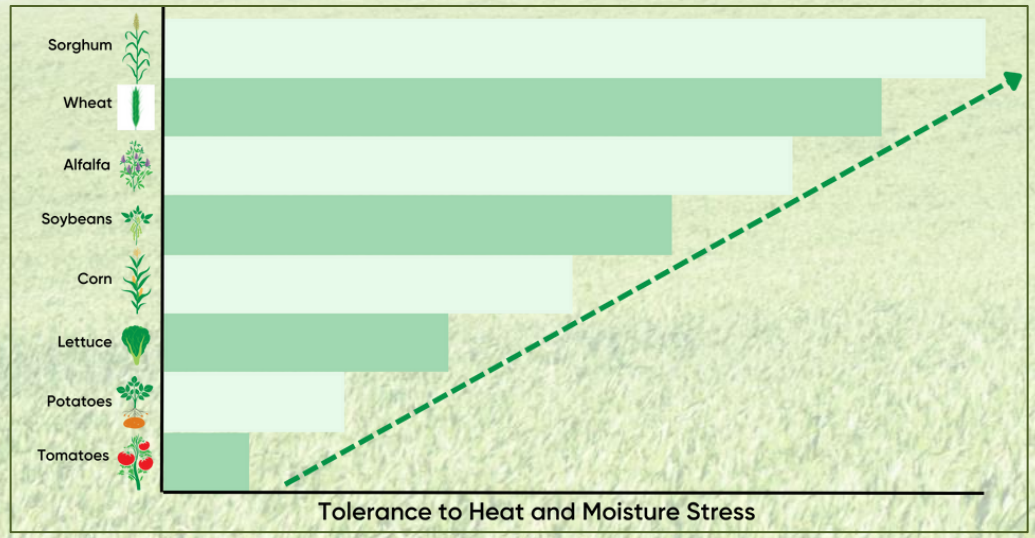
SP-1 Primes the Plant to Combat Abiotic Stress

- When plants are under stress, they produce ethylene which speeds up maturity and when left unchecked can result in premature death.
- SP-1 Classic contains microorganisms that produce phytohormones and enzymes such as ABA and ACC-deaminase known to directly inhibit ethylene production.
- In addition, ABA inhibits the opening of the stomatal giving the plant the ability to conserve water under stressful conditions.

- The microorganisms in SP-1 Classic hit several pathways that increase Osmolytes which enhance the plants potential to preserve water without hampering the normal metabolism under drought, heat and salinity stress.
- In addition, osmolytes protect the plant from oxidative damage by inhibiting the production of Reactive Oxygen Species (ROS) while conserving the cellular functions of the plant under abiotic stress.



Masera, P., Leonhardt, N., Schroeder, J. (2008). The Clickable Guard Cell: Electronically linked Model of Guard Cell Signal Transduction Pathways. University of California, San Diego



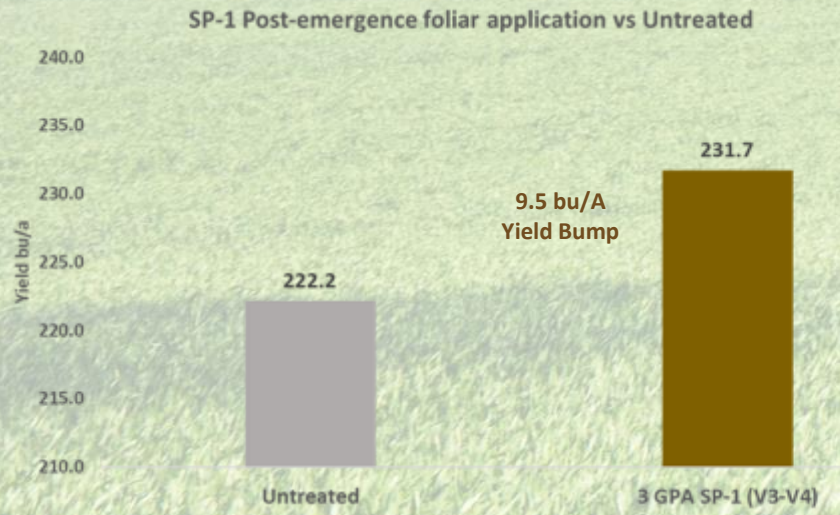
- Osmolytes are naturally found in plants to varying degrees with crops like sorghum having a very high level of osmolytes while tomatoes are on the other end of the spectrum.
- SP-1 Classic helps bridge the gap on crops with lower levels of osmolytes such as Potatoes, Corn and Soybeans.

SP-1 Classic®
Foliar

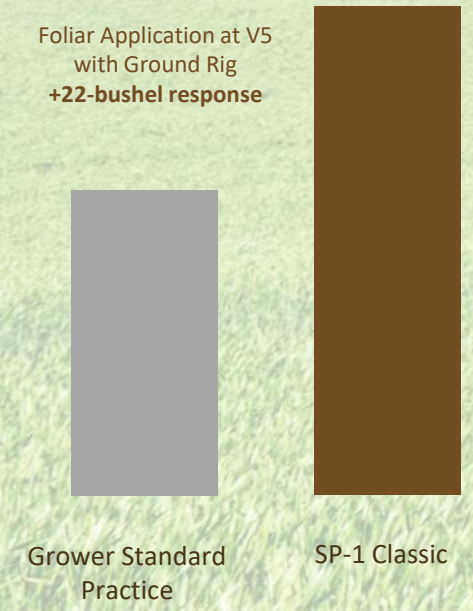
Foliar Application Results

While SP-1 is not a PGR, the ingredients within SP-1 work together to produce Phytohormones such as Auxins, Gibberellins & Cytokinins that are known to:

- Lessen Abiotic Stress
- Focus Plants Energy on Growth
- Improve Water Use Efficiency



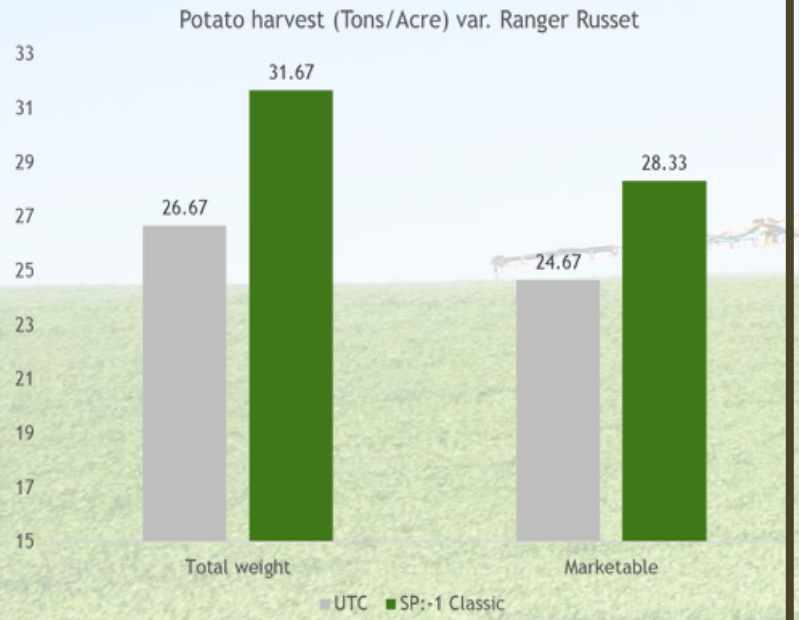
The Foliar treatment of SP-1 @ 3GPA showed a statistically significant increase in yield over the check



SP-1 Classic®
Foliar

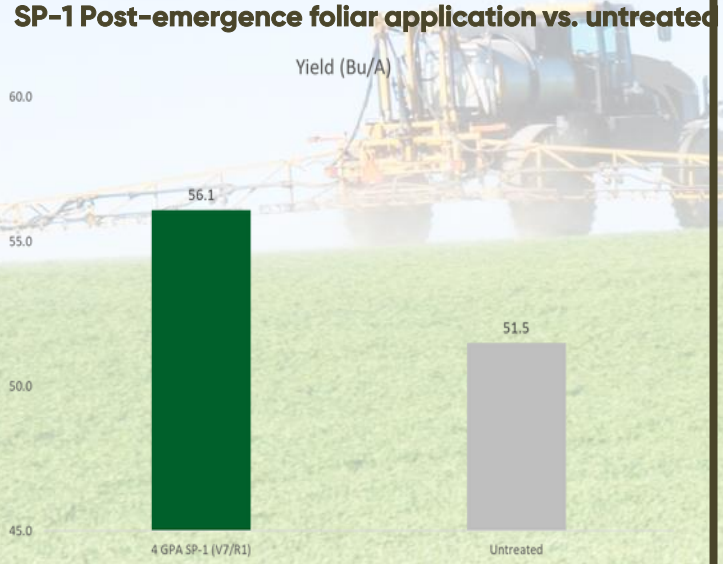
Foliar Application Results

Potatoes



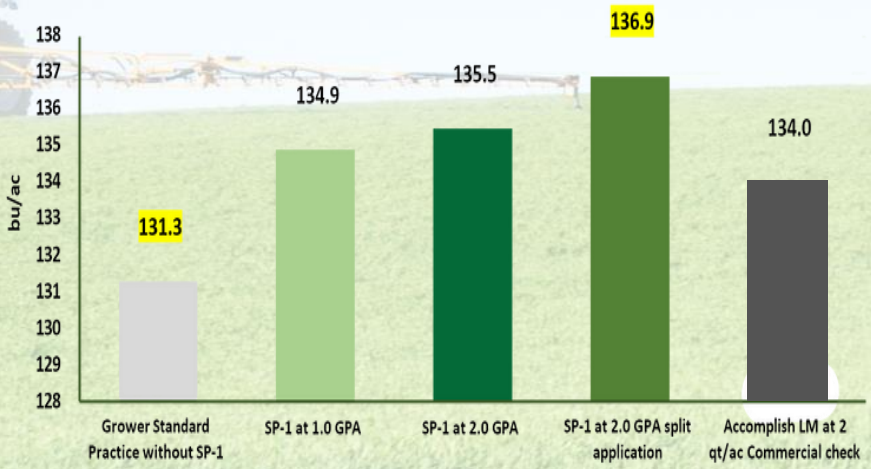
- When used as a foliar, SP-1 increased total tonnage by 5 tons or an 18.7% Increase over the check.
- Marketable potatoes increased by 3.7 Tons/Acre or 14.8% more marketable potatoes by integrating SP-1 Classic as a foliar application.

Soybeans:



- When used as a foliar, SP-1 by 9% or 4.6 bu/A in Soybeans

Wheat:



Rosalia, WA trial site - 2022

- SP-1 treatments outperformed the Grower standard as well as well as the Accomplish treatment.
- SP-1 @ 2GPA with a split application performed the best outyielding the Grower standard by 5.6 bu/A.

What it is and How it Works

Trial Data

Label & Use

SP-1 Classic®

Label and Use Instructions

PRODUCT DESCRIPTION

A biofertilizer designed to aid in the conversion of inorganic and organic fertilizers into plant available forms, decreases soil compaction and improves water infiltration in soils. Application of TerraTrove™ SP-1 Classic™ increases microbial populations in the rhizosphere.

MIXING AND APPLICATION

Shake well before using. Tank mix TerraTrove™ SP-1 Classic™ according to the directions in the table below. Mix only enough for the immediate application. Do not mix product with bactericides or copper compounds. Only mix TerraTrove™ SP-1 Classic™ with other products the day of use.

Organic Grower Considerations:

This product is intended for use according to an approved organic system plan. Consult your organic certifier before using this product.

CROP APPLICATION RECOMMENDATIONS

Crop	Rate per application	Directions
Berries	2 – 10 gal per acre 18.7 L – 93.6 L per ha	Apply at planting or at Spring bud break. Use higher rates if broadcast applied. Apply prior to harvest, and post-harvest.
Root Vegetables	2 – 10 gal per acre 18.7 L – 93.6 L per ha	Apply at planting. User higher rates if broadcast before bedding or after planting. Secondary (optional) applications every 7 to 30 days following planting up to 21 days before harvest. Use lower rates if banded or injected through irrigation, higher rates if broadcast.
Citrus	2 – 4 gal per acre 18.7 L – 37.4 L per ha	Apply at planting. Apply in conjunction with growth flushes, especially the Spring and Fall growth flush.
Cole Crops	2 – 10 gal per acre 18.7 L – 93.6 L per ha	Apply at planting. Use higher rates if broadcast before bedding or after planting. Secondary (optional) applications every 7 to 30 days following planting up to 21 days before harvest. Use lower rates if banded or injected through irrigation, higher rates if broadcast.
Corn	1.5 – 7 gal per acre 14 L – 65.5 L per ha	Apply in furrow or alongside seed at planting. Apply high rates if broadcast applied directly before or after planting. Apply at sidedress with lower rates if also applied during planting. May be applied with post emergent herbicides.
Cucurbits	2 – 10 gal per acre 18.7 L – 93.6 L per ha	Apply at planting. Use higher rates if broadcast before bedding or after planting. Secondary (optional) applications every 7 to 30 days following planting up to 21 days before harvest. Use lower rates if banded or injected through irrigation, higher rates if broadcast.
Small Grains	1 – 5 gal per acre 9.36 L – 46.8 L per ha	Apply before, during, or just after planting. Can be applied during Spring bud break of Fall planted grains. May be applied with post emergent herbicides.

SP-1 Classic®

Label and Use Instructions

Soybeans	1.5 – 7 gal per acre 14 L – 65.5 L per ha	Apply in furrow or alongside seed at planting. Apply high rates if broadcast applied just prior or just after planting. Apply at sidedress. Use lower rates if also applied at planting. May be applied with post emergent herbicides.
Fruiting vegetables	2 – 10 gal per acre 18.7 L – 93.6 L per ha	Apply at planting. Use higher rates if broadcast before bedding or after planting. Secondary (optional) applications every 7 to 30 days following planting up to 21 days before harvest. Use lower rates if banded or injected through irrigation, higher rates if broadcast.
Grapes	2 – 5 gal per acre 18.7 L – 46.8 L per ha	Apply at bud break. Repeat every 7-30 days until dormancy.
Grasses (grown for seed, sod production, pasture, forage) and Alfalfa	1 – 3 gal per acre 9.36 L – 28 L per ha	Apply at bud break. Apply after each harvest.
Perennial Herbs and Spices	2 – 10 gal per acre 18.7 L – 93.6 L per ha	Apply at planting. Use higher rates if broadcast before bedding or after planting. Secondary (optional) applications every 7 to 30 days following planting up to 21 days before harvest. Use lower rates if banded or injected through irrigation, higher rates if broadcast.
Leafy Annual Vegetables and Herbs	2 – 10 gal per acre 18.7 L – 93.6 L per ha	Apply at planting. Use higher rates if broadcast before bedding or after planting. Secondary (optional) applications every 7 to 30 days following planting up to 21 days before harvest. Use lower rates if banded or injected through irrigations, higher rates if broadcast.
Potatoes	2 – 10 gal per acre 18.7 L – 93.6 L per ha	Apply in furrow at planting. Use higher rates if broadcast before hilling or after planting. May be applied during hooking and early bulking.
Tree Fruits and Nuts	2 – 5 gal per acre 18.7 L – 46.8 L per ha	Apply at bud break. Repeat every 7-30 days until dormancy.
Tropical/Sub-tropical Fruits	2 – 5 gal per acre 18.7 L – 46.8 L per ha	Apply at planting. Apply in conjunction with growth flushes. Especially the Spring and Fall growth flush.

AGRICULTURAL GREENHOUSE PROPOGATION RATES		
Greenhouse plants, Injection systems	1 pint to 1 quart per 1,000 ft². Initial plug planting or seeding: 32 – 64 fl. oz. per gallon stock tank at 1:100. Constant feed, 4 – 8 fl. oz. per gallon stock tank at 1:100. Metric: Initial plug planting or seeding, 1 – 2 L per 3.78 L stock tank at 1:100. Constant feed, mix 60 – 120 ml per 3.78 L stock tank at 1:100	Drench or spray at appropriate rates to insure proper soil penetration.
Seed Piece or Bulb Treatment	Mix 1:1 with water and spray the seed piece or bulb	
Root Dip Application	Mix 1:1 with water and thoroughly soak roots prior to transplant.	

STORAGE & DISPOSAL

Storage: TerraTrove™ SP-1 Classic™ should be stored in original container, away from heat and direct sunlight. Preferably store in cool areas out of direct sunlight, away from children and pets, feed, and food products. **DO NOT ALLOW TO FREEZE**. Do not contaminate water, food, or feed by storage, disposal, or cleaning of equipment.

Disposal: Do not reuse this container. Rinse with water and add rinsate to spray tank, then offer container for recycling or by reconditioning, or puncture and dispose of in a sanitary landfill or incineration, or if allowed by state and local authorities, by burning. If burned, stay out of smoke.

Expiration Date: product guaranteed effective up to 1 year after date stamped on container.

FIRST AID

Eye Contact: Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids. Consult a physician. **Skin Contact:** Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. If skin irritation occurs: Get medical advice/attention. **Inhalation:** Remove exposed individual(s) to fresh air for 20 minutes. Consult a physician/poison center if individual's condition declines or if symptoms persist. **Ingestion:** Rinse mouth. Do NOT induce vomiting. Drink 1 or 2 glasses of water. Never give anything by mouth to an unconscious person. Get medical attention if symptoms occur.

CONDITION OF SALE AND WARRANTY

DPH Biologicals warrants that the product conforms to its chemical description and is reasonably fit for the purpose stated on the label only when used in accordance with label directions under normal conditions of use. Handling, storage and use of the product by Buyer or User are beyond the control of DPH Biologicals and Seller. Risks such as crop injury or other unintended consequences resulting form, but not limited to, weather or soil conditions, presence of other materials, disease, pests, drift to other crops or property, or failure to follow label directions will be assumed by Buyer or User. IN NO CASE WILL DPH BIOLOGICALS OR SELLER BE HELD LIABLE FOR CONSEQUENTIAL, SPECIAL, OR INDIRECT DAMAGES RESULTING FROM THE HANDLING, STORAGE OR USE OF THIS PRODUCT.

TerraTrove and SP-1 Classic are registered trademarks of DPH Biologicals

Application Methods

SP-1 Classic is tank mix friendly with most Crop Protection and Nutrition products. This versatile solution integrates seamlessly into your current operations whether it be:

- **In-furrow or 2X2**
- **Broadcast**
- **Foliar**
- **Fertigation**
- **Aerial**
- **Drip Tape**

Consult the label and your sales representative for more specific recommendations and proper application rates.

