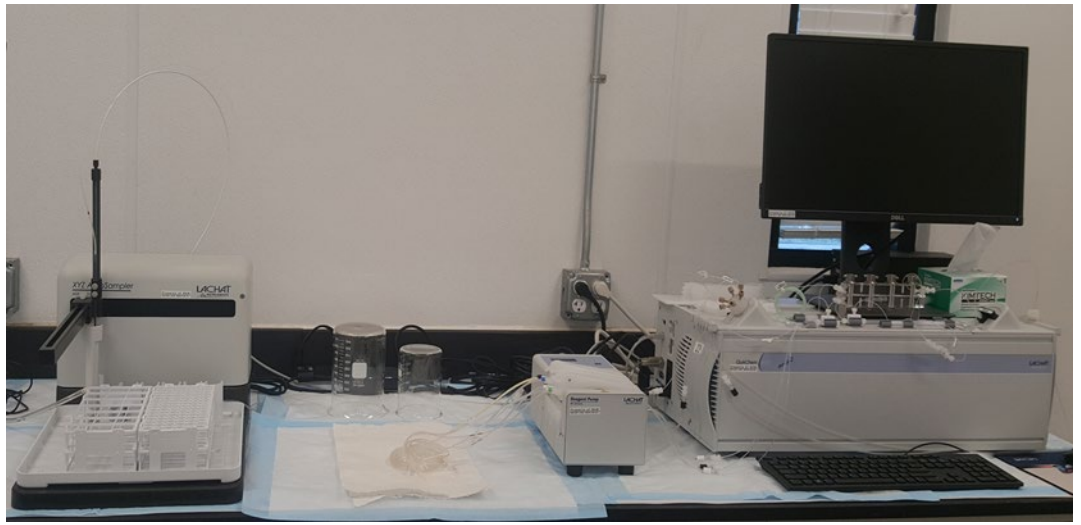
Alpha Synectics Lab Improvement & 2017/18 Research, Lab & Field Trials

Rita Abi-Ghanem, PhD

Sr. Director of Research & Development

Laboratory Updates



Lachat QuikChem®

8500 Series

Plant Growth Chamber

Root Scanner

Leaf scanner

List of Development Products

- New products developed: Nut Peg, Liquid Gaishi, CarbonX 201 and 203, Turf Blend. Fertilgold®: 3-2-5, B, Ca, Co, Cu, Double Play, Fe, K6, Mg, Micros I, Mn, Mo, N5.5, NK, Soil, Triple Play, XT, and Zn.
- Products in development: Fertilgold®: herbicide, K-Bor, P2O5, Ca-Si, and Ca-B. Eco-friendly algaecide, surfactants, 2-20-15, snail terminator.

Commercial Samples Analysis

- Soil, plant, and water analysis for distributors/growers.
- Please coordinate with sales rep before sending samples.

AlphaSynectics™ LABORATORIES

Please complete and return this form along with your samples to Alpha Synectics Laboratories. Analyses can only be as accurate as the samples that are received, proper sampling is imperative to providing accurate and meaningful data. Please follow sampling guidelines provided.

Client Information:

Name:	Email:
Address:	Sample ID:
City:	Sampling Date:
State & Zip:	Sample Submission Date:

Comments/Special Instructions: _____

_____

CHECK TEST GROUP/ANALYSES REQUESTED

Research Trials

1 – Liquid Sili-Max® Improves Wheat Yield at Much Higher Efficiency Than Conventional Dry Silicon Fertilizers

Brenda Tubana, PhD, Louisiana State University

Objective:

The objective of this study was to compare, for use in Louisiana wheat production, the efficacy of a liquid silicon (Si) fertilizer (Sili-Max®) with a commonly used dry Si source (steel slag) and another Si source (wollastonite) often used in research as a suspension.

