Inocucor®
THE PHYTO-MICROBIOME COMPANY

Inocucor's IN-M1 for Growers
Bill Schwoerer

August 13, 2017

Crop Biostimulants:

Plant biostimulants contain substance(s) and/or micro-organisms whose function when applied to plants or the rhizosphere is to stimulate natural processes to enhance/benefit nutrient uptake, nutrient efficiency, tolerance to abiotic stress, and crop quality.

Biostimulants foster plant growth and development throughout the crop life cycle from germination to plant maturity in a number of demonstrated ways, including but not limited to:

- Improving the efficiency of the plant's metabolism to induce yield increases and enhanced crop quality;
- Increasing plant tolerance to and recovery from abiotic stresses;
- Facilitating nutrient assimilation, translocation and use;
- Enhancing quality attributes of produce, including sugar content, color, fruit seeding, etc;
- Rendering water use more efficient;
- Enhancing soil fertility, particularly by fostering the development of complementary soil micro-organisms.

*European Biostimulants Industry Council

A Growing Market…

Global Market Insights, Inc. forecast Biostimulants Market share is poised to reach USD $4 billion by 2024.

What is driving the increased adoption?

- Necessity for sustainable farming practices along with resource scarcity including land and water supply and quality.
- Positive outlook on rejuvenating degraded soil along with benefits including plant growth, improved nutrient uptake.
- Rise in consumer spending on organic food along with increase in consumer affordability.
- Global organic food spending was over USD $85 million in 2016, increasing at over 17% every year.
- Loss of effectiveness and/or availability of traditional synthetic inputs.
- Safety

Biostimulant Challenges:

- Environmental variables
  - *temperatures
  - *moisture
  - *stressors
  - *crop
  - *persistence
  - *every situation can be unique in Ag
- Application variables:
  - *timing
  - *frequency
  - *use rates
  - *application technique
  - *compatibility
- Product inconsistencies:
  - *manufacturing/QA
  - *stability
  - *handling
- Independent research validating claims: *ask manufacturer

Biostimulant Benefits

- With proper application ->can be very effective.
- Safety
- Stimulate root and plant growth and vigor
- Improve crop tolerance to stresses
- Reduce the need for other inputs
- Potentially reduce overall production costs
- Potential synergy with other inputs
- Provide a paradigm shift- working with the plant microbiome vs against it.
- Easily incorporated in organic and conventional farming

Who is Inocucor?

INOCUCOR AT A GLANCE

- Originally based in Montréal, Québec; opening U.S. Headquarters and Commercialization Office in Denver, CO
- Sustainable specialty products that Improve Plant Health and Productivity
- 20,000 sf R&D facility; 30 employees, growing to 50 over next 6-9 months
- Core technology based upon fermentation of Mixed Microbial Communities
- Focused on bio-stimulation, bio-fertility and bio-control products
- Expanding relationships with academic and strategic corporate partners

LEADERSHIP TEAM

Donald Marvin, MBA – President & CEO
Serial entrepreneur with a track record of building exceptional value for stakeholders at several Life Science and Agri-Tech companies.

Margaret Bywater-Ekegärd, MD, PhD – Founder; EVP, Tech & Innovation
Molecular pathologist: extensive experience in identifying and successfully commercializing proprietary technologies at several Life Science/Biotech companies.

Ananda Fitzsimmons – Founder; VP, Chief Brand Ambassador
An out-of-the-box thinker and environmentalist, pushing the borders of traditional microbiology through new formulation discovery and artisanal process transfer.

Bryan Wallis, LLB, MBA – Vice President & CFO
Strong background in finance, legal and business development with extensive experience in building successful, high growth technology companies.

Jan Kral – Vice President, Sales
With his background in Power Engineering, he has the ability to bridge the Sales - R&D function and to open new markets for innovative products.

Aaron Waltz, PhD – Director, Field Trials & Nutrition
Agronomist with training and experience in crop protection, plant breeding and transgenic traits.

Ramesh Murugesan, PhD – Director, Process Development & Production
Fermentation and food process engineer with training and experience in the agri-food sector.

EXPERIENCED BOARD AND ADVISORY LEADERSHIP

James Blome – President of Bayer CropScience
Independent Non Executive Chairman

Claude Vachet – Managing Partner, Cycle Capital Management

Geoff Duyk, MD, PhD – Partner and Managing Director, TPG Alternative and Renewable Technologies

Donald Smith, PhD – McGill University
Chair of Scientific Advisory Board

Jeff Lievense, PhD – Genomatica, Inc.
Chair of Manufacturing Advisory Board

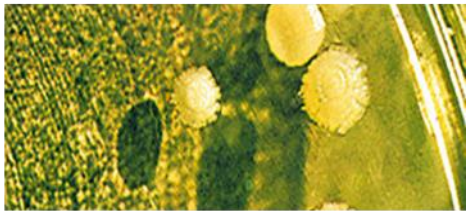
John Elstrott, PhD – Former Chairman of the Board of Whole Foods Market
Special Advisor for Sustainable Agri-food and Agriculture Practices