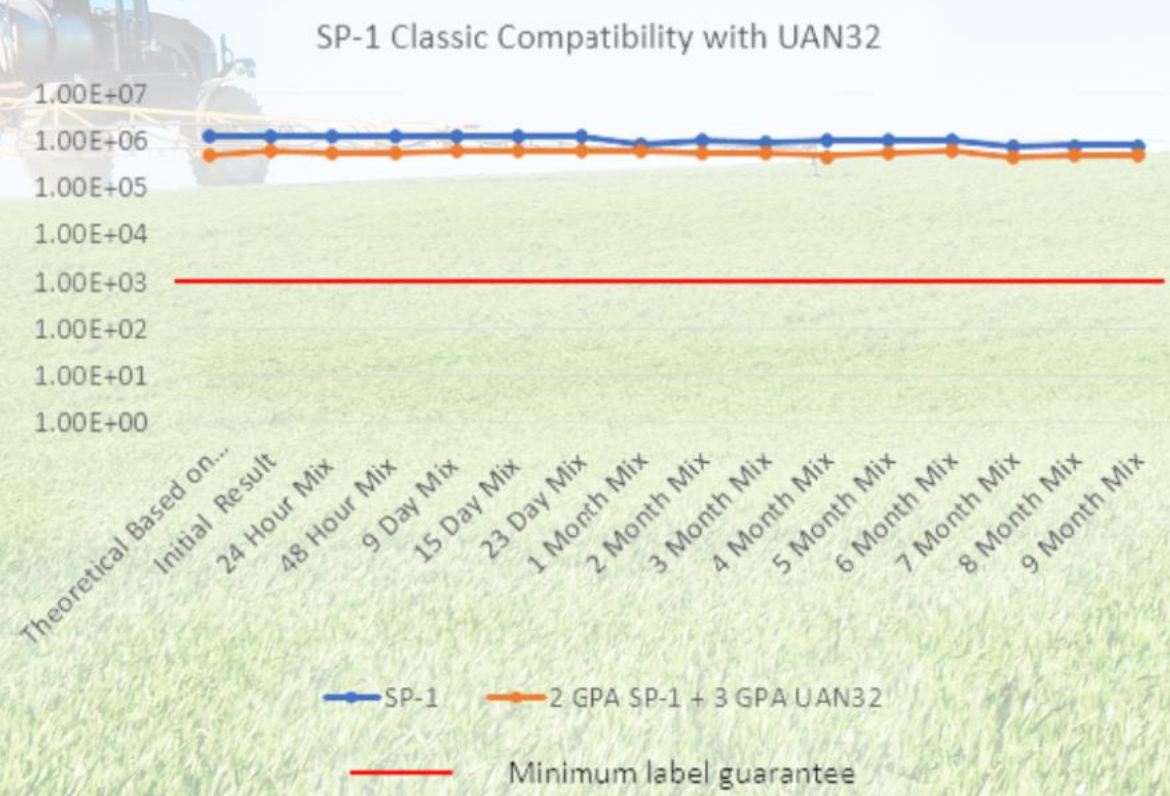
Organic Grower Considerations:

SP-1 Classic is OMRI listed for organic production.

SP-1 Classic®

Fertilizer Compatibility

SP-1 Seamlessly fits into fertility programs without any special precautions or additional steps needed. Studies have shown that SP-1 when combined with Fertilizer will remain viable for over one year in the tank without a statistical decline in CFU counts.



DPH Biologicals™

TerraTrove® SP-1 Classsic®

POWERZED BY RegenAphex™ TECHNOLOGY PLATFORM

THE COMPLETE BIOFERTILIZER

DPH Biologicals™

TerraTrove® Residuce®

ACCELERATE YOUR RESIDUE BREAKDOWN.

- **What it is and How it Works**
- Performance & Compatibility
- Label & Use

CROP RESIDUE BREAKDOWN

IMPROVED SOIL HEALTH

ENHANCE NUTRIENTS AVAILBILITY

ENCHANCED MICROBIAL ACTIVITY

CONVERT CARBON INTO NUTRIENTS

Terra Trove™ Residuce® Complete

Best in Class Delivery System

that keeps the biology alive and sticks it to the crop residue.

To facilitate crop residue breakdown and make fertilizer uptake more efficient, growers turn to TerraTrove™ Residuce® Complete, a diverse blend of naturally-occurring, nutrient-cycling fungal and bacterial microorganisms. This all-in-one solution includes fulvic acid and a food source, recycling and repurposing unprofitable carbon

DPH Biologicals

The Breakdown

Phanaerochaete chrcysosporium

beneficial naturally occurring fungus capable of organic breakdown of the lignin (woody plant parts) of crop residue.

Bacillus Spp

(bacteria) species that accelerate crop residue cellulose breakdown through the production of the enzyme cellulase.

Trichoderma Harzianum

is a major producer of enzyme cellulase. Cellulases are enzymes that are responsible for breakdown of challenging crop residue components

Fulvic Acid

stimulates microbial activity, assisting in the transferring of micronutrients in the soil to the plant, and can improve the breakdown of plant residue.

Residuce® is a diverse blend of naturally-occurring, nutrient-cycling microorganisms plus a food source. These organisms were specially chosen to help break down plant residue such as crop stubble, leaves, and composts.

- Residuce is used to accelerate the decomposition of recalcitrant organic materials that have a high C:N ratio such as cornstalks, wheat straw, and lawn thatch.
- Accelerating the breakdown of bulk carbon promotes rapid aggregation of soils which increases root penetration and exploration and increased levels of nutrients in the soil solution and can result in reduced fertilizer use without sacrificing yield
- The increased soil aggregation results in better performance by bio-fertilizers and bio-pesticides such as SP-1 and Companion
- By breaking down crop residue, Residuce enables improved plantability, standability & overall crop establishment.

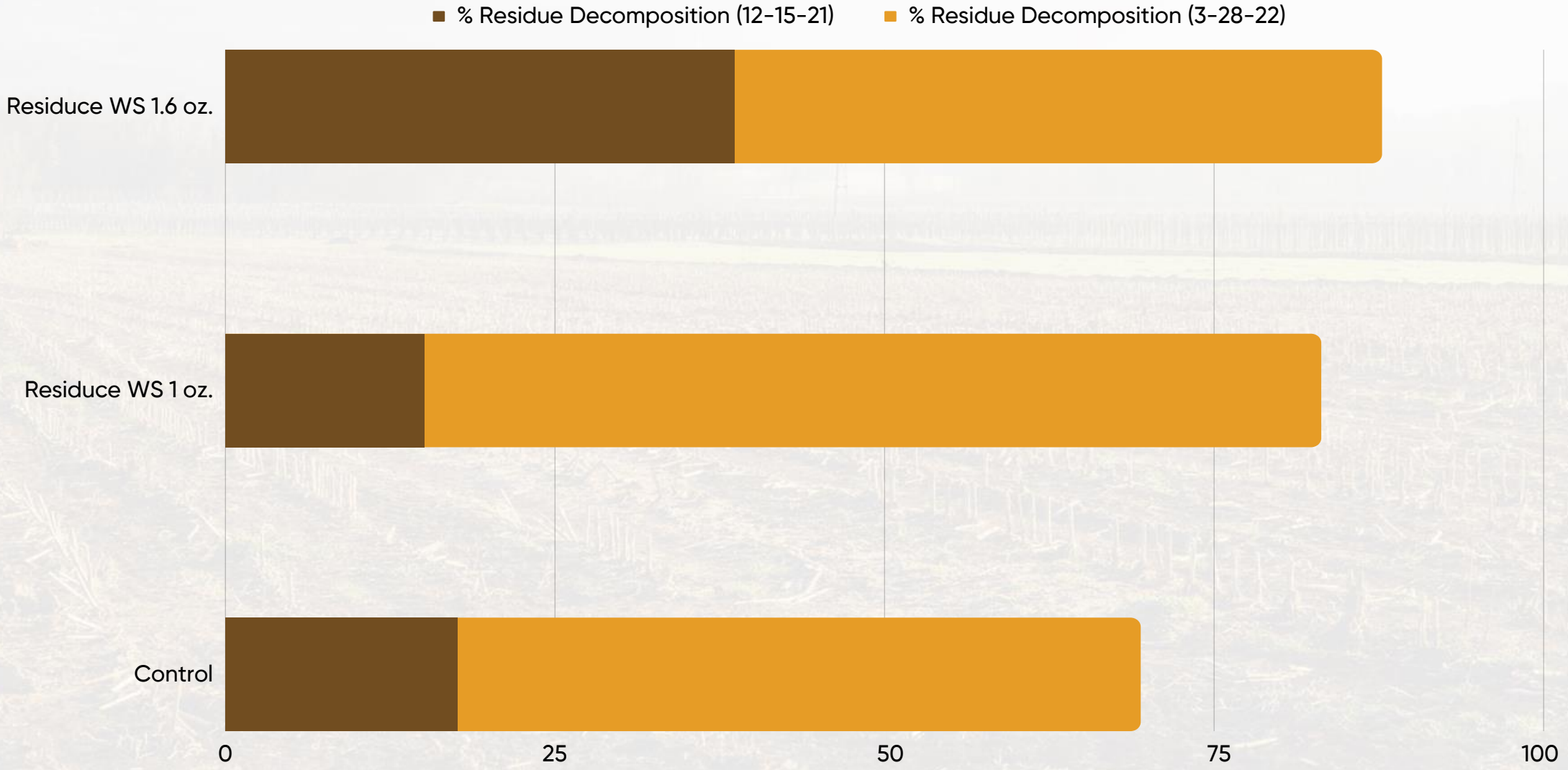
Providing Season Long Performance & Extended Nutrient Release

DPH Biologicals™

- What it is and How it Works
- **Performance & Compatibility**
- Label & Use

Residuce®

Small Plot Internal Results 2022



Residuce®

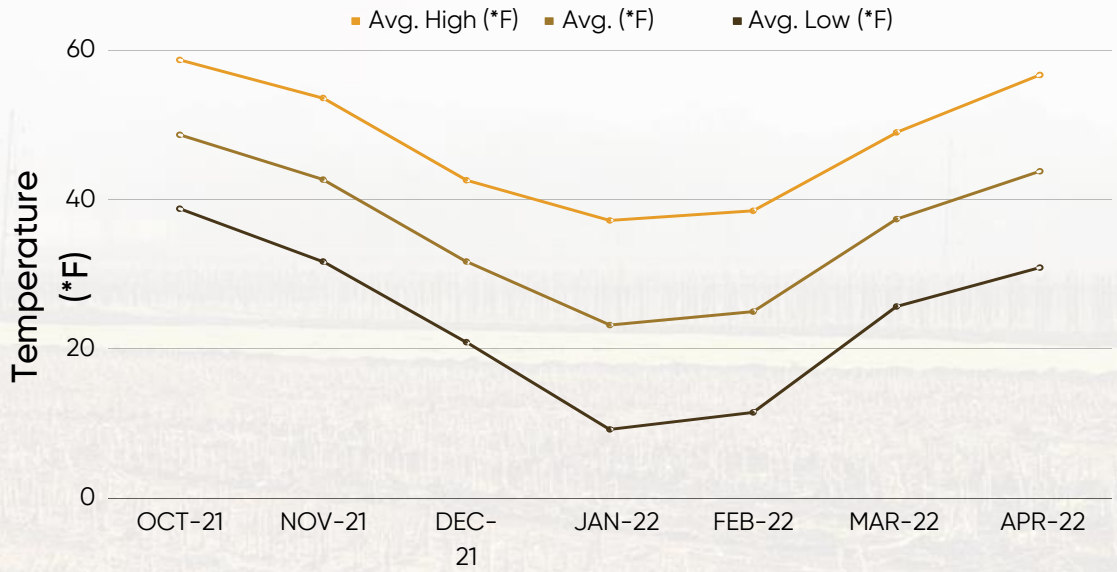
2021-2022 Residue Study

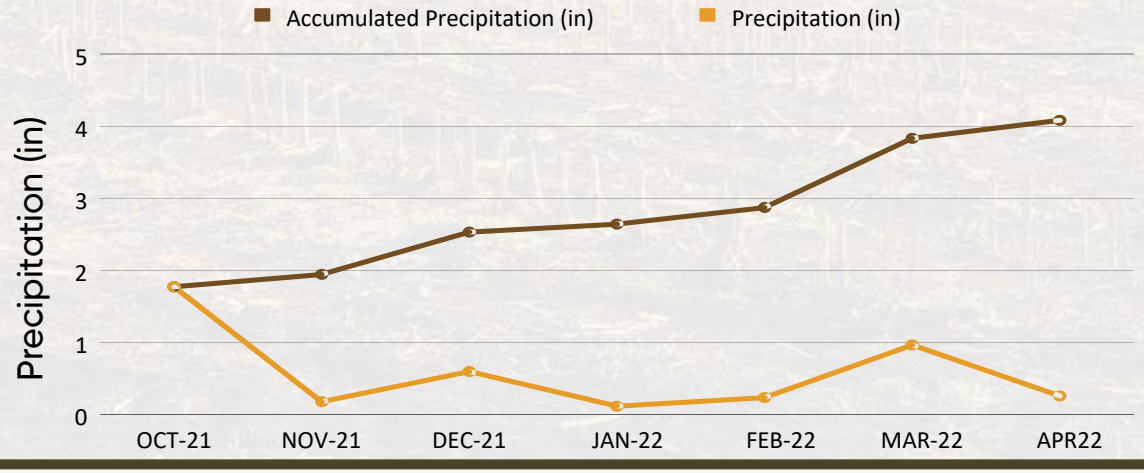
Objective:

Evaluate the effectiveness of a residue digester in accelerating the decomposition of cornstalks over fall, winter, and spring.

Summary Protocol

- Season: Winter, 2021/2022
- Location: Nebraska
- Treatments: Three
- T1 Untreated Check
- T2 Residuce®
- T3 Residuce® + MT17
- Replications: Four
- Trial Design: RCBD with four replications
- No-till production system
- Corn was harvested with a chopping corn head which cuts and spreads residue to facilitate breakdown





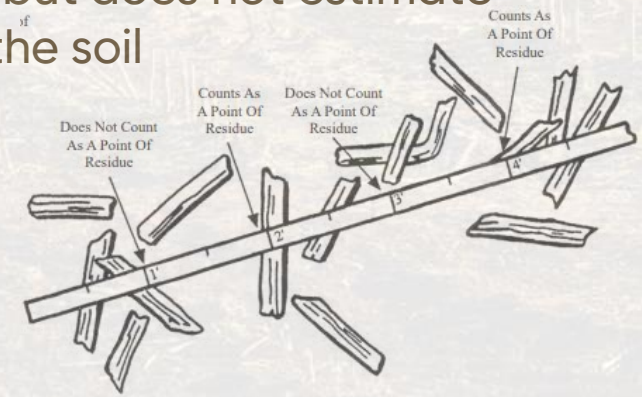
Residuce®

2021-2022 Residue Study

Terra Trove Residuce® Complete

Residue Study Process

- The line transect method has been proven effective in estimating the percent of the ground surface covered by plant residue at any time during the year
- 100-foot rope marked at 1-foot intervals
- Spread rope across field at angle to rows and count number of points that contact residue
- 100 points contacted - 100% coverage
- Only estimates ground coverage but does not estimate volume or height of residue over the soil



University of Nebraska Extension

Line Transect Method
T1, T2 & T3 were analyzed by LSD (0.05).
No difference in October.
T2 & T3 were significantly less than T1 in April.

Description	Post Harvest in October (%)	**Spring in April (%)**
Buffer	6	6.8
Check	94.9	88.9
Residuce®	93.5	**77.2 b**

DPH Biologicals

Residuce®

2021-2022 Residue Study

Untreated Check

Residuce®

2021-2022 Residue Study

Terra Trove Residuce® Complete

Untreated Check

Residuce®

DPH Biologicals

Residuce®

2022-2023 Residue Trial – Tolono, IL

Trial Details

- Tolono, IL
- 113 acre field
- Previous corn crop, no tillage or manual collection of stalks
- Residuce® Complete was applied at 12.8 fl. oz./acre
- Applied November 23, 2022 in water at 15 GPA using a 120' sprayer
- Plats are 480' wide by approx. 1,200' long
- Michigan State NPK calculator used to determine nutrient sink

Michigan State NKP Stover Calculator

- Studies show that residue contains 100 lbs. of N, 50 lbs. of P205, & 210 lbs. of K20 an acre on a 200-bushel corn crop
- Residuce® helps sink these nutrients into the soil making them available for uptake. Farmers can expect a 3:1 ROI with Residuce®.