Results

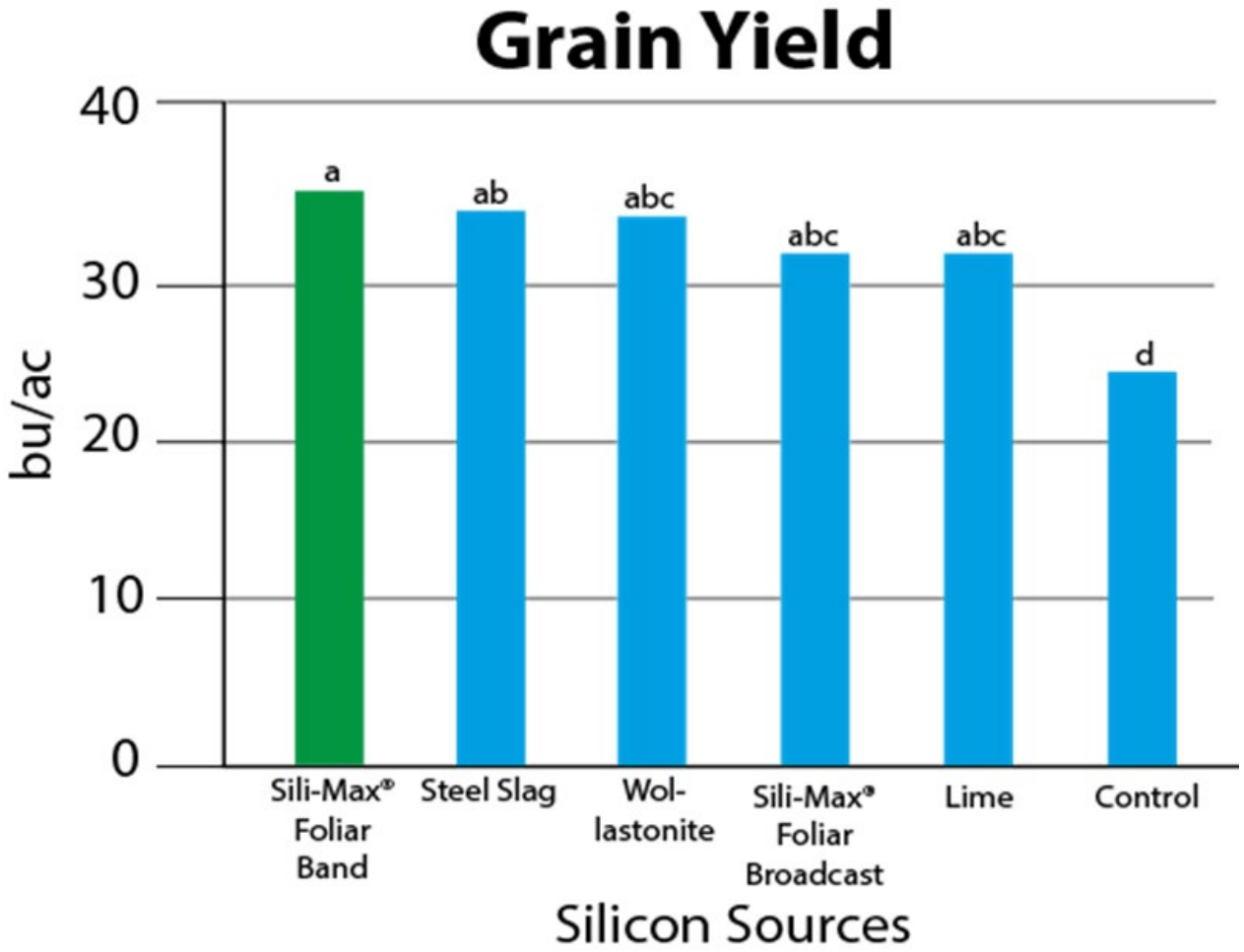


Figure 1. Silicon Source Effect on Grain Yield

Sili-Max® foliar band and Sili-Max® foliar broadcast increased grain yield by 10 and 7 bu/ac, respectively, in reference to the control plot.