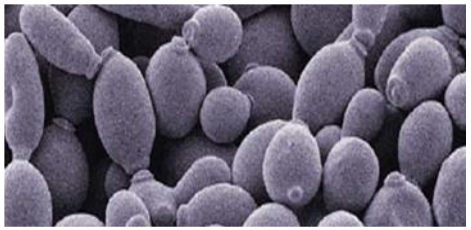
SCIENCE AND TECHNOLOGY

POWER OF MIXED MICROBIAL COMMUNITIES

A Microbial Consortia, Rather Than Single-Species, Approach

- Current technologies based on growing single microbes that perform one task, such as disease protection
- Inocucor's technology based on the emerging science of microbial consortia
- Microbes work together to stimulate the phyto-microbiome
- Up to 11 strains produce powerful 'natural metabolites or actives' to promote a better balance of the phyto-microbiome and act to drive yield increases





OVERVIEW OF PRODUCTION PROCESS

Growing strains from pure culture

Grouping strains in 4 family groups using special media

Combining groups to create of Inocul M® seed culture

Using Inocul-M® seed culture to produce Synergro™ in 3 weeks.

Proprietary down-stream separation process to remove microbes and concentrate bio-stimulation 'actives' to produce Synergro-Free™

TECHNOLOGY AND FERMENTATION PLATFORM

Secondary Fermenters in Background
Primary Fermenter in Foreground

Synergro™ Production Capacity at 20,700 Liters per Month

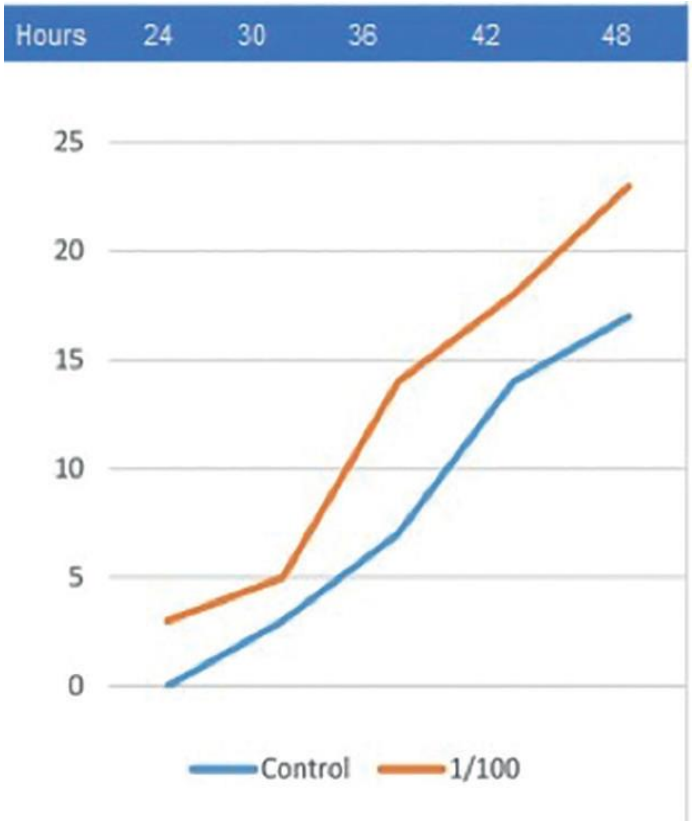
INOCUCOR'S COMMITMENT TO QUALITY

To ensure that every batch has the essential active stimulatory effects, each batch undergoes:

-Microbial analysis

-Chemical analysis

-Functional assays



Left: Germination Bio-assay. Inocucor-treated soybean seeds (in orange) show a rapid germination rate compared to water-treated controls during 24-48 hours after recommended treatment rates for field and greenhouse. (Assay based on 200 seeds per time point.)

AREAS OF FOCUS AND PRODUCT PIPELINE

- **Bio-stimulation** — *Base Business* ✓
  - ~$1.0B Market
  - 20% CAGR
- **Bio-fertility** — *Incremental Value* ✓
  - ~$1.0B Market
  - 14% CAGR
- **Bio-control** — *Incremental Value* ✓
  - ~$2.0B Market
  - 20% CAGR

First Gen Product
Synergro™

OMRI LISTED For Organic Use

REGISTERED cdfa ORGANIC INPUT MATERIAL

Global Biologicals Market Growing at ~15% CAGR… >$10B by 2020

First Commercial BIO-STIMULATION Product:

Inocucor IN-M1 aka: Garden Solution and Synergro™

- Live-cell formulation
- Improves plant and soil health
- Traditional and organic farmers
- High value produce
- Can be tank mixed with nutrients and herbicides
- Drip, side-dress, transplant, plug drench and/or foliar treatment

Next generation:

Inocucor IN-M2 aka: Synergro-Free™

- Cell formulation
- Bio-Stimulation properties of metabolites

Pipeline products include bio-stimulants and fungicides.