Residuce®

Tolono Residue Trial

Additional Details

- Corn yield and biomass was high (>200 bu/A) in 2021
- Corn was harvested with a chopping corn head and distributed- surface coverage was greater than 90% after harvest in October 2021
- The winter season was dry with very little precipitation
- By April 15, there was reduced coverage due to wind movement and some degradation
- The lack of moisture over the winter probably reduced overall decomposition
- DPH treatments showed a significant reduction in coverage compared to the untreated check
- Splitting stalks showed more saprophytic fungal decomposition (black) in T2 and T3 compared to T1 which remained more white

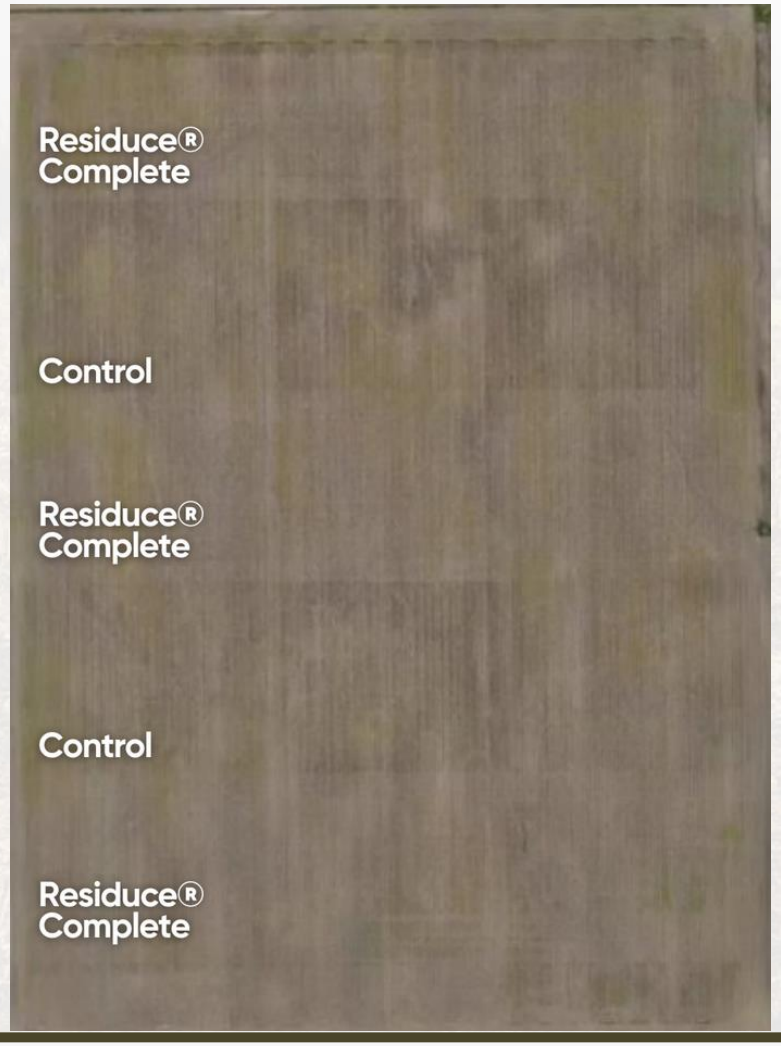
Residuce®

Tolono, IL Trial - Seeing is Believing

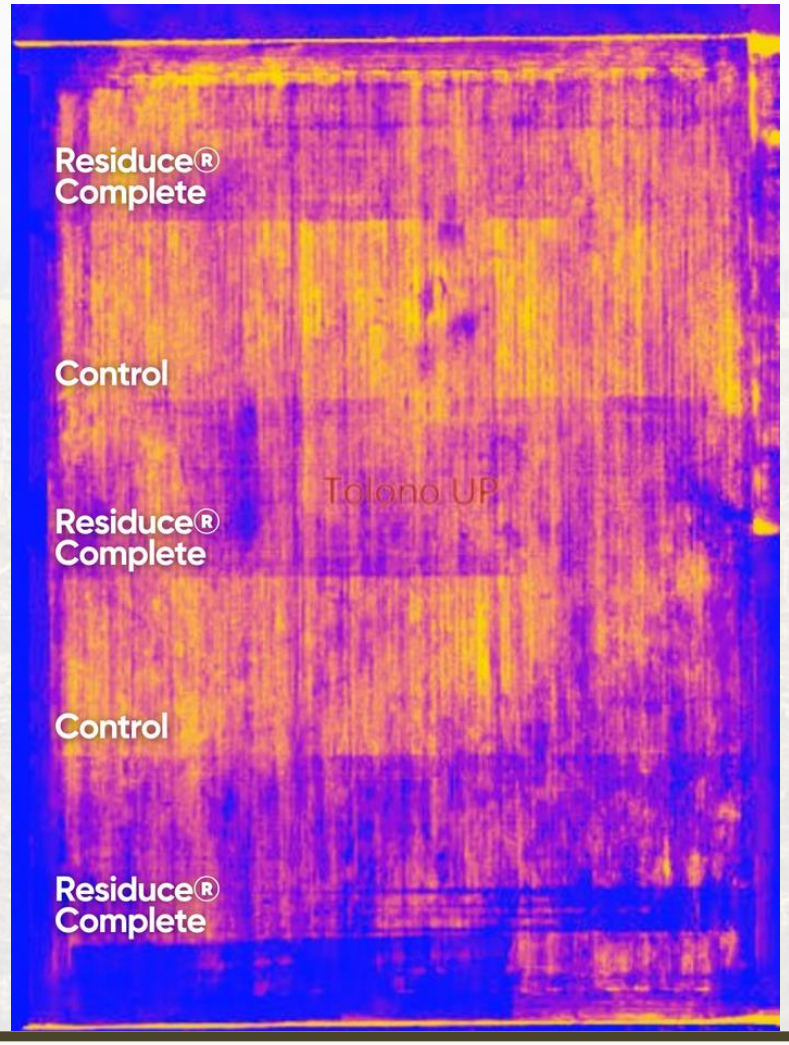
Terra Trove Residuce® Complete

The darker areas in the RGB = more corn stalks left out in the field.

RGB



NDVI



The darker images represent more bare soil as the NDVI for bare soil has an NDVI of around 0-0.1 while dried corn stalks have an NDVI of 0.4ish (lower value = closer to being bare soil).

aerial PLOT automated analytics for agriculture

DPH Biologicals

Residuce®

Tolono, IL Trial Results

Terra Trove® Residuce® Complete

19.7% accelerated degradation of stover which equates to:

NPK Released	Mkt. Price	Value Delivered/A
• 19.7 units of N released	$0.80 (32%UAN)	$15.76
• 9.85 units of P released*	$0.87 (MAP)	$8.60
• 41.37 units of K released	$0.52 (Potash)	$21.51

3:1 ROI to date

X2

$45.87 /A Total Value

Spring/Summer Extended Nutrient Release Estimate

X2 = $31.52

X2 = $17.20

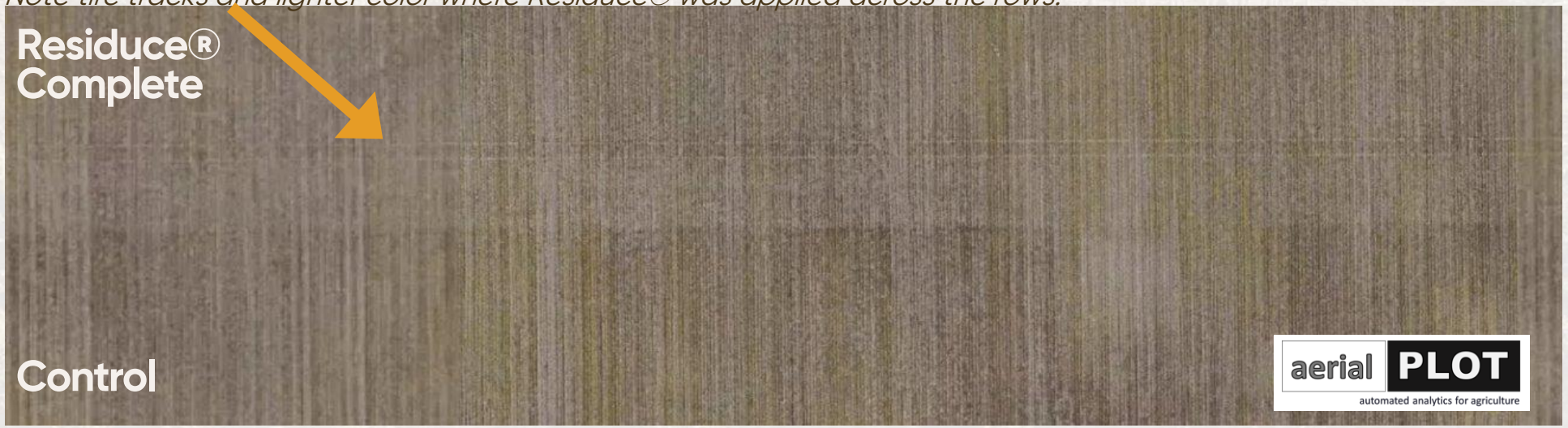
= $43.20

$91.92

Full Crop Season ROI Estimate

6:1 ROI Estimate

Note tire tracks and lighter color where Residuce® was applied across the rows.



DPH Biologicals™

* 3x more available than non-organic P

- What it is and How it Works
- Performance & Compatibility
- **Label & Use**

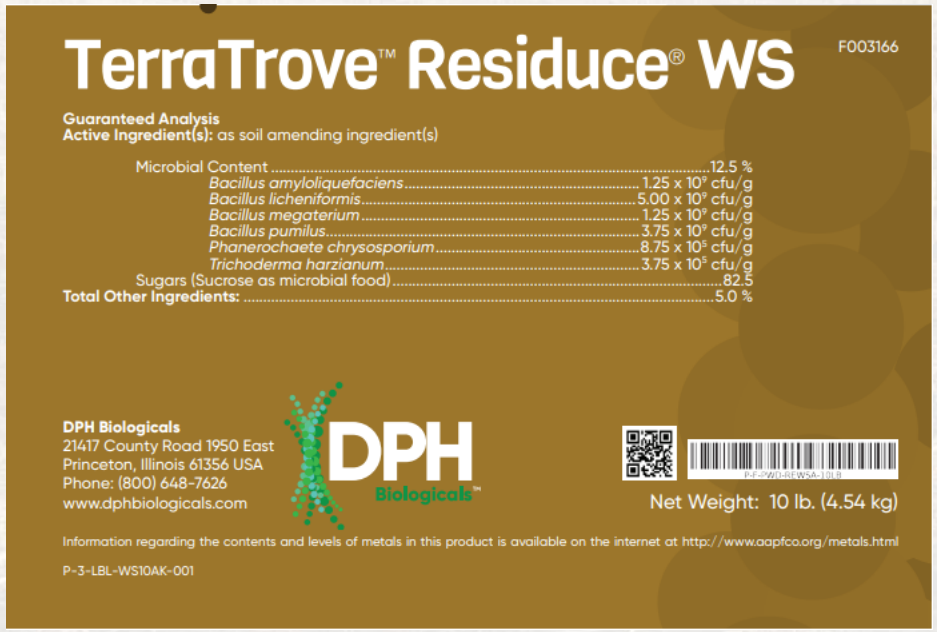
Residuce®

Available in Dry & Liquid Formulations

Terra Trove Residuce® Complete

Residuce is available as a dry in Residuce WS and a liquid as Residuce Complete

Terra Trove™ Residuce® WS



TerraTrove™ Residuce® WS F003166

Guaranteed Analysis
Active Ingredient(s): as soil amending ingredient(s)

Microbial Content	12.5 %
Bacillus amyloliquefaciens	1.25×10^9 cfu/g
Bacillus licheniformis	5.00×10^9 cfu/g
Bacillus megaterium	1.25×10^9 cfu/g
Bacillus pumilus	3.75×10^9 cfu/g
Phanerochaete chrysosporium	8.75×10^5 cfu/g
Trichoderma harzianum	3.75×10^5 cfu/g
Sugars (Sucrose as microbial food)	82.5
Total Other Ingredients:	5.0 %

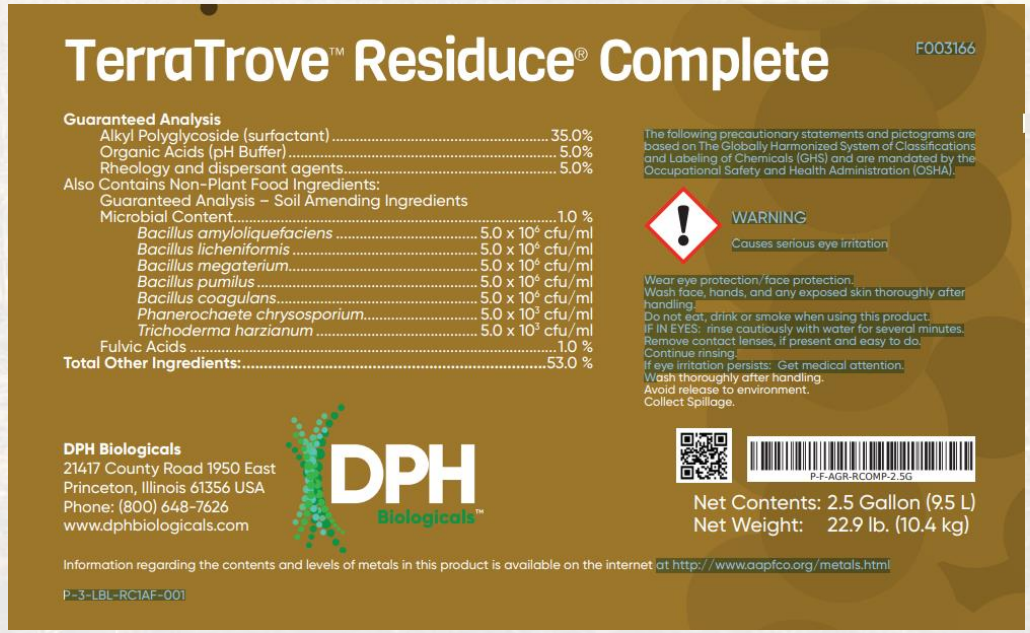
DPH Biologicals
21417 County Road 1950 East
Princeton, Illinois 61356 USA
Phone: (800) 648-7626
www.dphbiologicals.com

Net Weight: 10 lb. (4.54 kg)

Information regarding the contents and levels of metals in this product is available on the internet at http://www.aapfco.org/metals.html

P-3-LBL-WS10AK-001

Terra Trove™ Residuce® Complete



TerraTrove™ Residuce® Complete F003166

Guaranteed Analysis

Alkyl Polyglycoside (surfactant)	35.0%
Organic Acids (pH Buffer)	5.0%
Rheology and dispersant agents	5.0%
Also Contains Non-Plant Food Ingredients:	
Guaranteed Analysis – Soil Amending Ingredients	
Microbial Content	1.0 %
Bacillus amyloliquefaciens	5.0×10^6 cfu/ml
Bacillus licheniformis	5.0×10^6 cfu/ml
Bacillus megaterium	5.0×10^6 cfu/ml
Bacillus pumilus	5.0×10^6 cfu/ml
Bacillus coagulans	5.0×10^6 cfu/ml
Phanerochaete chrysosporium	5.0×10^3 cfu/ml
Trichoderma harzianum	5.0×10^3 cfu/ml
Fulvic Acids	1.0 %
Total Other Ingredients:	53.0 %

The following precautionary statements and pictograms are based on The Globally Harmonized System of Classifications and Labeling of Chemicals (GHS) and are mandated by the Occupational Safety and Health Administration (OSHA).

WARNING

Causes serious eye irritation

Wear eye protection/face protection.
Wash face, hands, and any exposed skin thoroughly after handling.
Do not eat, drink or smoke when using this product.
IF IN EYES: rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If eye irritation persists: Get medical attention.
Wash thoroughly after handling.
Avoid release to environment.
Collect Spillage.

DPH Biologicals
21417 County Road 1950 East
Princeton, Illinois 61356 USA
Phone: (800) 648-7626
www.dphbiologicals.com

Net Contents: 2.5 Gallon (9.5 L)
Net Weight: 22.9 lb. (10.4 kg)

Information regarding the contents and levels of metals in this product is available on the internet at http://www.aapfco.org/metals.html

P-3-LBL-RC1AF-001

OMRI LISTED For Organic Use

Application Methods

- Residuce® WS, w/Humic, & Complete is broadcast sprayed onto corn stalks, etc. and incorporated mechanically or with water.
- Applied after harvest; however, is best applied in Spring on land where wind erosion is a concern.
- Some crop residue disturbance is helpful to ensure good soil contact.

Product	Rate
Complete (liquid)	12.8 fl. oz/acre
WS (dry)	1.6 dry oz/acre

Terra Trove™

Myco Seed Treat®

What it is and How it Works

Performance & Compatibility

Label & Use

ENHANCED SEEDLING VIGOR & STAND

ENHANCES NUTRIENT UPTAKE

IMPROVED ROOT SYSTEM

IMPROVED STRESS TOLERANCE

Terra Trove™ Myco Seed Treat®

A comprehensive biological seed treatment that delivers a consortium of 7 different species of bacteria and fungi that surround the seed and quickly form symbiotic and mutualistic relationship with emerging roots creating a much more active rhizosphere to support crop development.

DPH Biologicals™

The Breakdown

MST includes seven different microbial species to ensure the right microbes are in the right place at the right time.

Microbial package includes beneficial bacteria & fungi including:
Mycorrhizae, Trichoderma, & a consortia of five different Bacillus Species!

Myco Seed Treat®, (MST), is a comprehensive biological seed treatment that delivers a consortium of 7 different species of bacteria and fungi that surround the seed and quickly form symbiotic and mutualistic relationship with emerging roots creating a much more active rhizosphere to support crop development.

- Microbes live symbiotically with the plant root and improve soil nutrient cycling.
- Mycorrhizal fungi extend the reach of the plant's roots for nutrient uptake.
- Boosts initial growth and works throughout the season to improve nutrient uptake, while colonizing existing root system.
- MST aids in abiotic stress resistance.
- The increased soil aggregation results in better performance by bio-fertilizers and bio-pesticides such as SP-1 and Companion

DPH Biologicals™

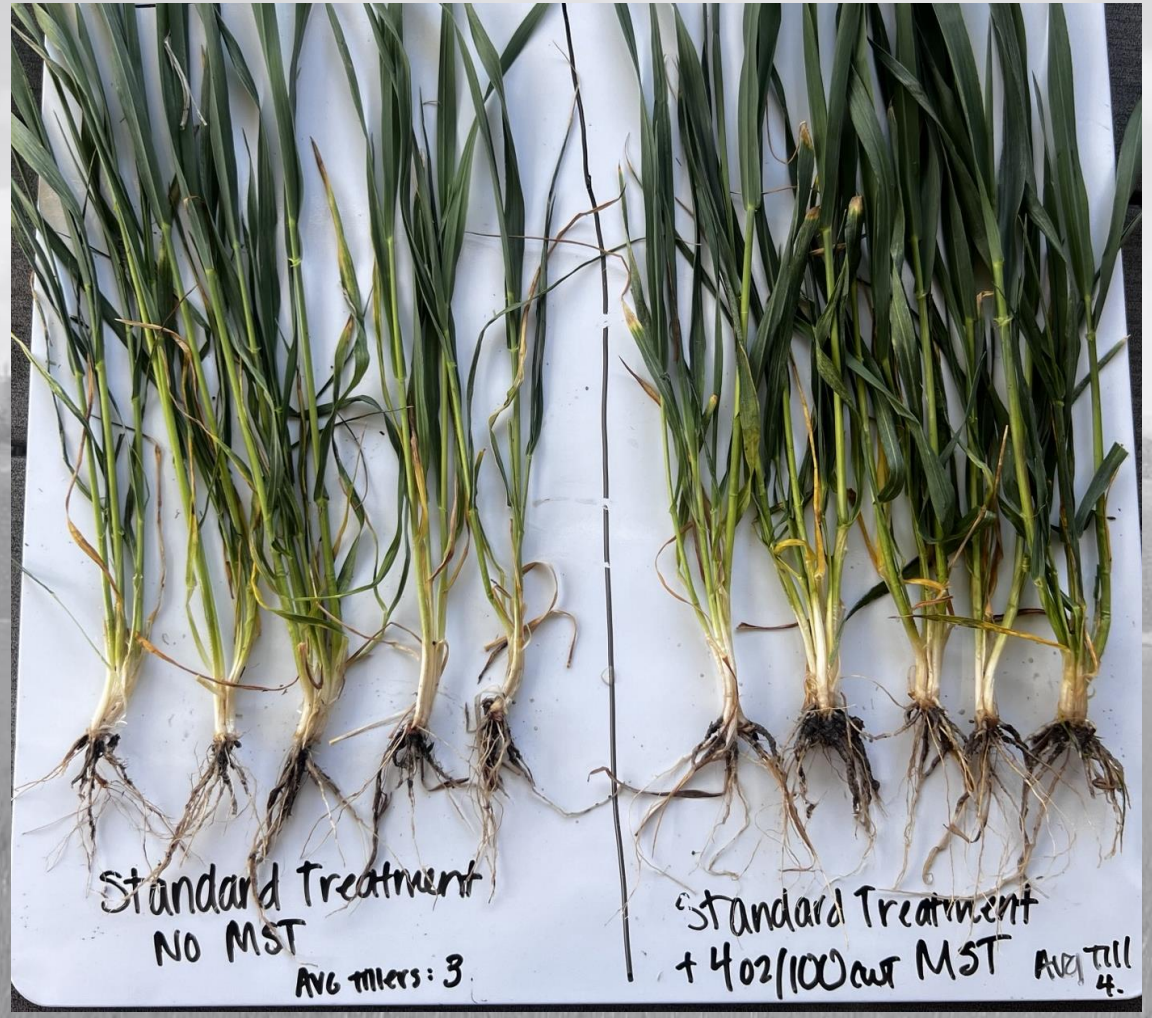
What it is and How it Works

Trial Data

Label & Use

MST

Ongoing Wheat Trial 2023



Central Kansas Grower Trial

- MST has more robust root structure
- Darker/Healthier Plant
- Will translate to higher yield