Results (cont'd)

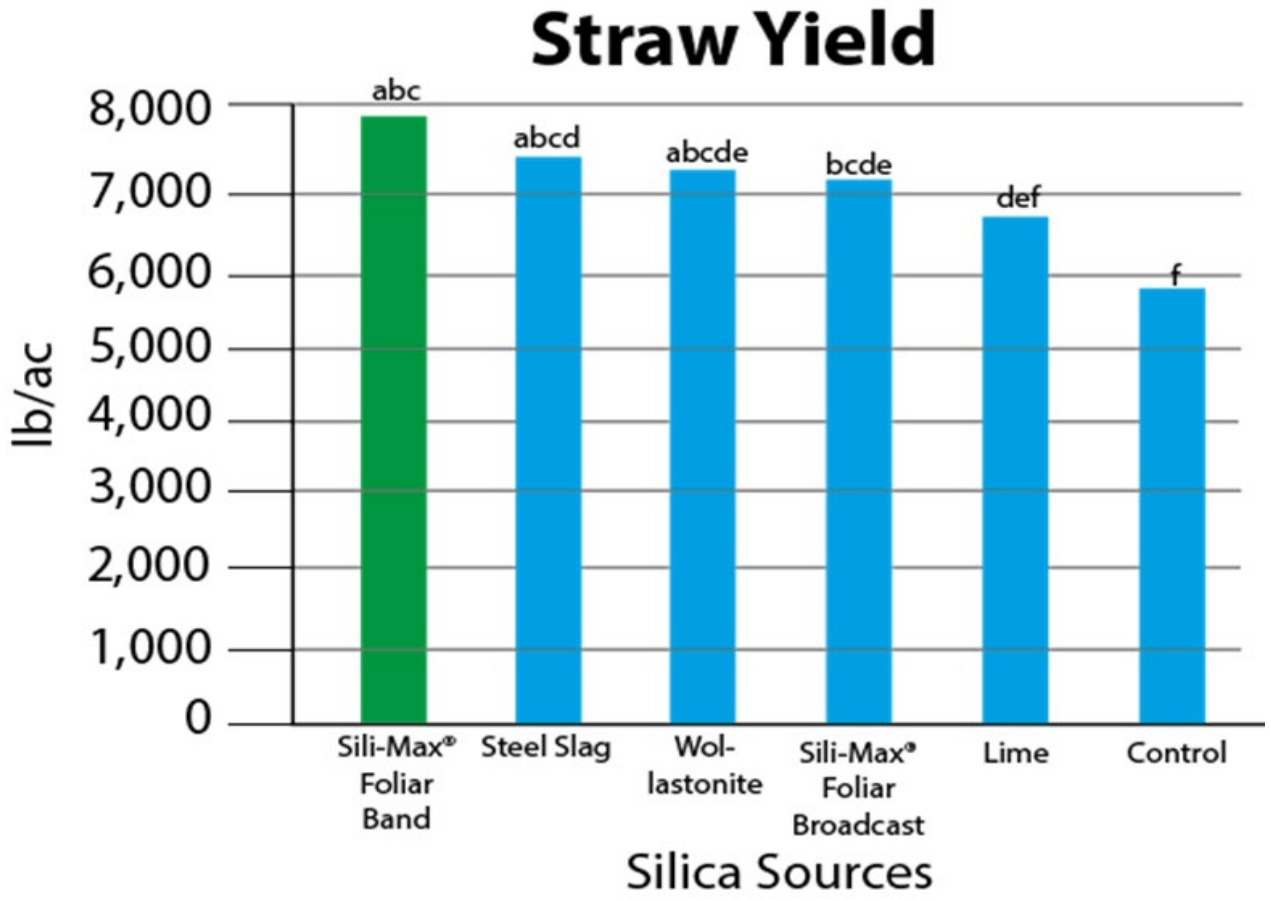


Figure 2. Silicon Source Effect on Straw Yield

Sili-Max® foliar band had the numerically highest straw yield at 7,941 lb/ac.

Conclusions

- Sili-Max® applied as foliar band at a rate 3,900 times less than the dry silicon sources contributed to higher grain yield and straw yield.
- Sili-Max® applied as a foliar broadcast at a rate 1,900 times less than the dry silicon sources led to high Si deposition in wheat leaves.

2 – Super Phos® Applied at 1/8 Rate of Conventional Phosphorus Improves Soybean Yield

Fred Below, PhD, University of Illinois

Objective:

This study aimed to evaluate responses from various phosphorus results sources, application methods, and timings on soybean yield in comparison with the availability and versatility of Super Phos® (SP) as an in-furrow and side-dressed phosphorus source to increase soybean productivity.