The IN-M1 formulation contains 11 strains of safe, food-grade beneficial bacteria, yeasts and molds		
Beneficial Microorganisms	**# of strains**	**Function**
Lactobacillus helveticus Lactobacillus casei Lactobacillus plantarum Lactobacillus rhamnosus Lactobacillus lactis	5	• Probiotic bacteria found in healthy human and animal gut • Naturally present in fruits, vegetables & leaves: precipitates fermentative processes • Enhances immunity • Suppresses e. coli and salmonella • Produces enzymes that stimulate growth of beneficial endogenous microbes in the soil • Produces organic acids which inhibit certain pathogens
Saccaromyces cervisiae Candida utilis Aspergillus oryzae	3	• Naturally occurring in soil, water and in the gut, on surface of leaves, fruit and vegetables • Breaks down polysaccharides to simpler, more easily metabolized molecules, increasing bioavailability to microbes and plants • Produces natural anti-biotics • Produces enzymes and metabolic by-products that stimulate the growth of endogenous yeast & fungi • Yeast debris provides nutrients for other beneficial microbes
Bacillus subtilis	1	• Abundant in healthy rhizosphere and in the gut of humans and ruminant animals • Natural surfactant producer • Colonizes plant root and makes nutrients available to plant • Produces natural antibiotic and enhances immunity • Suppresses gut pathogens and E. coli
Rhodopseudomonas palustris	2	• Commonly found in ponds, earthworm castings, marine coastal sediments and on fish • Fixes atmospheric carbon dioxide • Degrades lignin and aromatic compounds • Converts nitrogen into plant available form

Our 11 strains of beneficial microorganisms are selected to create a rich array of enzymes, organic and amino acids, and proteins to help improve the signaling capabilities of plants and liberate soil nutrients

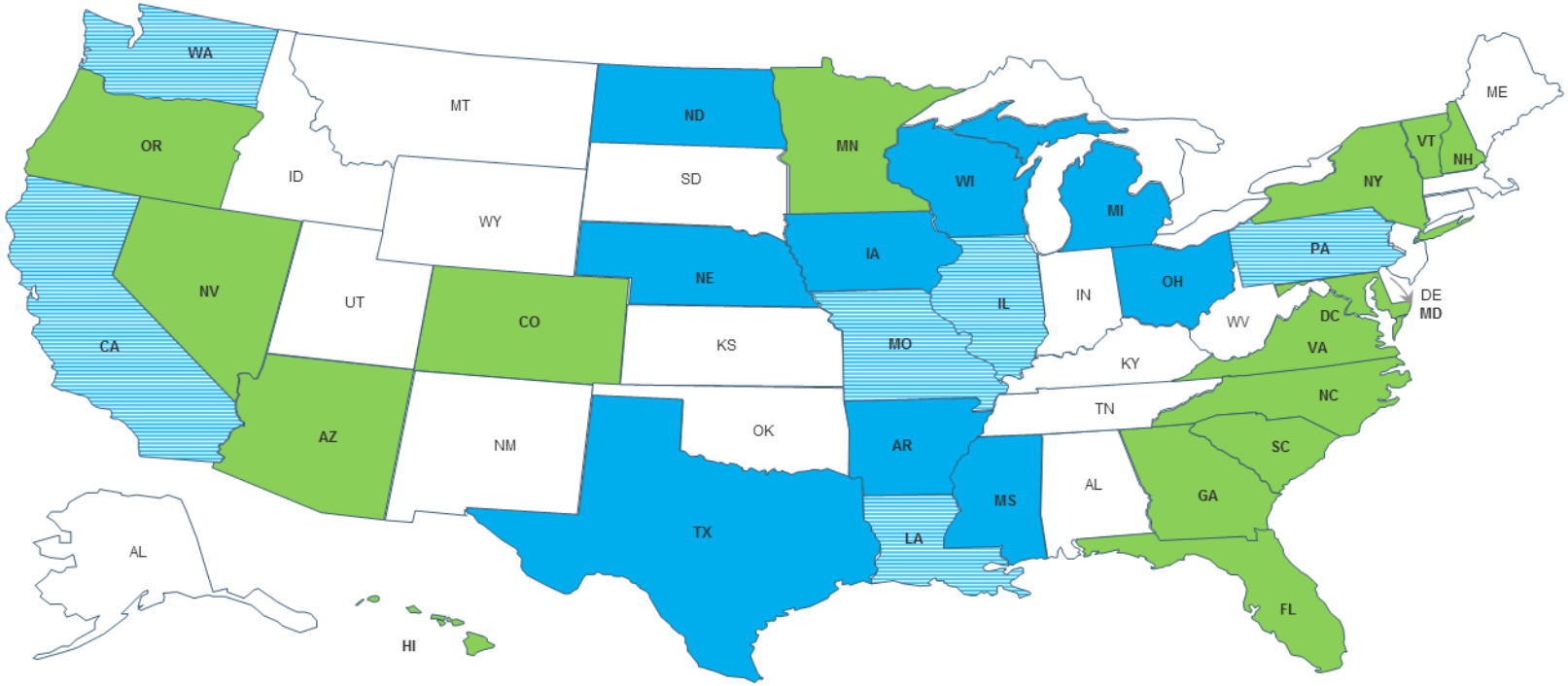
N⁰	ENZYMES	FUNCTION	pH	B.subtilis	A.oryzae	Lc.lactis	C.utilis	S.cerevesiae INO
1	Control			-	-	-	-	-
2	Phosphatase alkaline	Hydrolysis molecules that remove	8.5	++	+++++	+++++	++++	+++
3	Esterase (C 4)	phosphate groups, breaking down	6.5	+++	+++	-	+++	++
4	Esterase Lipase (C 8)	compounds to simpler molecules. Effective	7.5	++	+++	-	-	+++
5	Lipase (C14)	most in alkaline environments		-	-	-	-	-
6	Leucine arylamidase			++++	+++++	-	++++	+++++
7	Valine arylamidase			+++	++	-	+	+++
8	Cystine arylamidase	Break down of proteins and amino acids into		-	-	-	-	++++
9	Trypsine	smaller peptides	8.5	-	-	-	-	-
10	α-chymotripsine		7.5	-	-	-	-	-
11	Phosphatase acid	Hydrolysis of organic phosphates	5.4	++	+++++	++++	+++	+++++
12	Naphtol-AS-BI-phosphohydrolase			++	+++	-	++	+
13	α-galactosidase			+	-	-	-	-
14	β-galactosidase	Break down of glycolipids and glycoproteins into more readily available compounds		+++++	-	-	-	-
15	β-glucuronidase			-	-	-	-	-
16	α-glucosidase			-	++++	-	-	++++
17	β-glucosidase			-	+++	-	-	+++
18	N-acetyl-β-glucosaminidase	Break down of complex carbohydrates into simpler sugars Break down of cellulose		-	-	-	-	-
19	α-mannosidase			-	-	-	++	-
20	α-fucosidase			-	-	-	-	-