MST

Soybean Plot Results 202

Terra Trove Myco Seed Treat®

8% Yield Increase on Soybeans – W Illinois Soybean Research

8%
bu/A Yield Bump

W. Illinois U. Soybean Research

Organic Soybeans - 2 varities

- Untreated – 40.9 bu/A
- MST Treated – 44.1 bu/A (+3.2 bu)

DPH Biologicals™

MST

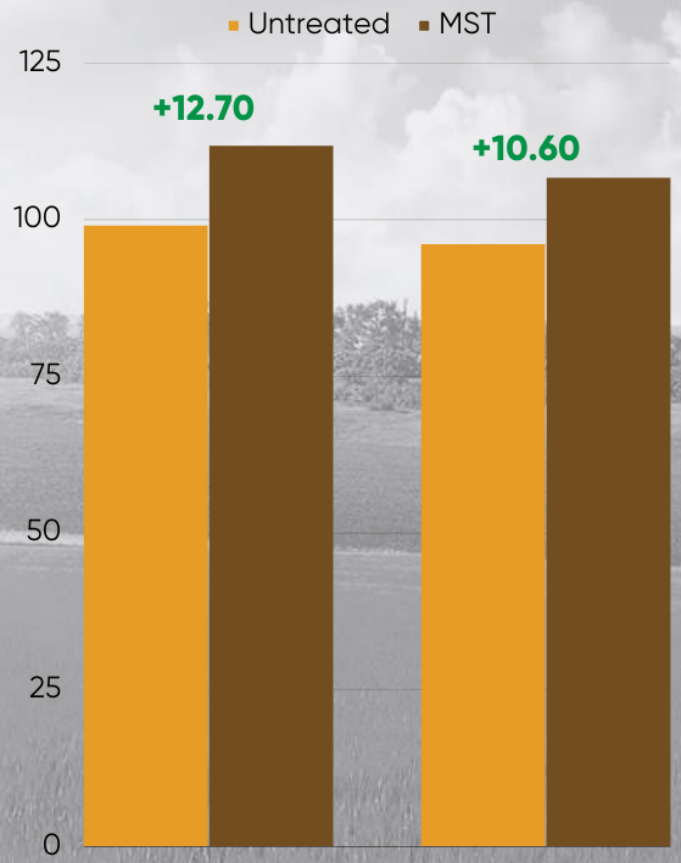
Corn Plot Results 2022

Terra Trove Myco Seed Treat®

Average Yield Increase of 11.6 bu/A on Corn over 6 Trials

11.6
bu/A Yield Bump

Tryon Group Research
Trial 07LF4C, Variety 108 RM Round Up Hybrid Seed Corn Trial, Madison, WI



Western Illinois University Research
Allison Organic Research Farm
Corn Production Trial, McDonough, IL

DPH Biologicals™

What it is and How it Works

Performance & Compatibility

Label & Use

MST

Label and Use Instructions

PRODUCT DESCRIPTION

TerraTrove Myco Seed Treat (MST) is a proprietary blend of naturally occurring, nutrient cycling bacterial and fungal microorganisms plus a food source to aid in digesting residual organic matter in the soil to increase nutrient availability to the plant. MST provides a zone of microbes surrounding the seed which can form a beneficial relationship with the plant's roots after germination. The added food source improves microbial establishment and growth.

MIXING AND APPLICATION

Add MST to seed transfer systems as planters are filled to allow even distribution of product onto the seed. If adding directly to the planter box:

1. Fill the planter box half full of seed
2. Add half the amount of MST to the added seed and mix to distribute
3. Add the remainder of the seed and MST
4. Mix thoroughly until all the seed is covered with MST

MST can be applied to seed previously treated with fungicides and insecticides. MST is not a seed lubricant, follow planter manufacturers recommendations for use with seed lubricants such as talc or graphite.

Seed Treatment	
Crop	Rate
All	4 – 12 oz per 100 lb. of seed. Use higher rates for smaller seed diameters.

Organic Grower Considerations:
This product is intended for use according to an approved organic system plan. Consult your organic certifier before using this product.

STORAGE & DISPOSAL:

Storage: TerraTrove Myco Seed Treat should be stored in its original container, away from heat and direct sunlight. Preferably store in cool areas out of direct sunlight, away from children and pets, feed, and food products. Do not contaminate water, food, or feed by storage, disposal, or cleaning of equipment.

Disposal: Do not reuse this container. Dispose of contents/container in accordance with local/regional/national regulations.

Expiration Date: product guaranteed effective up to 2 years after date stamped on container.

FIRST AID

Eye Contact: Immediately flush plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. If eye irritation persists: Get medical advice/attention. **Skin Contact:** Wash off immediately with plenty of soap and plenty of water while removing all contaminated clothes and shoes. If skin irritation persists, call a physician. **Inhalation:** Remove exposed individuals(s) to fresh air for 20 minutes. Consult a physician/poison center if individuals condition declines or if symptoms persist. **Ingestion:** Rinse mouth. Do NOT induce vomiting. Drink 1 or 2 glasses of water. Never give anything by mouth to an unconscious person. Call a poison center or doctor/physician if you feel unwell.

Condition of Sale and Warranty: DPH Biologicals warrants that the product conforms to its chemical description and is reasonably fit for the purpose stated on the label only when used in accordance with label directions under normal conditions of use. Handling, storage and use of the product by Buyer or User are beyond the control of DPH Biologicals and Seller. Risks such as crop injury or other unintended consequences resulting form, but not limited to, weather or soil conditions, presence of other materials, disease, pests, drift to other crops or property, or failure to follow label directions will be assumed by Buyer or User. IN NO CASE WILL DPH BIOLOGICALS OR SELLER BE HELD LIABLE FOR CONSEQUENTIAL, SPECIAL, OR INDIRECT DAMAGES RESULTING FROM THE HANDLING, STORAGE OR USE OF THIS PRODUCT.

P-3-LBL-MST30AB-001
Ver: 1.0

4 oz/A Use Rate

MST

Application Methods

Add MST to seed transfer systems as planters are filled to allow even distribution of product onto the seed. If adding directly to the planter box:

1. Fill the planter box half full of seed
2. Add half the amount of MST to the added seed and mix to distribute
3. Add the remainder of the seed and MST
4. Mix thoroughly until all the seed is covered with MST

MST can be applied to seed previously treated with fungicides and insecticides. MST is not a seed lubricant, follow planter manufacturers recommendations for use with seed lubricants such as talc or graphite.

4 oz/A Use Rate

Application Rate	
Crop	Rate
All	4 – 12 oz per 100 lb. of seed. Use higher rates for smaller seed diameters.

Organic Grower Considerations:

This product is intended for use according to an approved organic system plan. Consult your organic certifier before using this product.

Unlocking Your Plants Natural Defenses Against Disease

Companion®
Wettable Powder

Bella Trove

Biological Fungicide delivering 3 modes of action providing more control and pesticidal resistance in one product.

DPH Biologicals™

Companion Wettable Powder

- **Labels & Product Overview***
- Features & Benefits
- Trial Results

* The Companion family currently has 2 labels, one of which is exclusive to CA. Companion Biological Fungicide WP represents the CA registration while BellaTrove Companion Maxx WP represents the remaining states. For purposes of this presentation, Companion WP will be used to represent both labels unless explicitly spelled out.

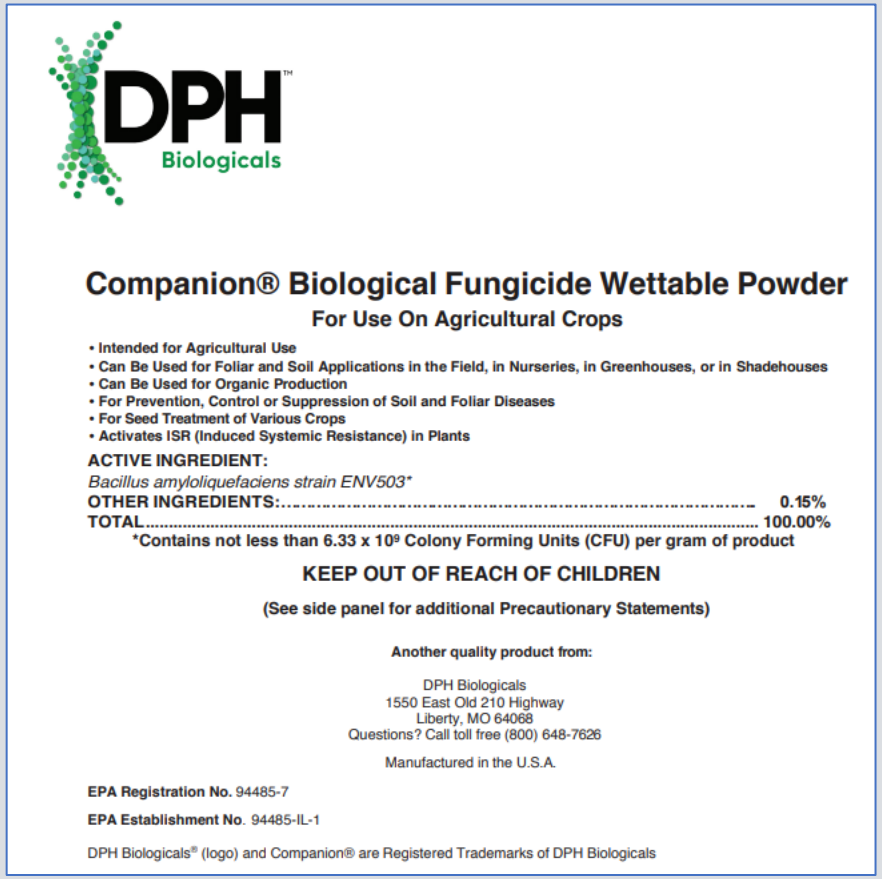
Companion® WP

Companion Wettable Powder

Same Active Ingredient – 2 Separate Labels

- Current label for California
- AI: Same ENV503 as Companion Maxx
- New registration for Companion Maxx ST submitted with expected registration by year end

CA Label



DPH Biologicals

Companion® Biological Fungicide Wettable Powder

For Use On Agricultural Crops

- Intended for Agricultural Use
- Can Be Used for Foliar and Soil Applications in the Field, in Nurseries, in Greenhouses, or in Shadehouses
- Can Be Used for Organic Production
- For Prevention, Control or Suppression of Soil and Foliar Diseases
- For Seed Treatment of Various Crops
- Activates ISR (Induced Systemic Resistance) in Plants

ACTIVE INGREDIENT:
*Bacillus amyloliquefaciens strain ENV503**
OTHER INGREDIENTS: 0.15%
TOTAL 100.00%
***Contains not less than 6.33 x 10^9 Colony Forming Units (CFU) per gram of product**

KEEP OUT OF REACH OF CHILDREN

(See side panel for additional Precautionary Statements)

Another quality product from:

DPH Biologicals
1550 East Old 210 Highway
Liberty, MO 64068
Questions? Call toll free (800) 648-7626

Manufactured in the U.S.A.

EPA Registration No. 94485-7

EPA Establishment No. 94485-IL-1

DPH Biologicals® (logo) and Companion® are Registered Trademarks of DPH Biologicals

New Label outside CA

Bacillus amyloliquefaciens strain ENV503 | Group | BM02 | Fungicide

Bella Trove™

BellaTrove® Companion® Maxx WP

For Agricultural Use For Prevention, Control or Suppression of Soil and Foliar Diseases
Quickly establishes beneficial colonies on roots and leaves
Activates the plant's defense/immune system (Induced Systemic Resistance)
Exempt from MRLS

Active Ingredient
Bacillus amyloliquefaciens strain ENV503* 0.149%
Other Ingredients 99.851%
Total: 100.000%
*Not less than 5.9 x 10^9 Colony Forming Units (CFU) per gram of product

KEEP OUT OF REACH OF CHILDREN

HOTLINE NUMBER
Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-800-222-1222 for emergency medical treatment information. For information on this product, call the National Pesticide Information Center at 1-800-858-7378, Monday through Friday, 8:00 AM to 12:00 PM Pacific time.

(See interior page for additional precautionary statements)

DPH Biologicals
1550 East Old 210 Highway
Liberty, MO 64068
Phone: 1-800-648-7626
www.dphbio.com

P-3-LBL-BTCMP-20LB

DPH Biologicals™

P-F-PWD-BTCMP-20LB

EPA REG NO. 94485-5
EPA EST NO. 94485-IL-1
Net Contents: 20 lb

Not for sale or use after: (Date stamped/placed on labeling will be 6 months after the date of manufacture.)

- New label recently approved with exception of CA.
- Includes additional crops – Tree nuts & fruit, Corn, Wheat, Sunflowers, Sugarcane, Cotton
- Expanded use pattern including Aerial

Companion Biological Fungicide WP

BellaTrove Companion Maxx WP

BellaTrove Companion® Maxx WP

Broadly Labeled for both Crops and Diseases

Companion has shown reduction of disease, increase in plant vigor, and/or increases in yield in many crops and growing systems

- Apple
- Avocado
- Banana
- Cauliflower
- Cranberries
- Clover
- Corn*
- Cotton*
- Cucumber
- Ornamental flowers
- Grape
- Lettuce
- Melon
- Onion
- Papaya
- Pear
- Pepper
- Potato
- Pumpkin
- Rice
- Soy
- Squash
- Stone Fruit*
- Strawberry
- Sugarcane*
- Sunflower*
- Tomato
- Tree Nuts*

* Not included on CA label – Companion Biological Fungicide WP

Companion® WP

Proprietary - Industry leading, biological fungicide that directly attacks pathogens while activating a plant's own immune response

Bella Trove™ Companion®

- Contains DPH Bio's proprietary active ingredient, *Bacillus amyloliquefaciens ENV503*
- Use of **highly resilient gram-positive spores** allow for building robust and stable formulations, can be combined with many crop protection and fertility products
- Enhanced **nutrient uptake, stress reduction and disease suppression** in one product
- **Three modes of action** providing more control & additional pesticidal resistance
  - Forms protective barrier around root structure
  - Directly fighting pathogens
  - Activating a plant's own immune response
- Zero pre-harvest interval

OMRI LISTED For Organic Use

DPH Biologicals™

Companion® WP

How to Apply to Field Crops

- Foliar Spray (including Aerial) – Every 7-10 days during disease onset, preventative use only.
- Transplant Water Applications
- In-Furrow
- Banding
- Drip Irrigation
- Sprinkler or Flood (Basin), Furrow, and Border Irrigation

Companion Wettable Powder

- Labels & Product Overview
- **Features & Benefits**
- Trial Results

Bella Trove™ Companion®

Companion® WP

Advantages with Proprietary Strain ENV503

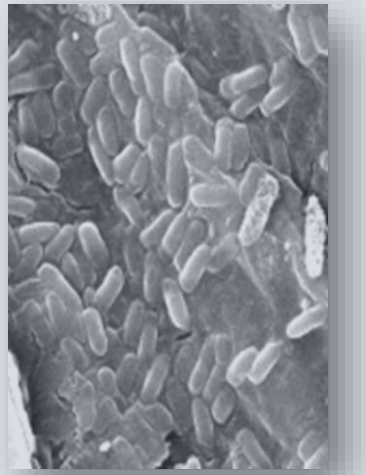
- **Proprietary Formulation** & production process delivers high concentration of AI
  - Best in class strain development & cultures
  - Higher concentration of AI
- Formulation carries **FIFRA Registration** & **OMRI Certification**
  - BioControl & BioFertility in one formulation
  - Suitable for both Organic & Conventional production
- **Three Modes of Action** providing more control and less pesticidal resistance

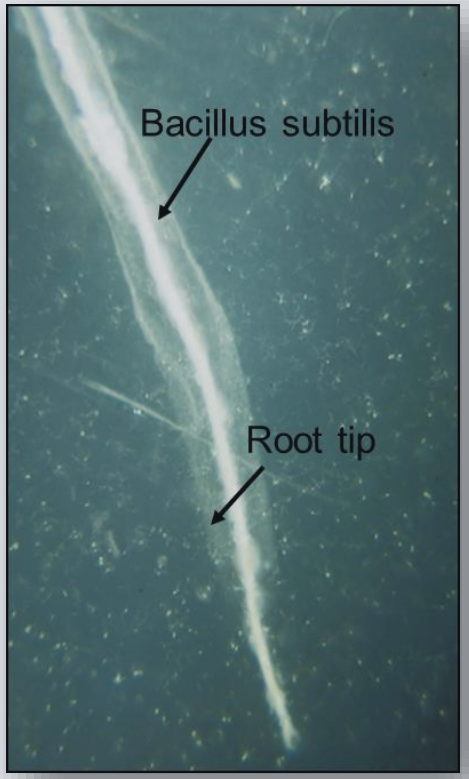
Companion® WP

1 Product
3 Modes of Action

- Forms a protective barrier around the roots, protecting them from invading pathogens.
- Known to trigger the plant's immune system (ISR).
- Produces antibiotic lipopeptides that prevent the growth and antagonistic effects of soilborne and foliar pathogens.