Results

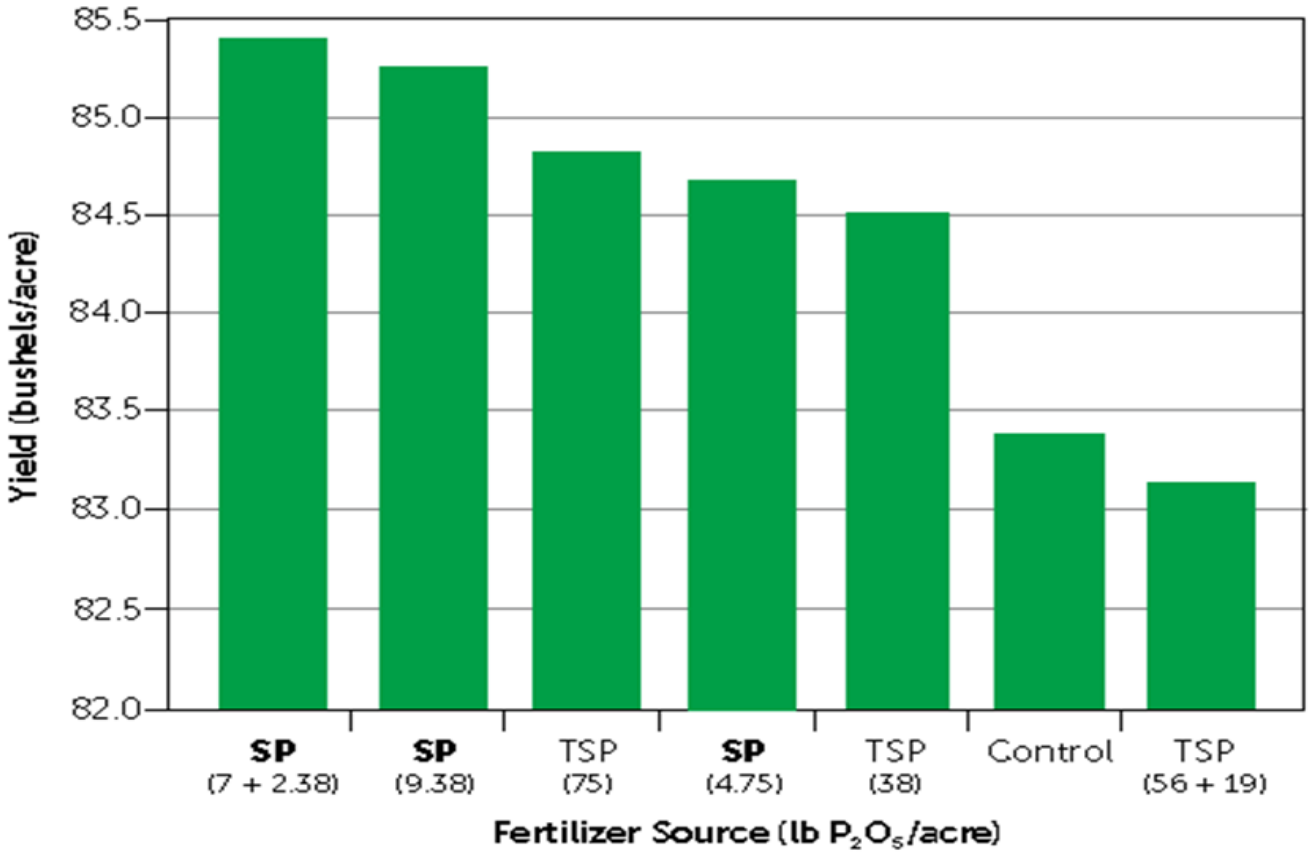


Figure 1. The effect of P fertilizers, source, and rate on soybean yield

Results (cont'd)