Inocucor is Investing in Independent Research to optimize the use of our products:

PRODUCT REGISTRATION

Synergro™	CFIA Registration	Approved in December 2016
Synergro-Free™	CFIA Registration	Approved in December 2016

PRODUCT REGISTRATION



Synergro™	Registered	In 22 States
Synergro-Free™	Registered	In 16 States
Synergro™ & Synergro-Free™	Registered	Both products are registered in these States

FUTURE PRODUCT PIPELINE

LOREM IPSUM

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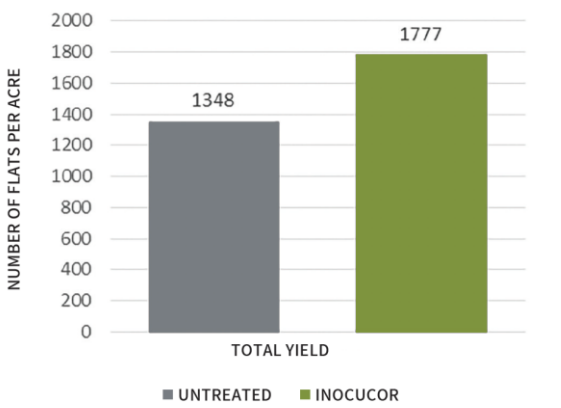
FIELD TRIALS

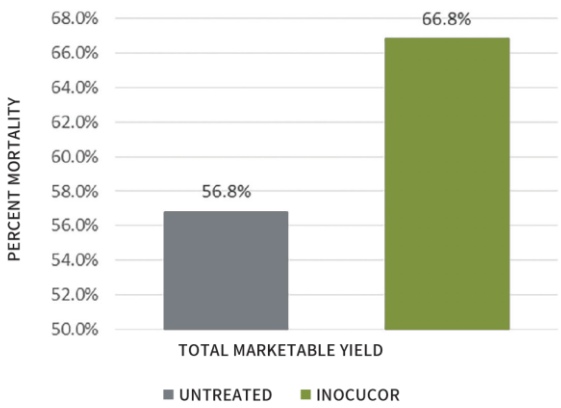
HOLDEN ORGANIC STRAWBERRIES

- Trial conducted with Holden Research & Consulting in Oxnard, California as a randomized complete block with 6 replications.
- Organic methods of cultivation for Portola variety strawberry
- Synergro™ applied through drip irrigation at a rate of 1 gallon per acre following a monthly schedule of application
- Applications made in addition to a standard grower program for organic strawberries in Ventura County

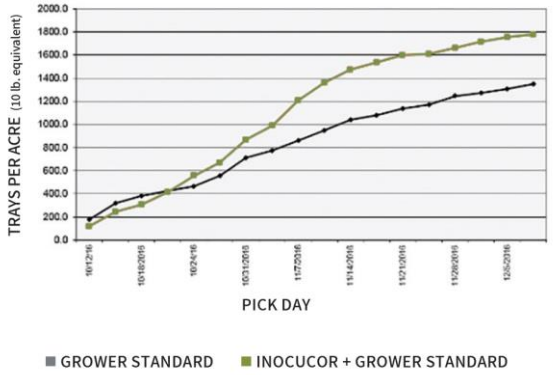
CUMULATIVE STRAWBERRY YIELD IN FLATS PER ACRE