Colonization
- Root
- Seed





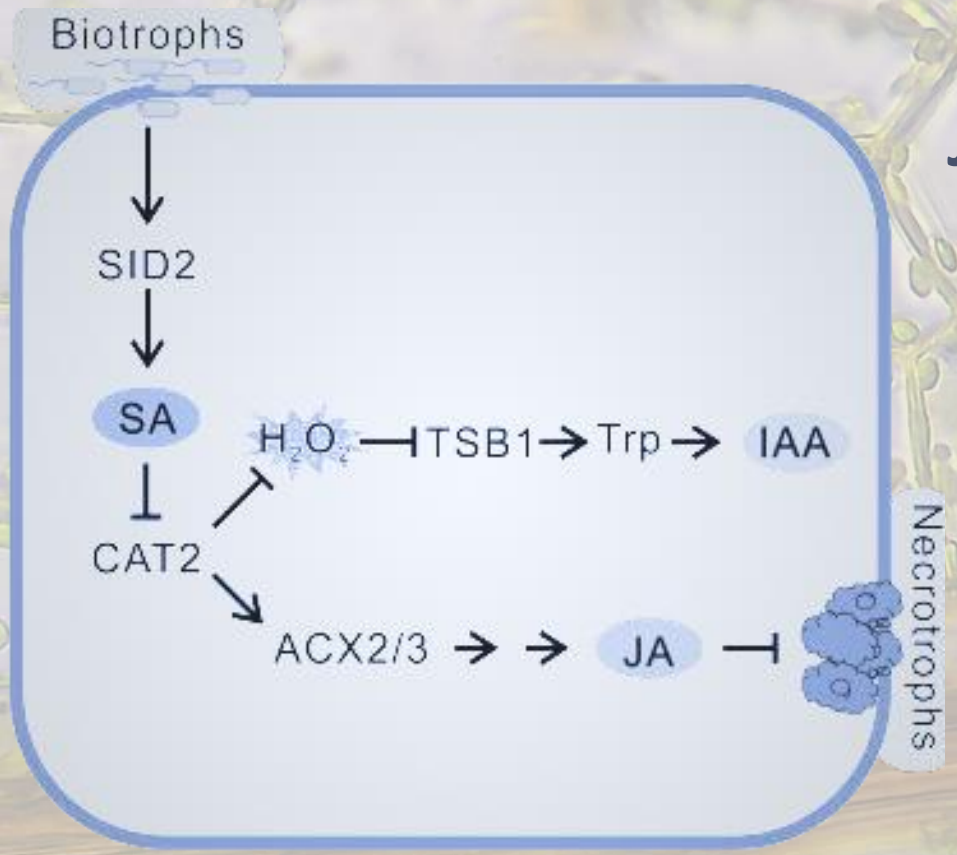
BellaTrove Companion® Maxx ST

Effect of Phytohormone Mediated Plant Defense

Elicits SAR – PR Genes (Plant resistance) that produce pathogen toxic proteins (phytoalexin), Thickened cell walls, etc.

Salicylic Acid

- Plant defense hormone against biotrophic pathogens such as Powdery Mildew
- **Biotrophs** are pathogenic organisms that rely on living matter



Hong-Mei Yuan, Wen-Cheng Liu, Ying-Tang Lu (2017). CATALASE2 Coordinates SA-Mediated Repression of Both Auxin Accumulation and JA Biosynthesis in Plan Defense, Cell Host & Microbe

Jasmonic Acid

- Plant defense hormone against necrotrophic pathogens such as Rhizoctonia, Pythium & Fusarium
- **Necrotrophs** are Pathogenic organisms that feed on dead

Companion Wettable Powder

- Labels & Product Overview
- Features & Benefits
- Trial Results

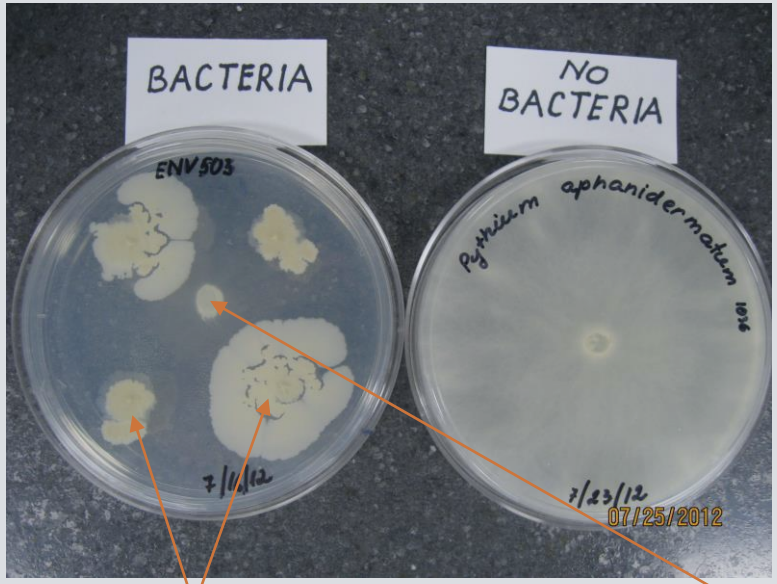
Bella Trove™ Companion®

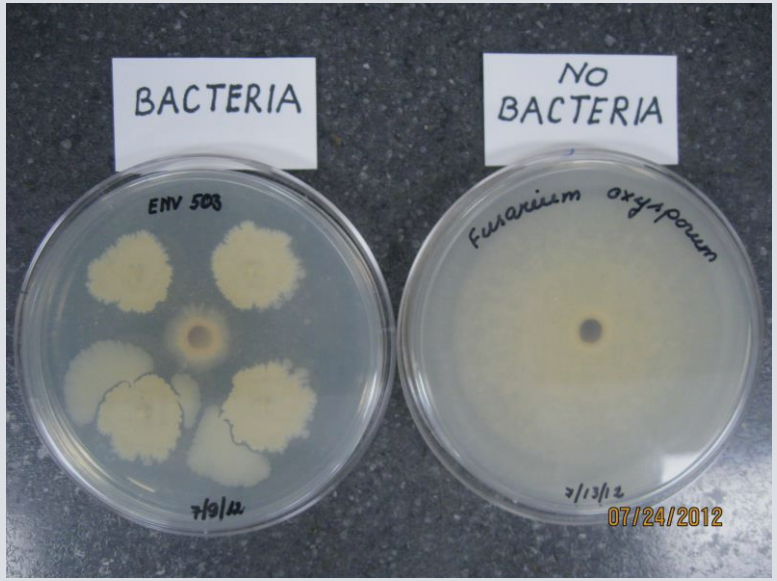
BellaTrove Companion® Maxx ST

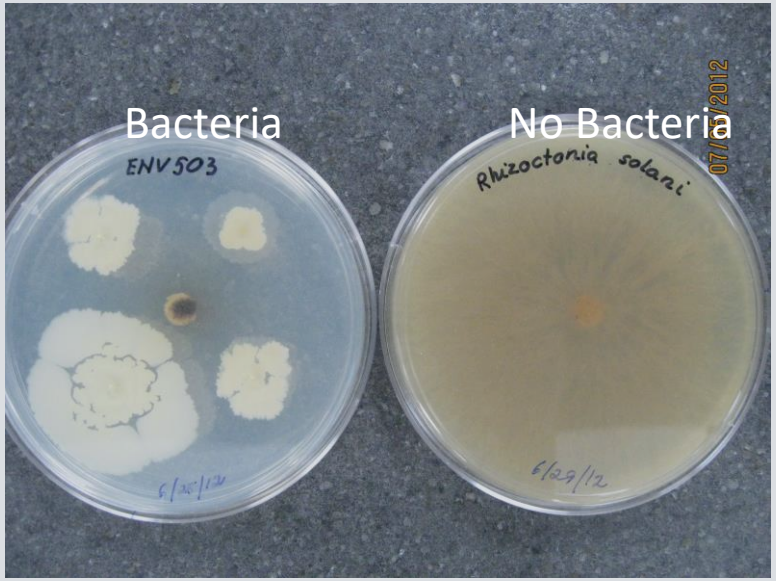
Disease Control using BellaTrove Companion® Maxx ST

Agar plates below demonstrate lipopeptides at work. Toxic metabolites that stop fungal growth

In vitro suppression of Pythium, Fusarium, and Rhizoctonia spp.







ENV503 Bacterial colonies **Suppressed fungal colony**

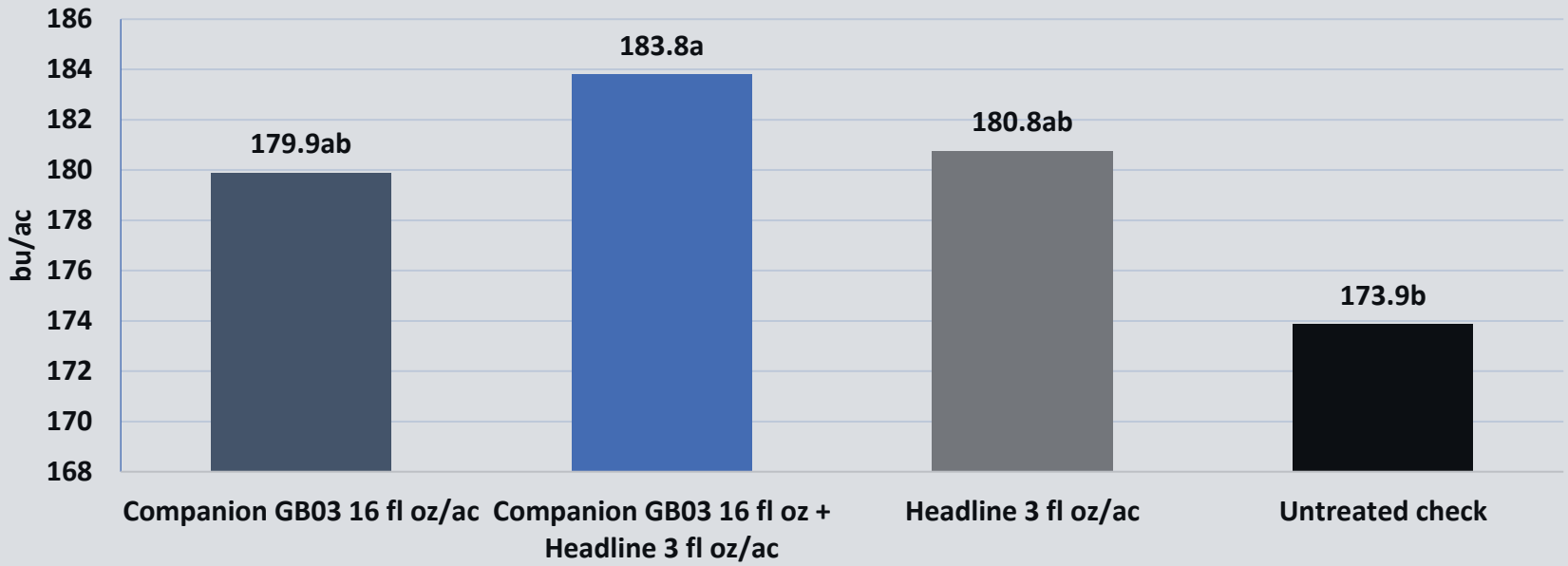
Companion® WP

Impact on Corn Yield

Corn grain yield across 40 plots at 10 trial sites

Data Source: AgriThority®Indpendent Trials

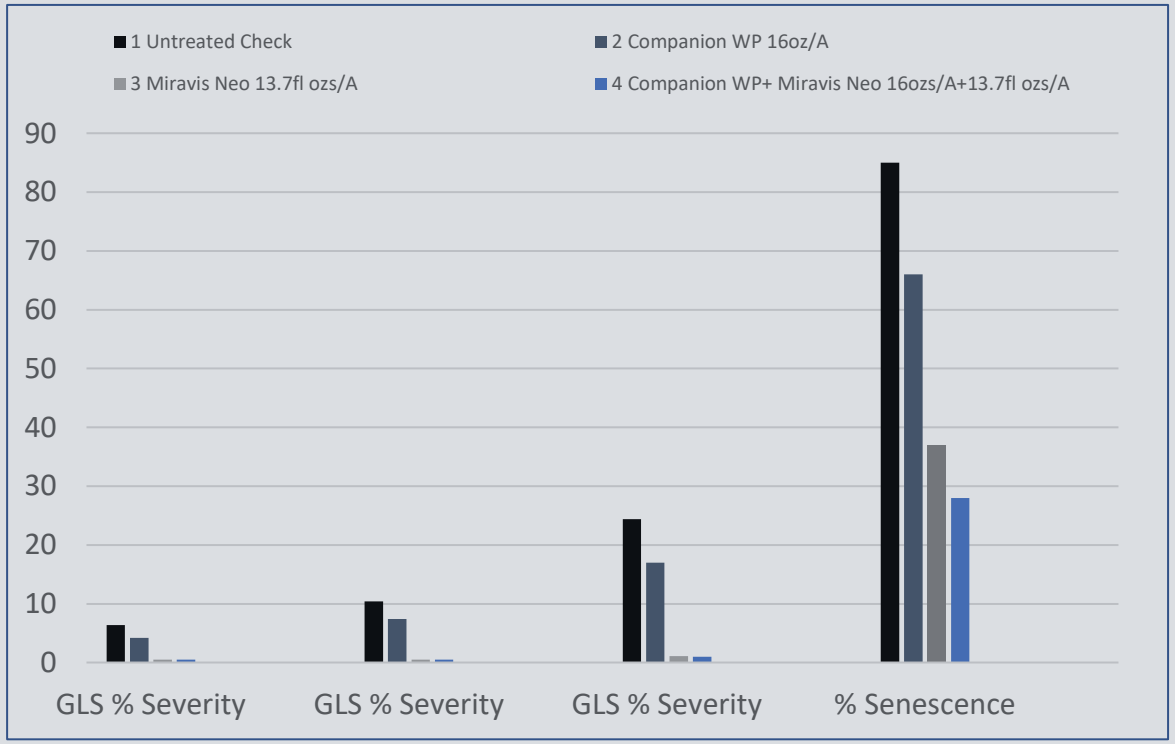
P=0.03



Companion® WP

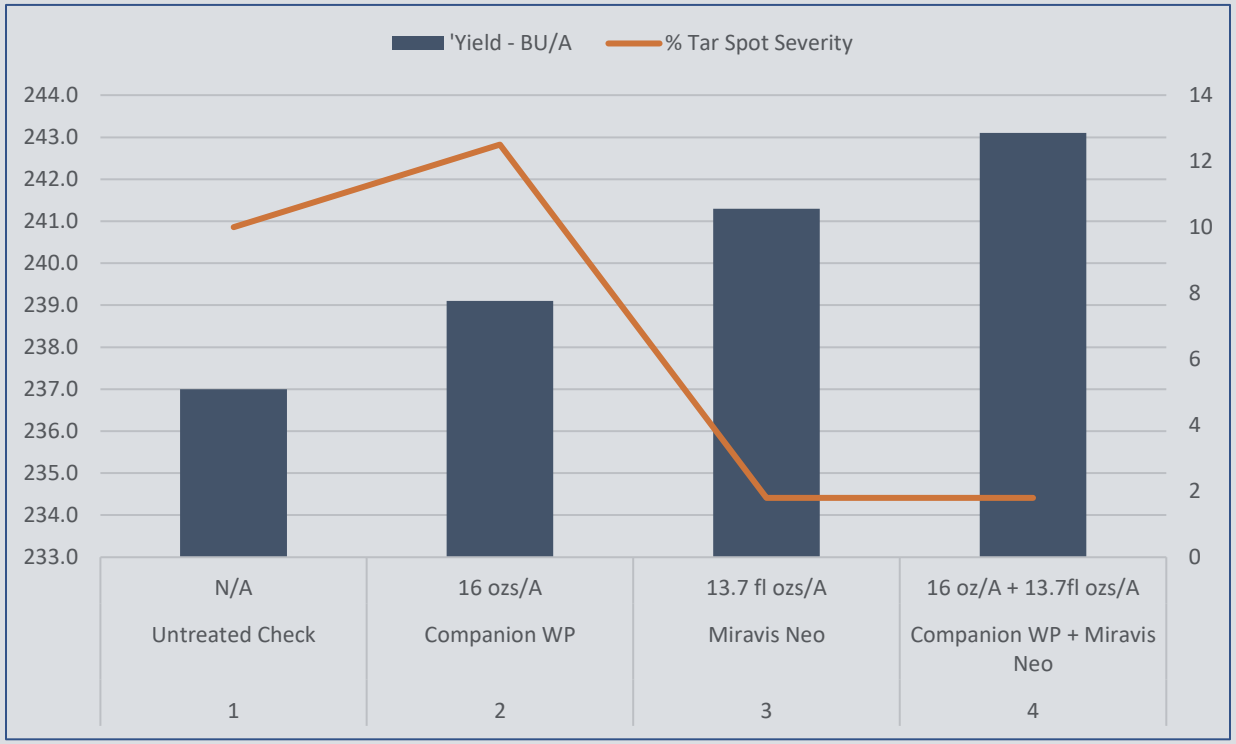
Better Together – Grey Leaf Spot

Companion Grey Leaf Spot Trial JCB Ag Research



Senescence significantly lower with the combination despite perfect disease control with Miravis, translating to increased yield

Companion Grey Leaf Spot Trial JCB Ag Research



Yield significantly higher with the combo despite excellent disease control with Miravis.