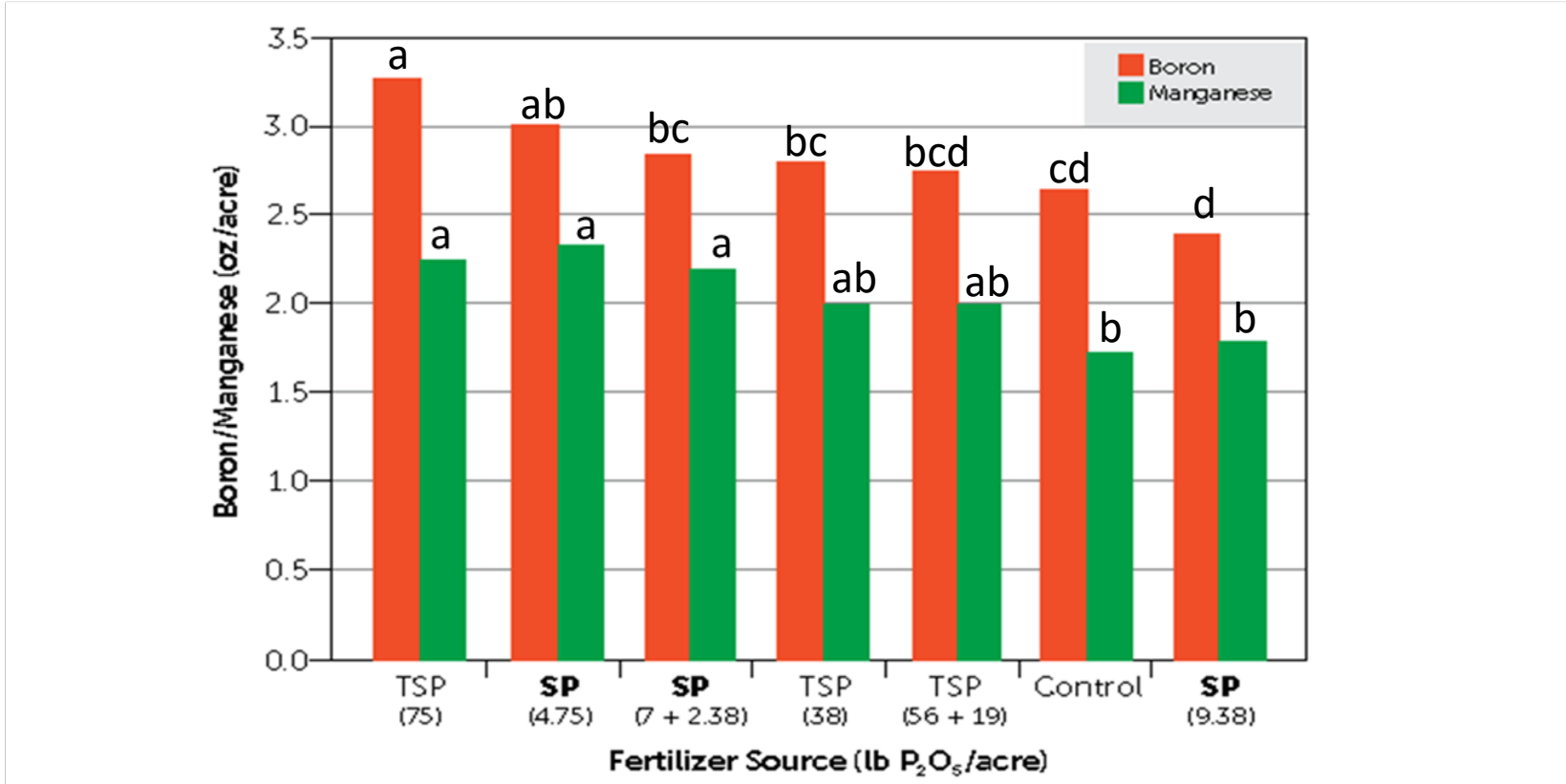


Figure 2. The effect of P fertilizers, source, and rate, on boron and manganese accumulation in soybean

Conclusions

- Super Phos® at the low rate of 1/8 that of conventional P produced yields numerically similar to that produced by TSP. This suggests enhanced efficiency associated with Super Phos®.
- The study also demonstrated a significant increase in boron (B) and manganese (Mn) becoming available in the soil when applying 4.75 lbs P_2O_5/acre of Super Phos® compared with the Control.

3 – Super Phos® Improves Alfalfa Yield

Ayman Mostafa, PhD, The University of Arizona

Objective:

The primary objective of this research study of Super Phos® (SP) on alfalfa was to determine if a single application of SP would provide similar results to conventional fertilizer.