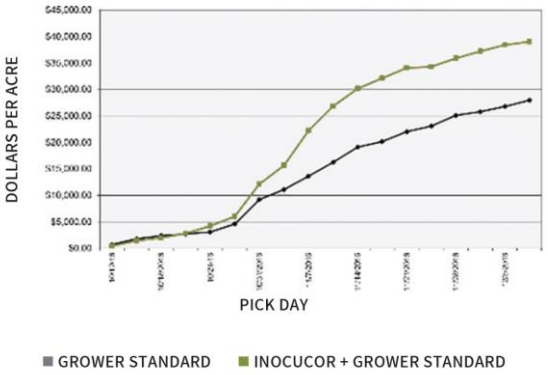
MARKETABLE PRODUCTION



CUMULATIVE MARKETABLE PRODUCTION BY PICK DAY



CUMULATIVE NET RETURN BY PICK DAY



Inocucor

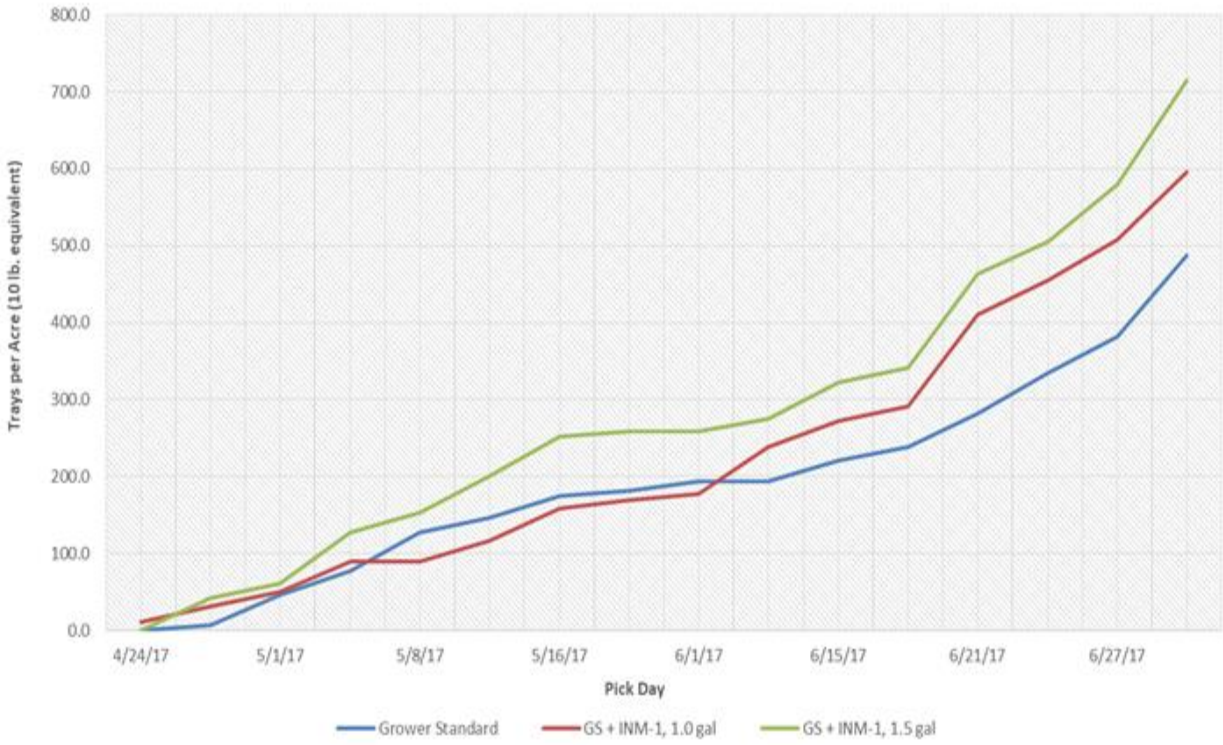
FIELD TRIALS

HOLDEN CONVENTIONAL STRAWBERRIES

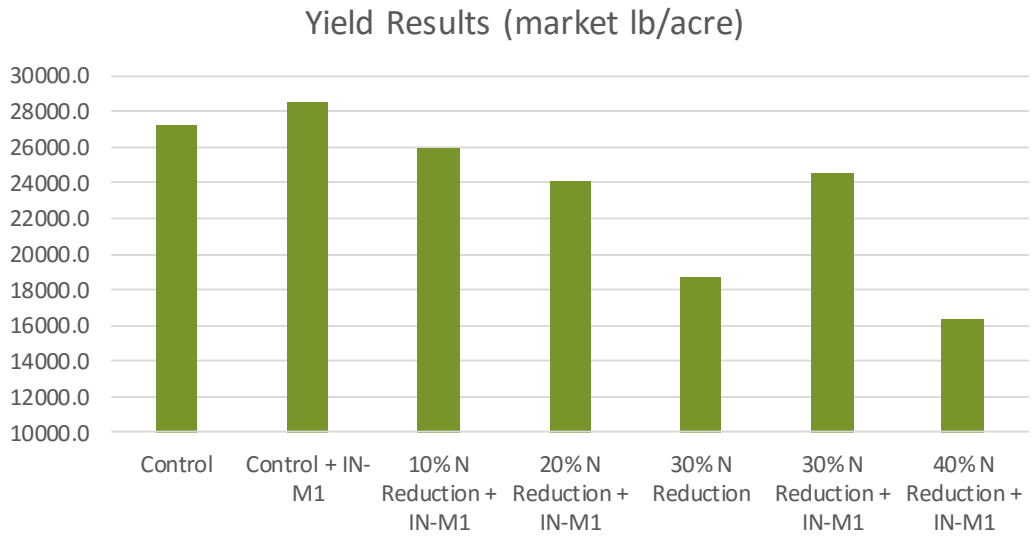
- Trial conducted with Holden Research & Consulting in Oxnard, California as a randomized complete block with 2 Treatments and 6 replications.
- Conventionally grown in potted media with Portola variety strawberry
- Synergro™ applied through drip irrigation at a rate of 1 gallon/A and 1.5 gallon/A following a monthly schedule of application
- Applications made in addition to a standard grower program for conventional strawberries in Ventura County

Marketable Production varied slightly by pick day, but the cumulative graph shows a clear winner – INM-1. While the monthly 1 gal applications increased production by **+22.1%** over grower standard, the 1.5 gal applications increased it by a whopping **+46.5%**.

Chart 1: Inocucor in Strawberries - Ventura County - Spring 2017 - Cumulative Marketable Production by Pick Day



Head Lettuce: INM-1 + N-Reduction Research



TRIAL RESULTS

Working with Pacific Ag Group in Chular, CA, we designed controlled head lettuce field trials to measure the impact of INM-1 on yield, utilizing varying rates of Nitrogen fertilizer reduction.