Companion®
WP

Better Together – Stay Green

Control

Companion 16ozs R1

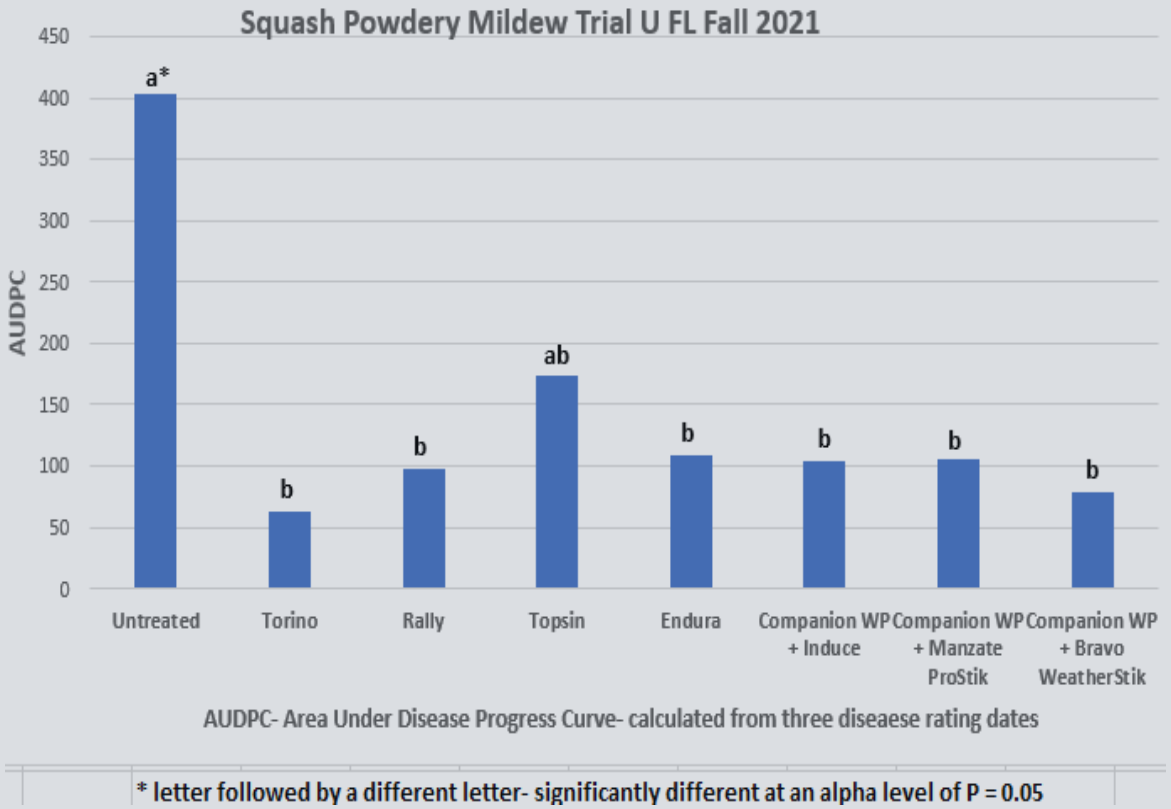
Miravis Neo 13.7 fl ozs R1

Companion 16ozs +
Miravis Neo 13.7 fl ozs R1

Companion® WP

Squash

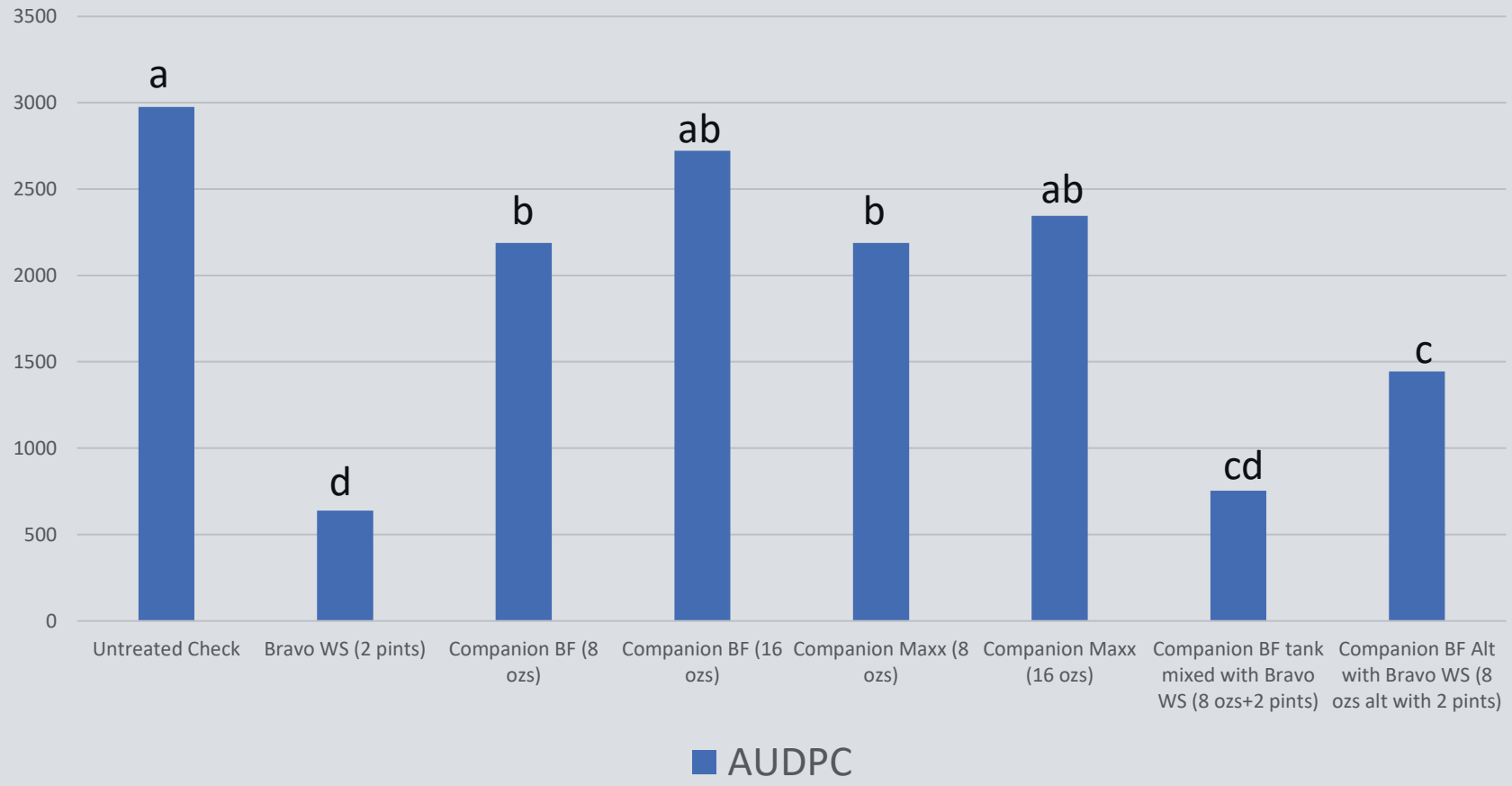
Companion efficacy – Dr. Roberts U of FL



AUDPC = Area Under the Disease Progress Curve, this represents the disease occurrence throughout the season

Companion® WP

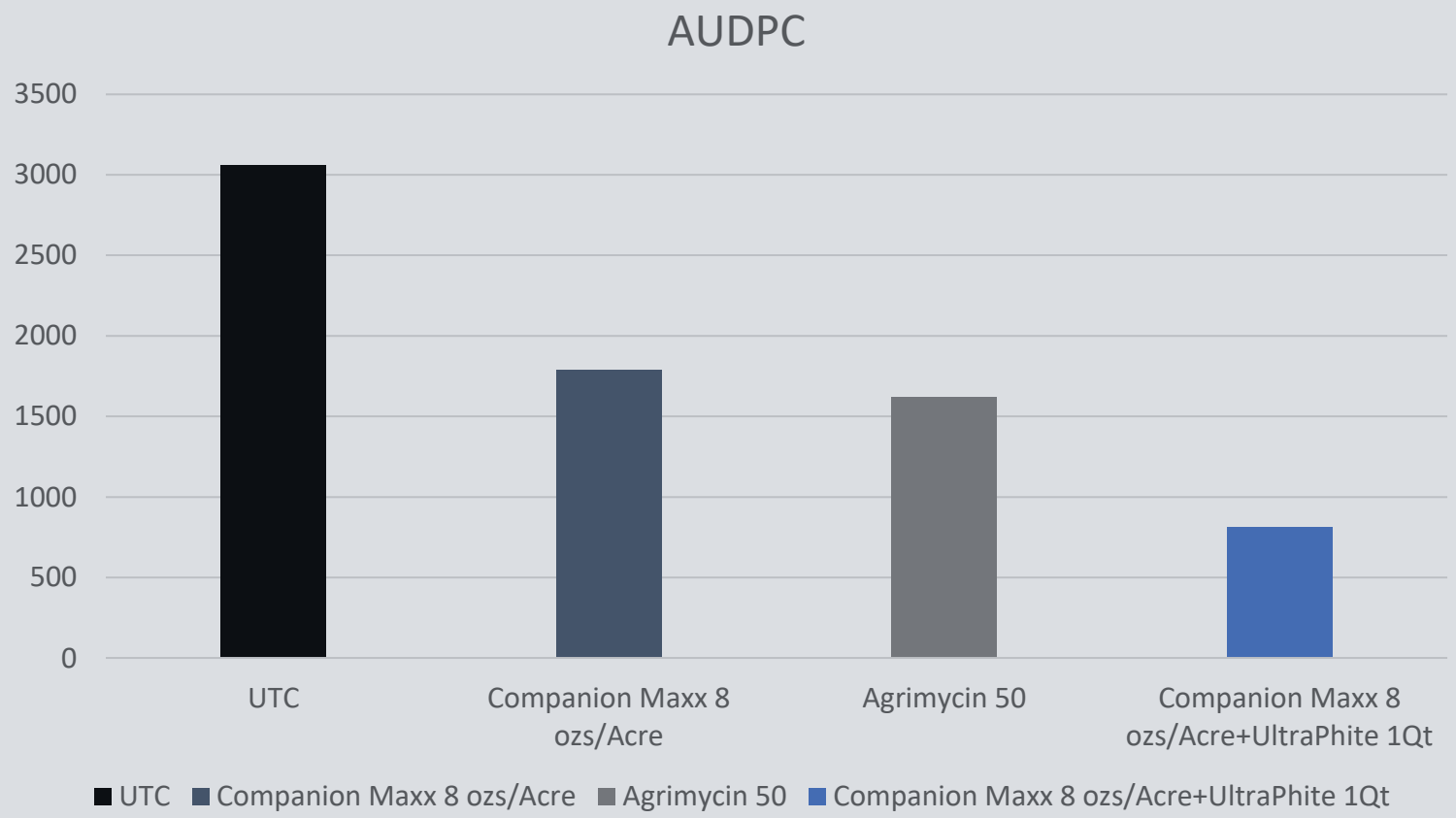
Squash – Powdery Mildew Evaluation



Conclusion: Under extreme disease pressure Companion BF and Companion Maxx provided equivalent disease control that was significantly weaker than the standard. Companion tank mix and alternation programs were statistically equal

Companion® WP

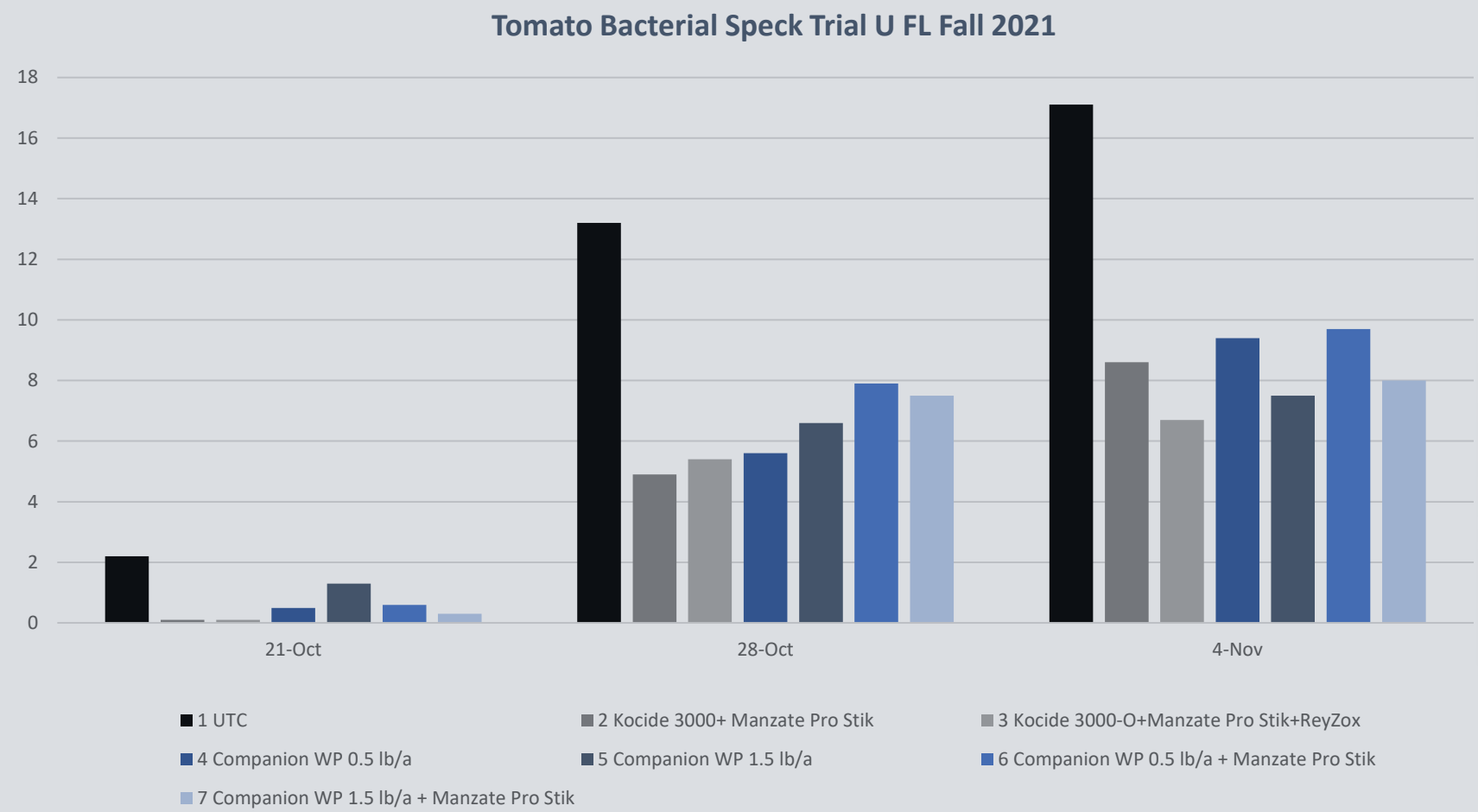
Tomatoes



Under very heavy disease pressure both **Companion Maxx** and **Agrimycin 50** reduced disease severity roughly 50%. The combination of **Companion Maxx with UltraPhite** reduced disease severity by 75%