Results

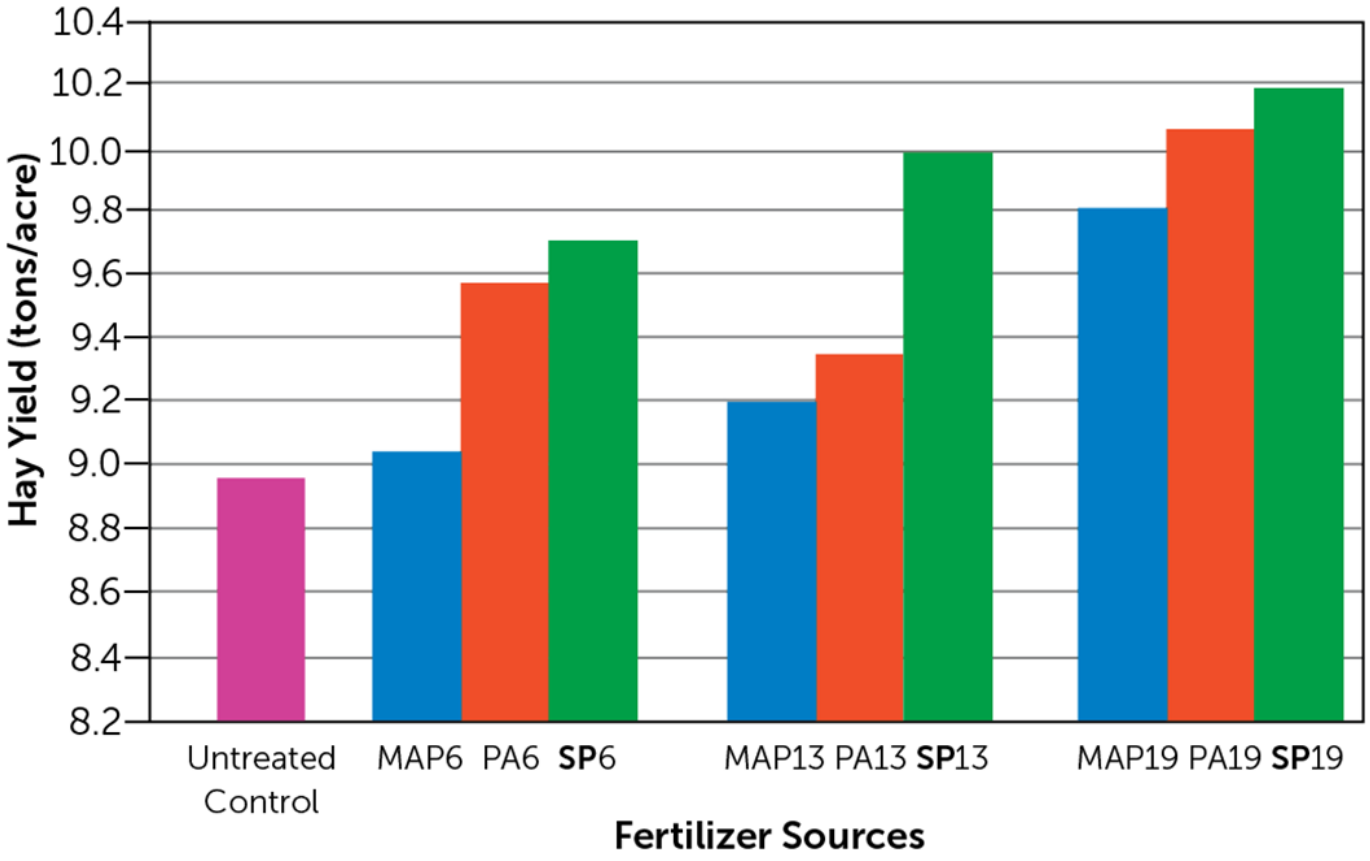


Figure 1. The effect of P fertilizer sources and rates on hay yields

Conclusions

- Super Phos® applied at 6, 13, and 19 lb/ac P_2O_5 numerically contributed to the highest alfalfa hay yield in comparison with other phosphorus fertilizer sources.
- Future studies of Super Phos® on alfalfa should investigate the effects of other rates and timings of application to determine maximally efficient alfalfa programs.