- Simply adding INM-1 to the grower standard control resulted in a **+4.5%** yield increase
- INM-1 application significantly mitigated yield decreases from N reduction
- Lettuce with 30% less N yielded +**31.3%** higher *with* INM-1 than without
- There appears to be a yield cliff after 30% N reduction, even with INM-1 application

Implications: Utilizing INM-1 in head lettuce production can aid in costly & disruptive regulatory compliance related to Nitrogen leaching while mitigating resulting yield losses.

FIELD TRIALS

UNIVERSITY OF GEORGIA WATERMELON

- Trial performed at the University of Georgia research site in Moultrie as a randomized complete block with four replications
- Experimental plots consisted of 20 plants each in double rows. 10 plants each row, at 6’ centers, 42’’ in-row spacing. Rows were covered in polyethylene plastic mulch
- Treatments of Inocucor SynergroTM were as follows: 1) 1% pre-plant application to plugs in seeding trays. 2) Transplant water as 50mL per hole of 1% solution. 3) Foliar application at peak female flower at a rate of 1 gallon/acre
- Both untreated and treated plots received the UGA standard production program. 1000 lbs/acre of 5-10-5 NPK as preplant broadcast, followed by fertigation of 7-0-7 NPK or CN-9 of 15lbs/N acre every 10 days beginning two weeks after planting. In total, fertigation provided 125 lbs/acre N. All plots were irrigated at the rate of 1 inch of water per week.