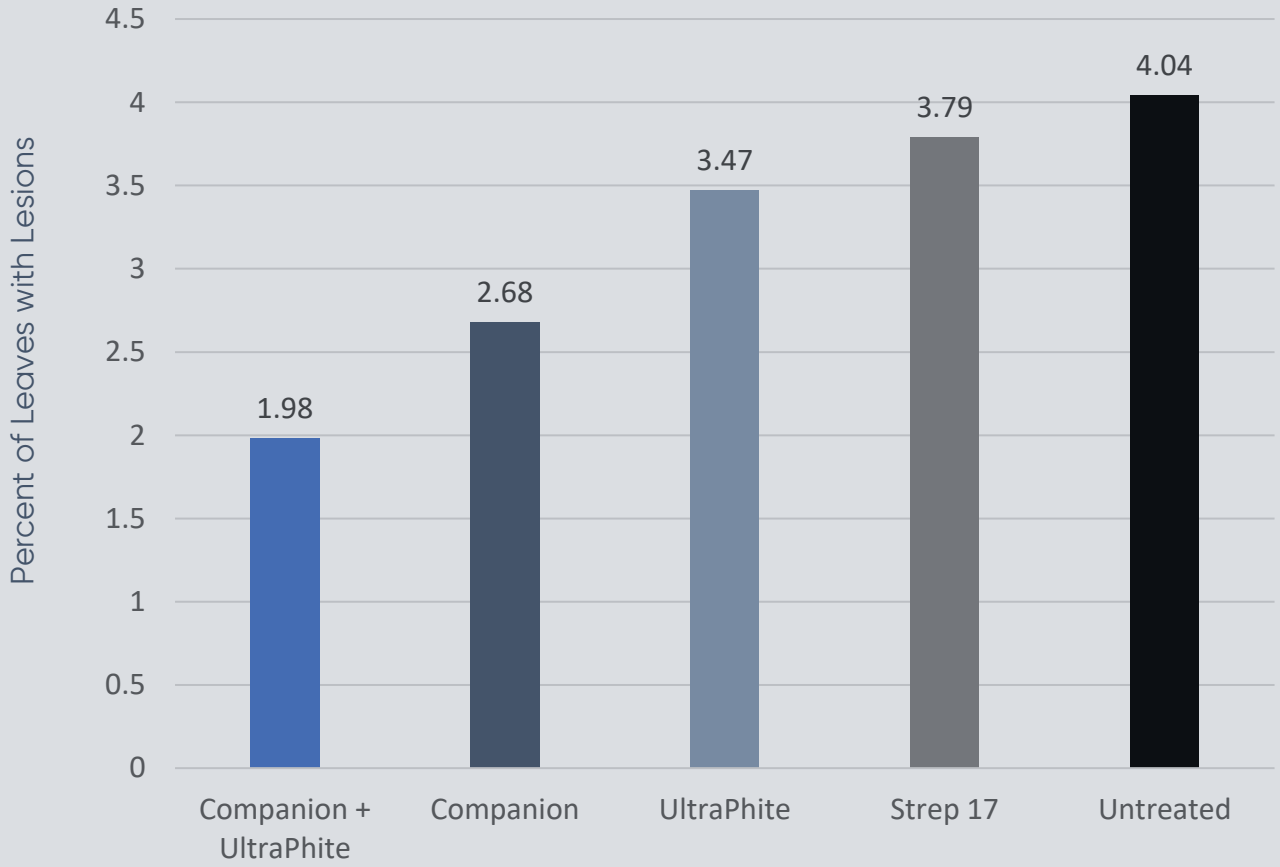
Companion® WP

Tomatoes – Bacterial Speck



Companion® WP

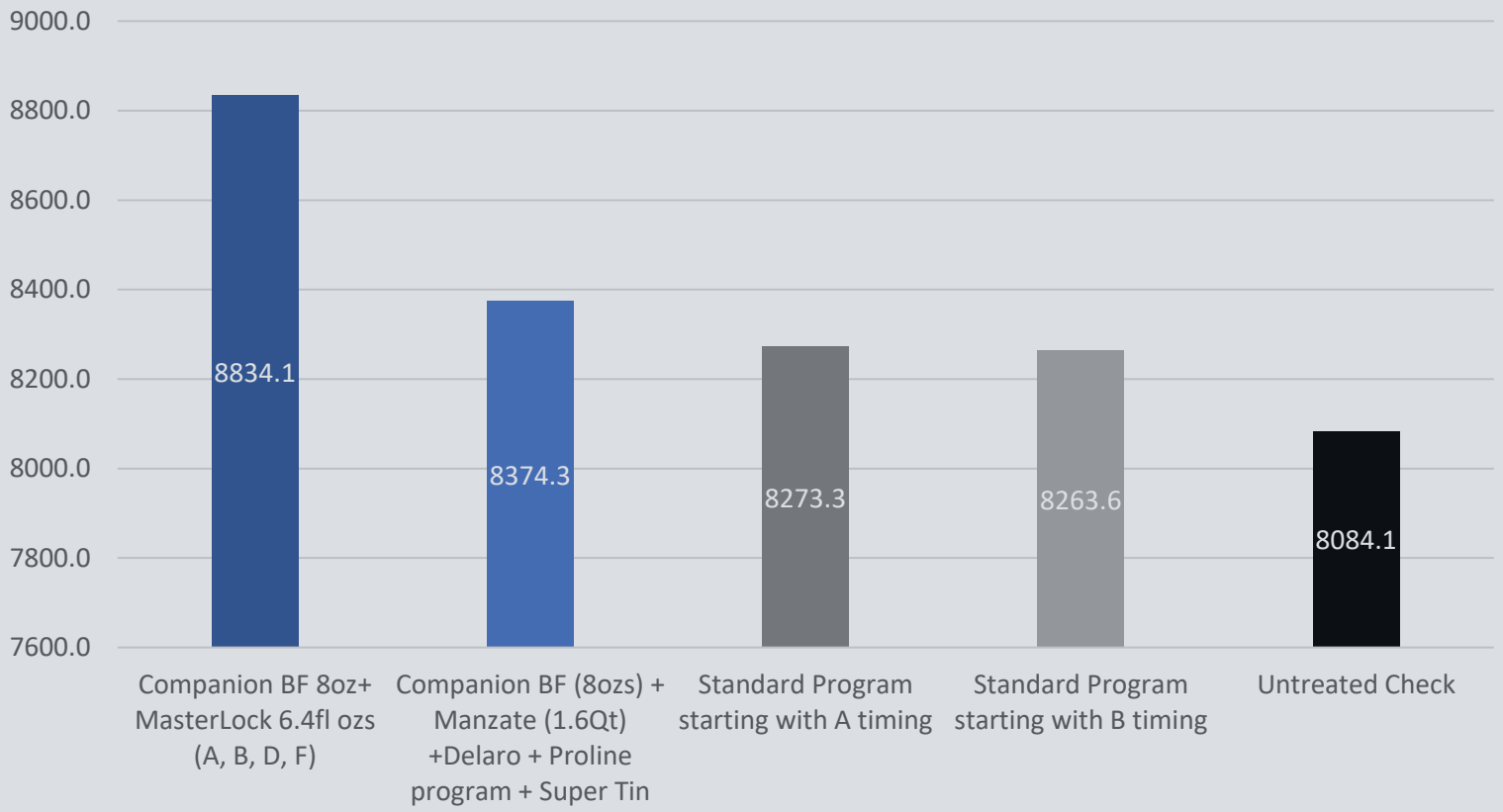
Apple Scab



Companion® WP

Sugarbeets – MI Sugar Cercospora Program CR+

Recoverable White Sugar per Acre



Standard A

Manzate	1.6 qt	A
Delaro	11 fl oz	B
Proline	1.6 fl oz	B
Manzate	1.6 qt	B
Super Tin	8 fl oz	D
Topsin	20 fl oz	D
Manzate Pro-Stik	2 lb	D
Provysol	5 fl oz	F
Manzate Pro-Stik	2 lb	F
MasterLock	6.4 fl oz	A B D F

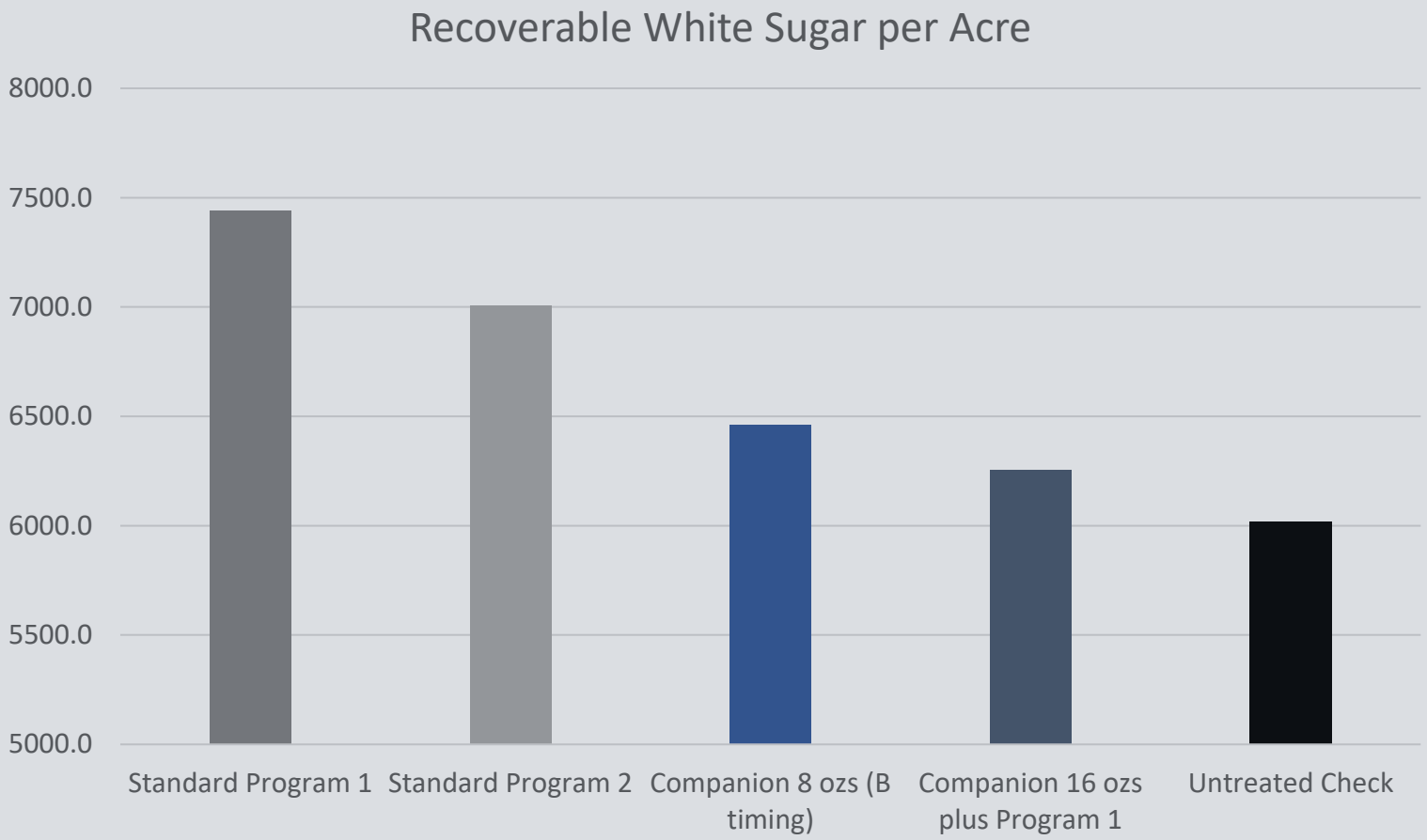
Standard B

Delaro	11 fl oz	B
Proline	1.6 fl oz	B
Manzate	1.6 qt	B
Super Tin	8 fl oz	D
Topsin	20 fl oz	D
Manzate Pro-Stik	2 lb	D
Provysol	5 fl oz	F
Manzate Pro-Stik	2 lb	F
MasterLock	6.4 fl oz	B D F

Application Dates:	
A - 7/5	D - 8/16
B - 7/15	E - 9/2
C - 8/2	F - 9/14

Companion® WP

Sugarbeets - Cercospora Program Standard - Answer



Program 1

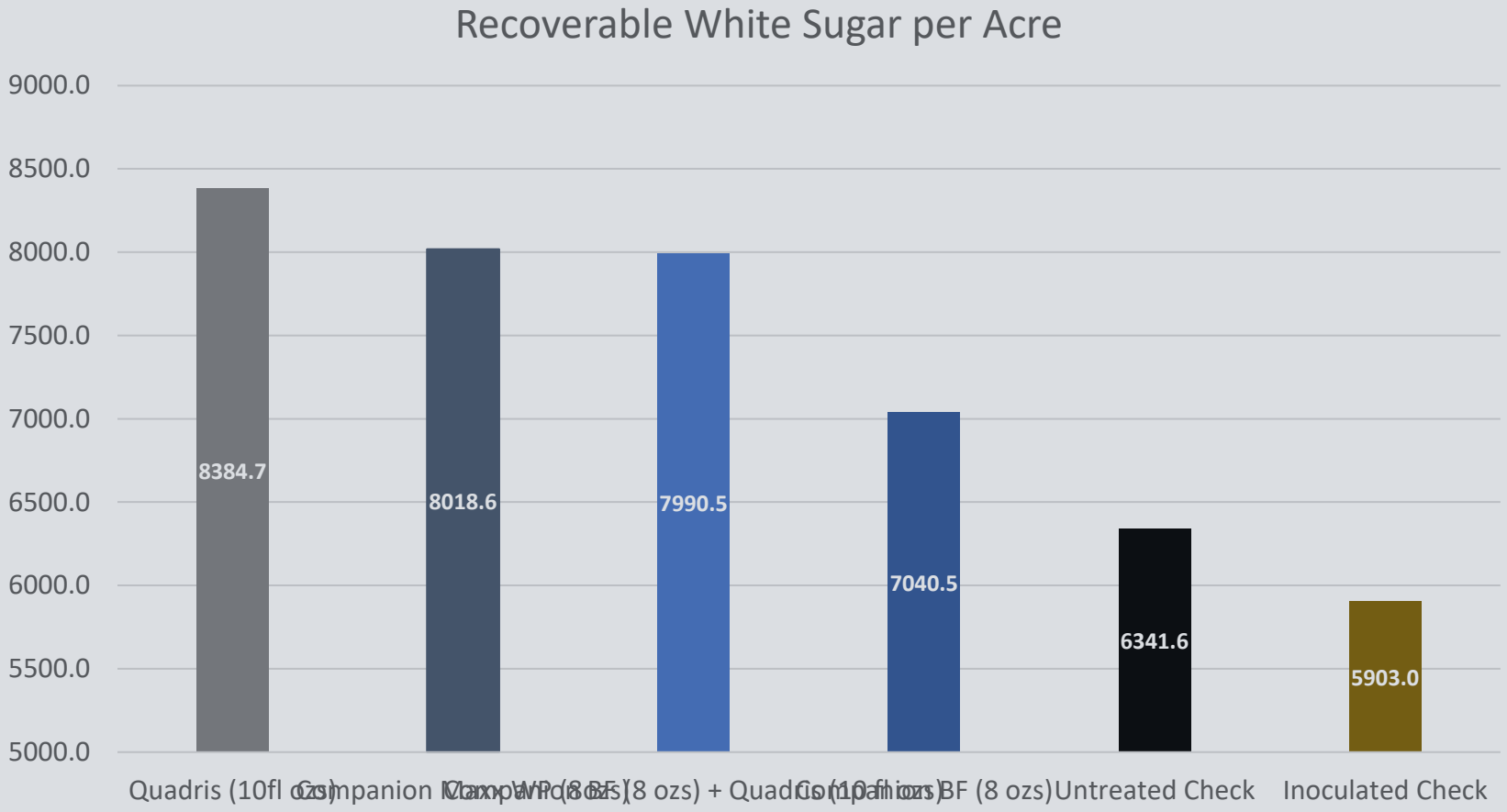
Manzate	1.6 qt	A
Delaro	11 fl oz	B
Proline	1.6 fl oz	B
Manzate	1.6 qt	B
Super Tin	8 fl oz	C
Topsin	20 fl oz	C
Manzate Pro-Stik	2 lb	C
Provysol	5 fl oz	D
Manzate Pro-Stik	2 lb	D
Super Tin	8 fl oz	E
Manzate Pro-Stik	2 lb	E
Inspire XT	7 fl oz	F
Manzate Pro-Stik	2 lb	F
MasterLock	6.4 fl oz	A-F

Program 2

Manzate	1.6 qt	A
Inspire XT	7 fl oz	B
Manzate	1.6 qt	B
Super Tin	8 fl oz	C
Topsin	20 fl oz	C
Manzate Pro-Stik	2 lb/a	C
Provysol	5 fl oz	D
Manzate Pro-Stik	2 lb	D
Super Tin	8 fl oz	E
Manzate Pro-Stik	2 lb	E
Delaro	11 fl oz	F
Proline	1.6 fl oz	F
Manzate Pro-Stik	2 lb	F
MasterLock	6.4 fl oz	A-F

Companion® WP

Sugarbeets - Inoculated Rhizoctonia - Laker



Companion® WP

Why Companion Maxx WP

Proven Biological Control & Fertility Offering:

- Three modes of action providing more control & additional pesticidal resistance
  - Forms protective barrier around root structure
  - Directly fighting pathogens
  - Activating a plant's own immune response
- Highly concentrated, best-in-class formulation
- Improves plant growth & stress resistance
- OMRI listed & Is non-toxic to humans and wildlife

OMRI LISTED For Organic Use

Unlocking Your Plants Natural Defenses Against Disease

BellaTrove Companion® Maxx ST

OMRI LISTED
For Organic Use

Bella Trove

Biological Seed Treatment Fungicide which delivers suppression & stimulation through 3 modes of action

DPH Biologicals™

- What is it and How it works
- Performance & Compatibility
- Label & Use

Bella Trove™
Companion® Maxx ST

BellaTrove Companion® Maxx ST

Proprietary - Industry leading, seed treatment biological fungicide that directly attacks pathogens while activating a plant's own immune response

- Enhanced **crop nutrition, stress reduction and disease suppression** in one product
- Impacts Nutrient uptake of Phosphorous and other key macro and micro-nutrients.
- **Suppression of seedling diseases** as well as longer term **rhizosphere diseases**
  - Rhizoctonia, Pythium, Fusarium
- Contains DPH Bio's proprietary active ingredient, ***Bacillus amyloliquefaciens ENV503***
- **Better Together:** Works well with crop nutrition & protection products
- Increases a plant's own ability to **fight disease** and **withstand stress**
  - Production of phytohormones like GA, ABA and others
- **Flexible Application:** Seed Treatment (Slurry), Planter Box, Hopper Box

OMRI LISTED For Organic Use

BellaTrove Companion® Maxx ST

Advantages with Proprietary Strain ENV503

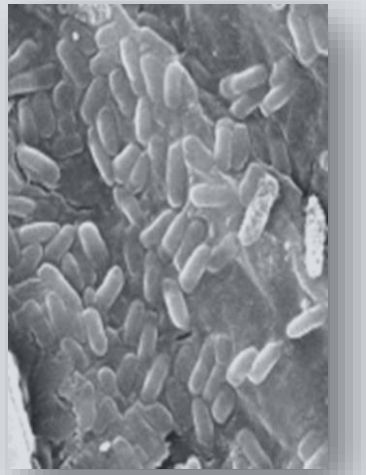
- **Proprietary Formulation** & production process delivers high concentration of AI
  - Best in class strain development & cultures
- Formulation carries **FIFRA Registration** & **OMRI Certification**
  - BioControl & BioFertility in one formulation
  - Suitable for both Organic & Conventional production
- **Three Modes of Action** providing more control and less pesticidal resistance
- **Flexible Application:** Seed Treatment (Slurry), Planter Box, Hopper Box

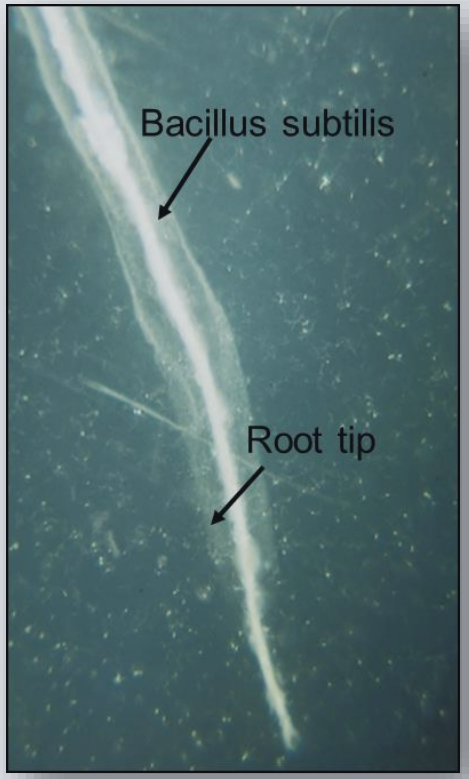
BellaTrove Companion®
Maxx ST

1 Product
3 Modes of Action

- Forms a **protective barrier** around the roots, protecting them from invading pathogens.
- Known to trigger the plant's **immune system (ISR)**.
- Produces **antibiotic lipopeptides** that prevent the growth and antagonistic effects of soilborne and foliar pathogens.

Colonization
- Root
- Seed





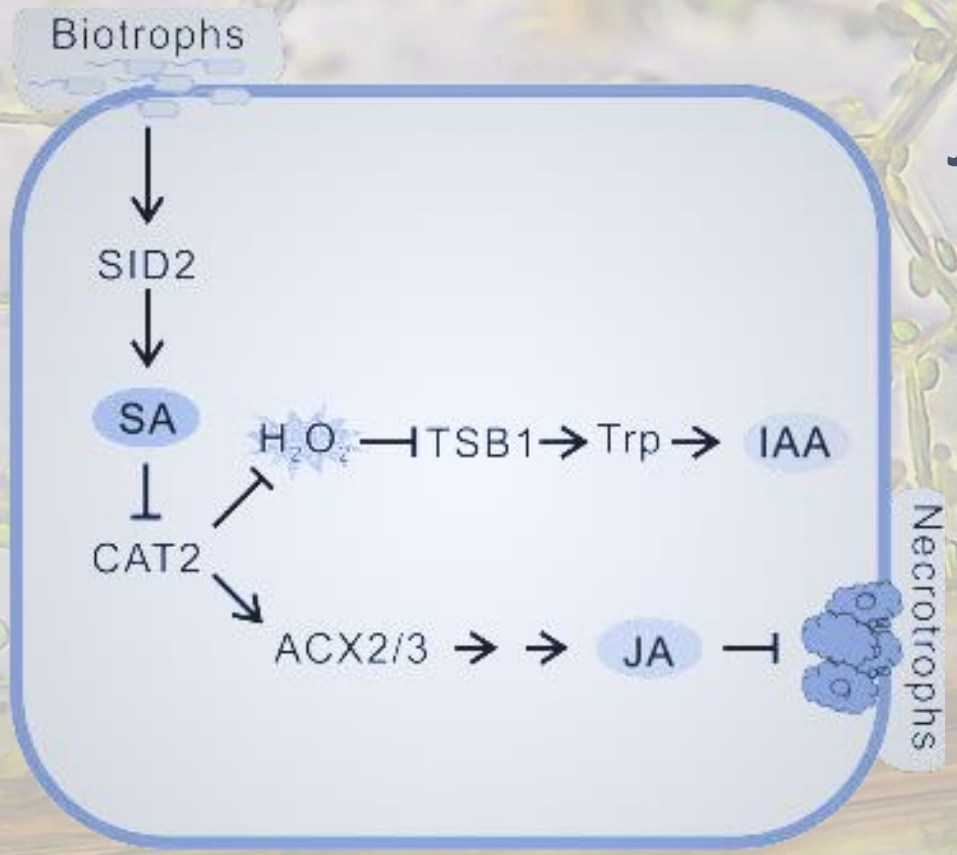
BellaTrove Companion® Maxx ST

Effect of Phytohormone Mediated Plant Defense

Elicits SAR – PR Genes (Plant resistance) that produce pathogen toxic proteins (phytoalexin), Thickened cell walls, etc.