4 – Proud 3® Controls Anthracnose on Geranium

Francesca Hand, PhD, Ohio State University

Objective:

The objective of this study was to test the efficacy of Proud 3® for the control of the anthracnose pathogen *Colletotrichum acutatum* on greenhouse-grown geranium plants.

Results

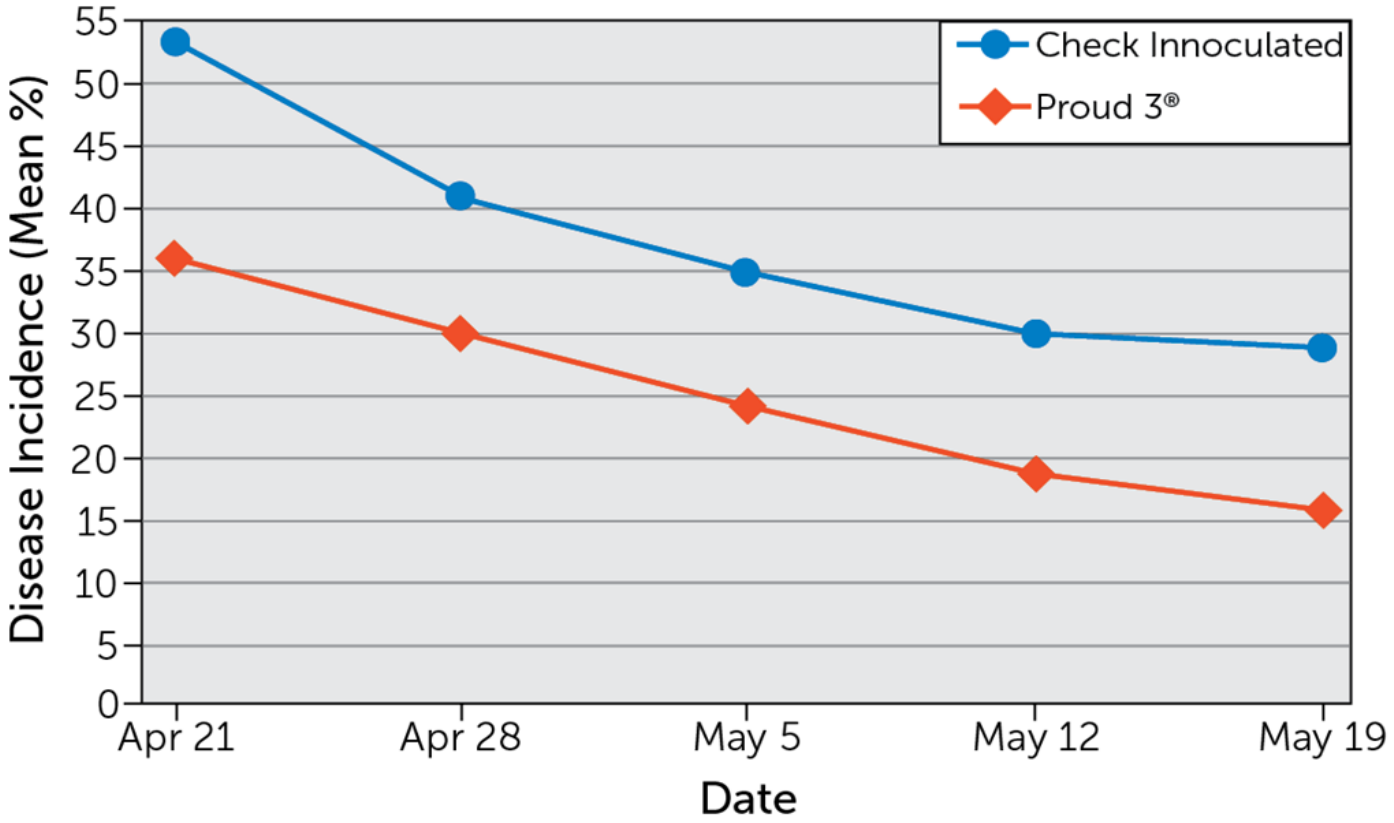


Figure 1. Incidence (mean %) of anthracnose on geranium plant

Results (cont'd)