FIGURE 2: Vigor rating: 1 = dead; 5 = avg.; 9 = extremely vigorous

UGA VIGOR RATINGS

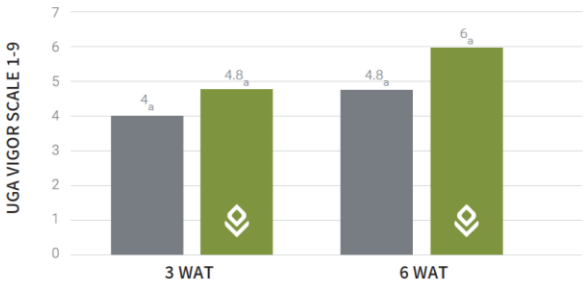


FIGURE 3: Total weight of harvest by fruit size category

WATERMELON YIELD BY SIZE

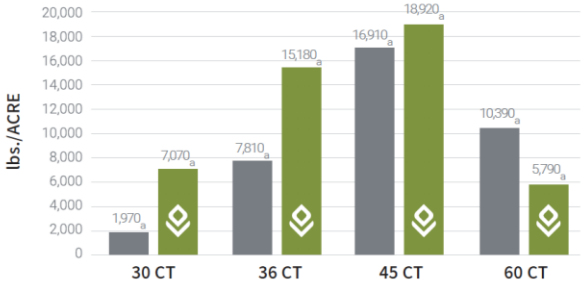


FIGURE 4: Harvest assessments

WATERMELON ASSESSMENTS

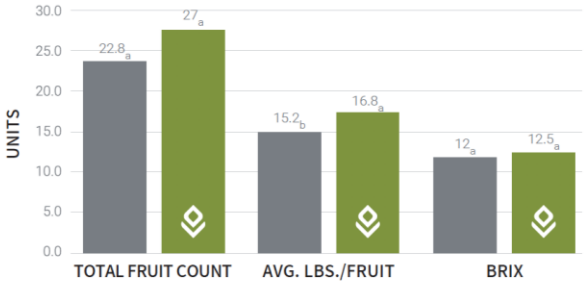
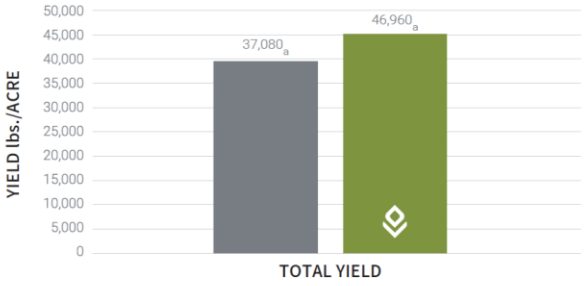


FIGURE 5: Total yield measurements

TOTAL YIELD lbs./ACRE

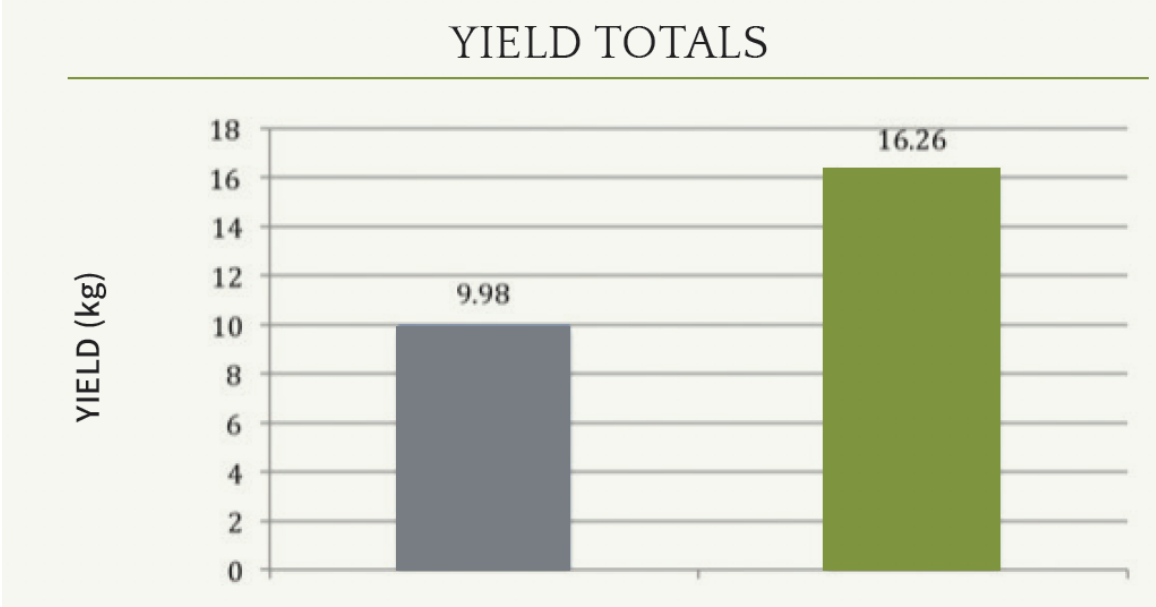


FIELD TRIALS

CLEMSON UNIVERSITY BROCCOLI

- Trial performed at Clemson University in Clemson, S.C. in Packman-variety broccoli.
- Field plots were laid out using a randomized design and three replications per treatment type. 9m plots were randomized within a 54m strip designated for the trial with three plots given per treatment. Each plot contained 30 plants.
- Treatments of Inocucor Synergro™ were as follows:
- 1) Two applications to seedling flats, at seeding and at 3 weeks after seeding, as a drench of 1% solution.
- 2) Soil application of 1% solution made immediately after transplanting.

Trial plots were selected away from the field margins to guard against edge effects at row ends. Plots consisted of six contiguous 9 m sections, which were randomly assigned as either Inocucor or control treated. A total of 30 broccoli seedlings were planted at 0.3 m apart in each plot according to treatment type.



FIELD TRIALS

CLEMSON UNIVERSITY TOMATOES

- Trial performed at Clemson University in Clemson, South Carolina, as a randomized complete block design with 3 replicate plots for each treatment. Each plot contained 10 plants with plants spaced 1 foot apart.
- Pre-transplant application of 1% Synergro solution to seedling trays
- Synergro was applied bi-weekly as a foliar application of 1% solution.
- Tissue samples were taken 117 days after planting.