Salicylic Acid

- Plant defense hormone against biotrophic pathogens such as Powdery Mildew
- **Biotrophs** are pathogenic organisms that rely on living



Hong-Mei Yuan, Wen-Cheng Liu, Ying-Tang Lu (2017). CATALASE2 Coordinates SA-Mediated Repression of Both Auxin Accumulation and JA Biosynthesis in Plan Defense, Cell Host & Microbe

Jasmonic Acid

- Plant defense hormone against necrotrophic pathogens such as Rhizoctonia, Pythium & Fusarium
- **Necrotrophs** are Pathogenic organisms that feed on dead

- What is it and How it works
- **Performance & Compatibility**
- Label & Use

Bella Trove™
Companion® Maxx ST

DPH Biologicals™

BellaTrove Companion® Maxx ST

Disease Suppression & Plant Stimulation

While BellaTrove Companion Maxx ST is a new formulation and registration, the A.I. is a proven performer for both disease suppression & root/plant stimulation

Suppression

Fig. 1

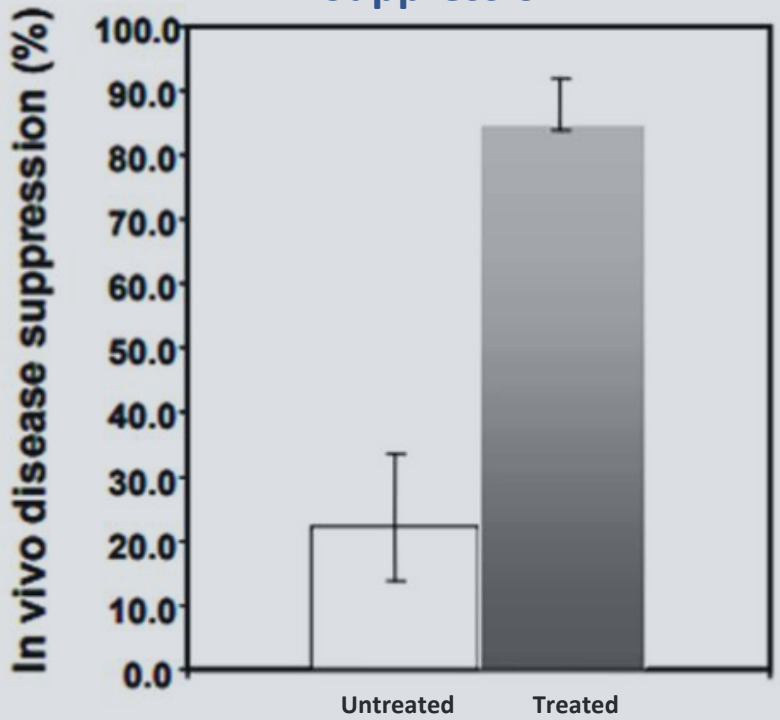


Fig. 1: In vivo growth inhibition of R. solani K1 using B. subtilis RB treated seeds compared to control. *Advances in Microbiology, 2016, 6, 424-431*

Stimulation

Fig. 2

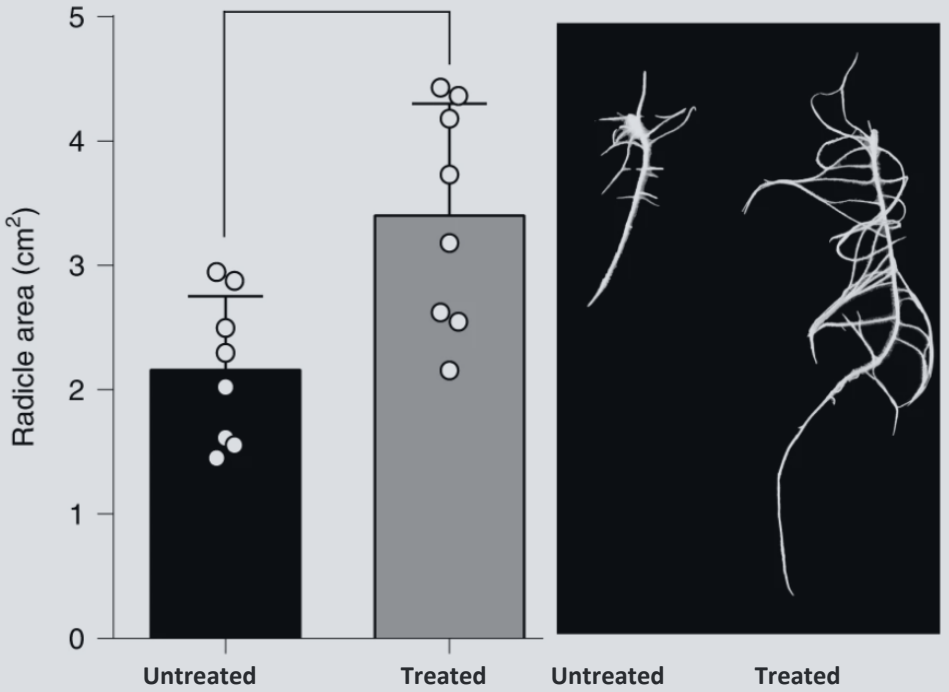


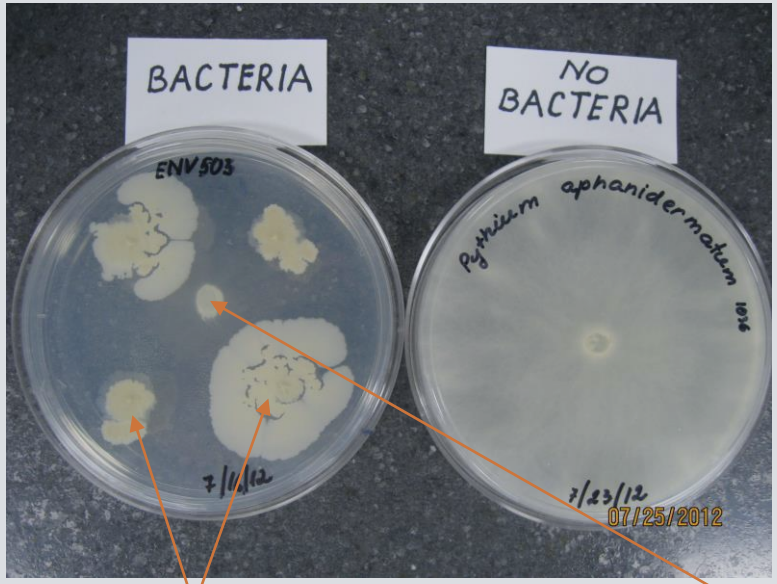
Fig. 2: Interaction of *B. subtilis* with the seeds stimulates radicle development and results in growth-promoting effect on adult plants. *Nature Microbiology (Nat Microbiol) ISSN 2058-5276*

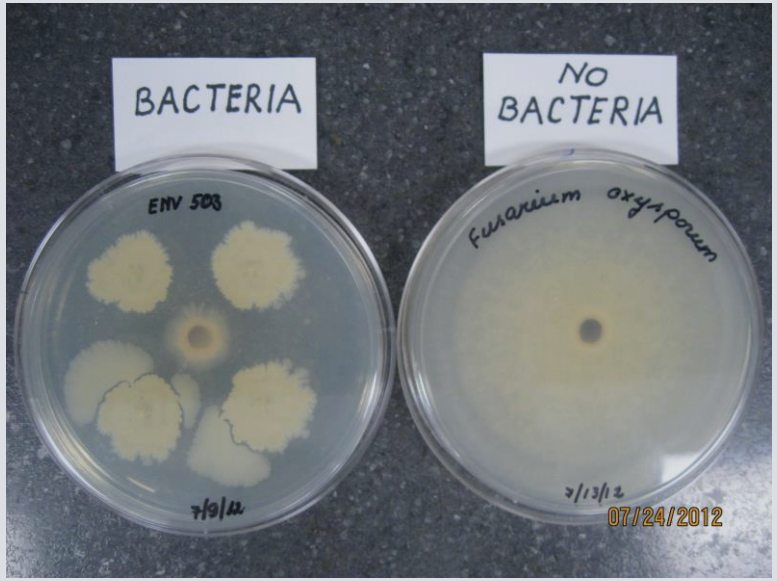
BellaTrove Companion® Maxx ST

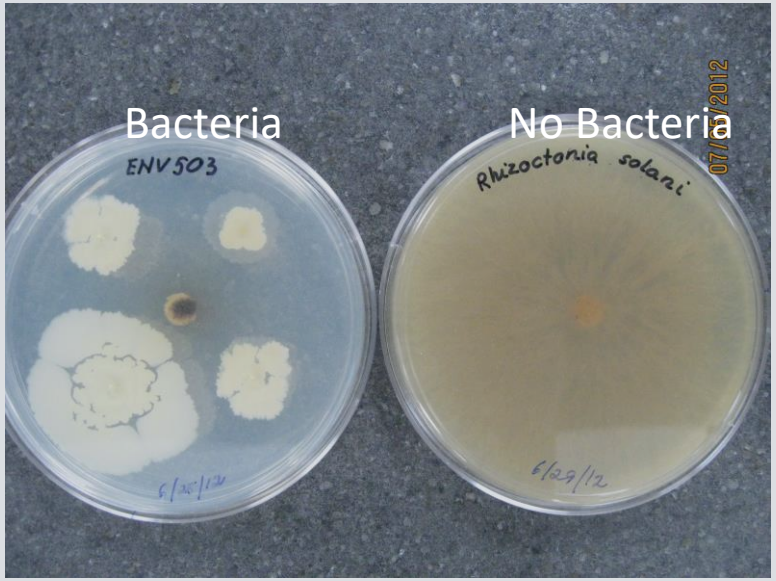
Disease Control using BellaTrove Companion® Maxx ST

Agar plates below demonstrate lipopeptides at work. Toxic metabolites that stop fungal growth

In vitro suppression of Pythium, Fusarium, and Rhizoctonia spp.





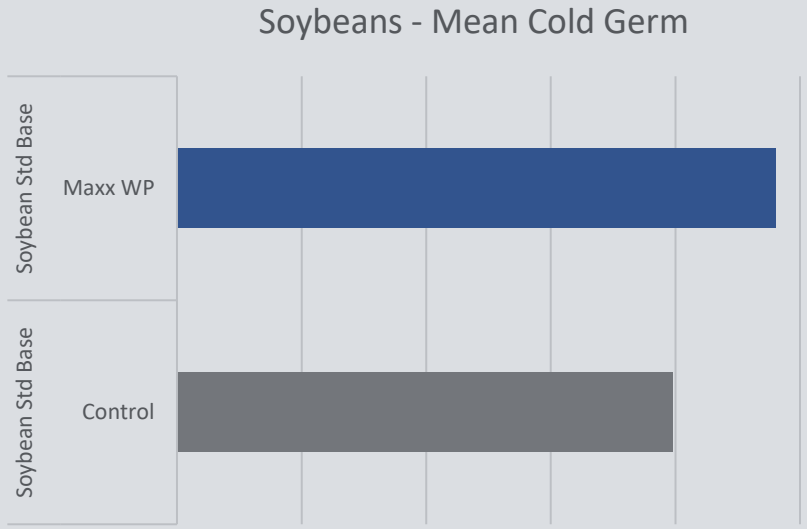


ENV503 Bacterial colonies **Suppressed fungal colony**

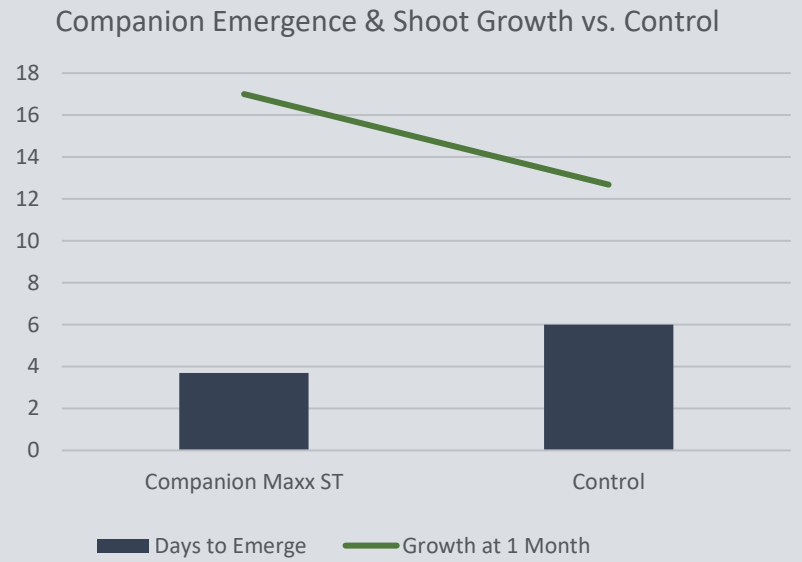
BellaTrove Companion® Maxx ST

Improved Emergence & Growth BellaTrove Companion® Maxx ST

8-point increase in cold germination over standard treatment



2 Day emergence advantage with over 4” plant height differential after 30 days



BellaTrove Companion® Maxx ST

Compatibility Studies

Companion Maxx ST is safe to use with seed treatment pesticides to enhance disease control and reduce the occurrence of resistance. It was put through a series of studies on multiple crops to ensure compatibility and seamless integration. The following crops and categories were tested:

Crops:	Corn, Soybeans and Wheat
Physiological Quality:	▪ Warm & Cold germs were conducted resulting in neutral to positive responses ▪ Statistical improvement on cold germ with Soybeans
Plantability:	▪ No negative effect on plantability. Each of the Companion Maxx ST treatments were within the tolerance range for plantability
Flowability:	▪ No negative effect compared to treated seed
Dust-off:	▪ No negative effect on dust off

Seed testing completed by SGS, Brookings SD

- What is it and How it works
- Performance & Compatibility
- **Label & Use**

Bella Trove™
Companion® Maxx ST

BellaTrove Companion® Maxx ST

Proprietary Strain – ENV503

- Use of highly resilient gram-positive spores allow for building robust and stable formulations, can be combined with many crop protection and fertility products
- Contains DPH Bio's proprietary active ingredient, *Bacillus amyloliquefaciens ENV503*
- Broad crop, disease spectrum, and many use patterns listed on the label
- Additional plant SAR benefits and can supplement other on seed biologicals with positive agronomic benefits for a multi-species mix

OMRI LISTED For Organic Use

BellaTrove Companion® Maxx ST

Crops, Diseases & Rates

Crops	Diseases	Rate per 100 lb. of Seed to be Treated	Rate per 50 lb. Seed Unit
Alfalfa	Fusarium spp. (Fusarium seedling blight) Rhizoctonia spp. (Damping-off fungus) Pythium spp. (Damping-off fungus)	0.25 to 1.0 oz.	**0.125 to 0.5 oz.**
Legume Vegetables including: Green Beans, Snap Bean, Lima Bean, Kidney Bean, Navy Bean, Pinto Bean, Wax Bean, Pole Bean, Garden Pea, Pea and Field Bean, and Soybeans.	Fusarium spp. (Fusarium seedling blight) Rhizoctonia spp. (Damping-off fungus) Pythium spp. (Damping-off fungus)	0.33 to 0.5 oz.	**0.165 to 0.25 oz.**
Corn	Fusarium spp. (Fusarium seedling blight) Rhizoctonia spp. (Damping-off fungus) Pythium spp. (Damping-off fungus)	0.25 to 1.0 oz.	**0.125-0.5 oz.**
Cotton	Fusarium spp. (Fusarium seedling blight) Rhizoctonia spp. (Damping-off fungus) Pythium spp. (Damping-off fungus)	0.25 oz.	**0.125 oz.**
Cut seed Potato	Fusarium spp. (Fusarium seedling blight) Rhizoctonia spp. (Damping-off fungus) Pythium spp. (Damping-off fungus)	2 oz.	**1 oz.**
Peanut	Fusarium spp. (Fusarium seedling blight) Rhizoctonia spp. (Damping-off fungus) Pythium spp. (Damping-off fungus)	0.165 to 1.0 oz.	**0.0825 to 0.5 oz.**
Wheat and Barley	Fusarium spp. (Fusarium seedling blight) Rhizoctonia spp. (Damping-off fungus) Pythium spp. (Damping-off fungus)	0.25 to 0.33 oz.	**0.125 to 0.165 oz.**
All Other Agricultural Seed: Brassica(Cole) Leafy Vegetables, Cucurbits Vegetables, Fruiting Vegetables, Bulb Vegetables and Root and Tuber Vegetables	Fusarium spp. (Fusarium seedling blight) Rhizoctonia spp. (Damping-off fungus) Pythium spp. (Damping-off fungus)	0.25 to 1.0 oz.	**0.125-0.5 oz.**
Other Crop Seed	Fusarium spp. (Fusarium seedling blight) Rhizoctonia spp. (Damping-off fungus) Pythium spp. (Damping-off fungus)	Compare with above	**Compare with above**

BellaTrove Companion® Maxx ST

Flexible Application

- Seed Treatment (Slurry)
- Planter Box
- Hopper Applications

BellaTrove Companion® Maxx ST

Operational Efficiency

- Ease of use
  - Stable for months once mixed in a slurry
  - Widely compatible with all ST technologies commonly used
  - On seed stability for years once applied
- Mixes easily with water-based ST formulations including polymers– no special precautions necessary.
- Easily incorporated into slurry. Once agitated add powder in.

BellaTrove Companion® Maxx ST

Why Companion Maxx ST

Proven Biological Control & Fertility Offering:

- Three modes of action providing more control & additional pesticidal resistance
  - Forms protective barrier around root structure
  - Triggers the plant's immune system (ISR)
  - Produces lipopeptides that directly attack pathogens
- Highly concentrated, best-in-class formulation
- Improves plant growth & stress resistance
- OMRI listed & Is non-toxic to humans and wildlife

OMRI LISTED For Organic Use