TREATMENT GROUP	TOTAL LEAF N%	TOTAL YIELD (kg)
CONTROL	3.23	14.3
TREATED	4.30	20.0

TABLE 1: Leaf tissue % nitrogen (N) and total marketable yield in Inocucor Synergro-treated vs. untreated control tomato experimental plots.

FIGURE 1: Nutrient analysis of plant tissues shows the use of Inocucor increases nitrogen content in plants

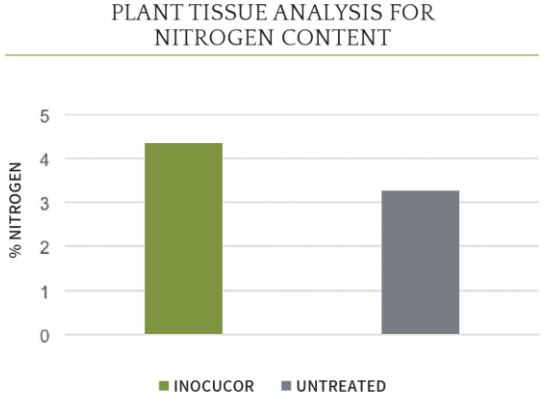
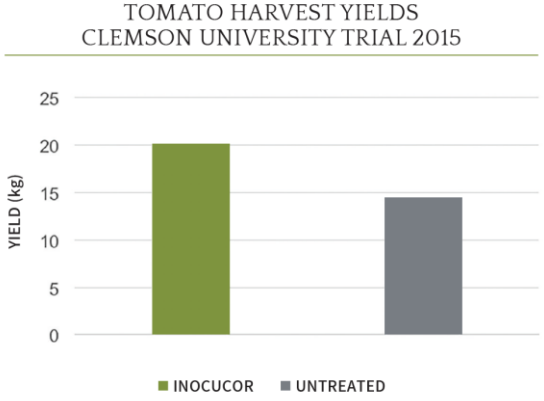


FIGURE 2: Yield data totaled from all harvest between June 8th and July 10th



FIELD TRIALS

ONTARIO STRAWBERRIES

- Trial performed in Lambeth, Ontario, at A&L Laboratories in Albion-variety strawberry
- Seedling trays received a pre-plant application by dipping trays in a 1% Synergro™ solution.
- Soil application through transplant water with 1oz of 1% Synergro solution.
- Harvest data were collected every two days between August 13th and October 6th.

FIGURE 1: Weekly strawberry yield totals lbs. from untreated Albion strawberry plants (black series) vs. Inocucor Synergro-treated plants (red series).

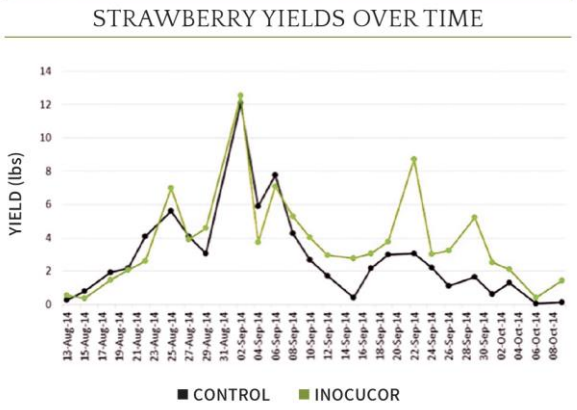
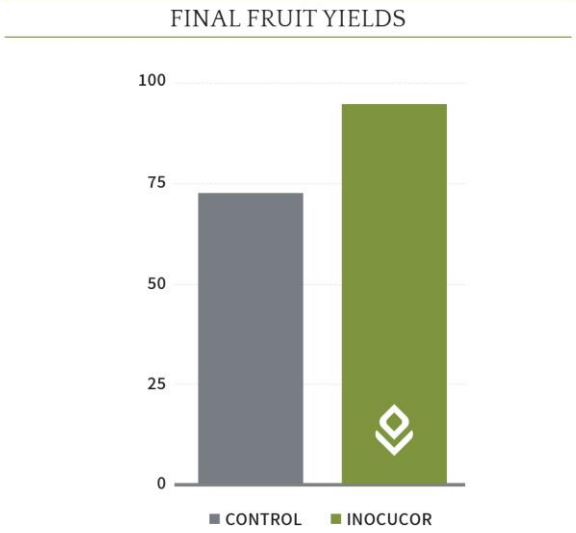


FIGURE 2: Final yield (in lbs.) for untreated Albion strawberry plants vs. Inocucor Synergro-treated plants



RESULTS

- Plant leaf measurements were taken six weeks after planting from 40 randomly selected plants in each treatment. Results showed that Inocucor-treated plants had leaves that were significantly long and wider than those untreated.
- Treated strawberry plants produced 94.63 lbs in total over the harvest season compared to only 72.23 produced in the untreated. This represents a 33% yield increase from the addition of Synergro.

THANK YOU

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