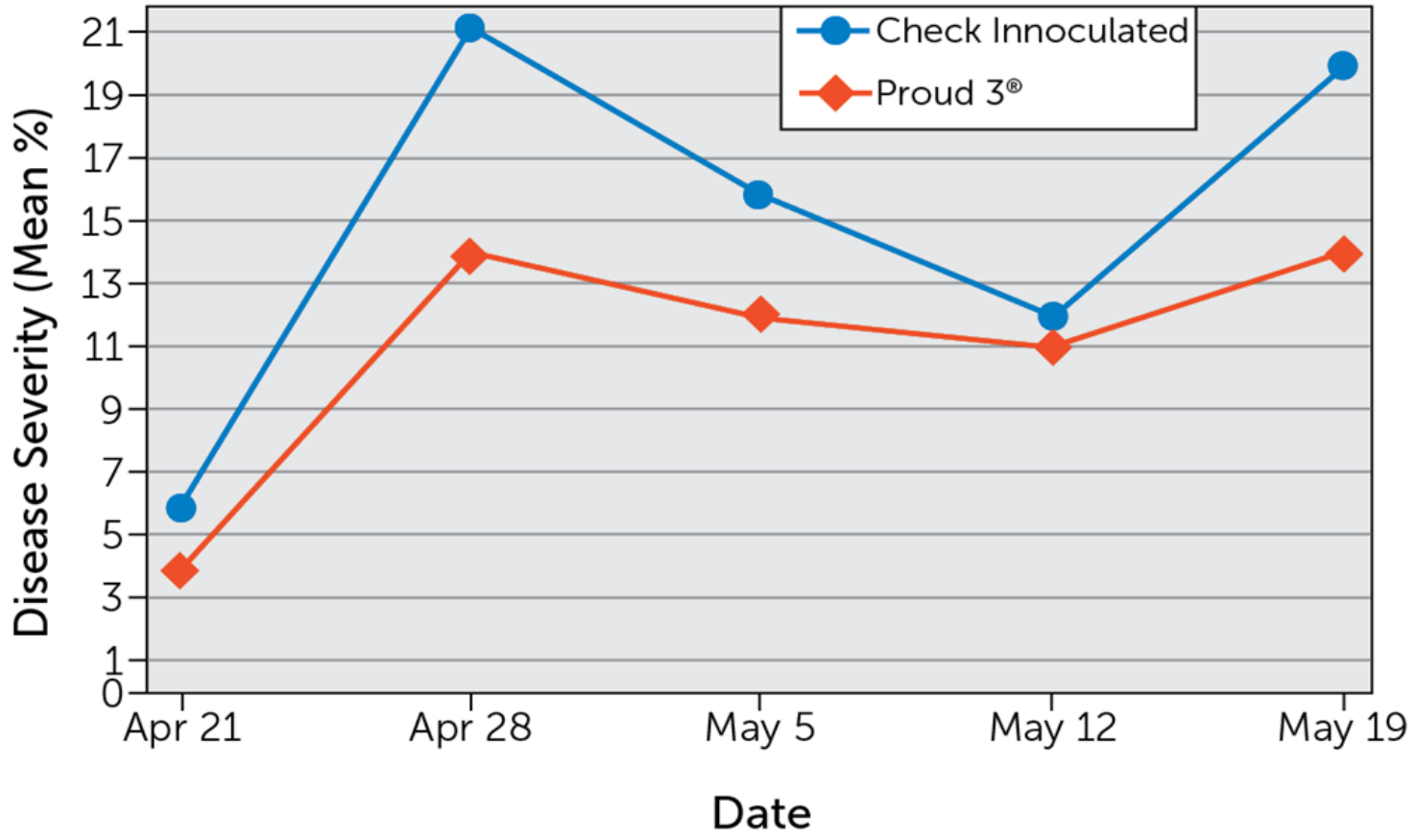


Figure 2. Severity (mean %) of anthracnose pathogen *Colletotrichum acutatum* on geranium plants

Conclusions

Huma Gro® Proud 3® decreased the incidence and severity of anthracnose disease on geranium plants.

5 – Proud 3® Controls *Phytophtora* on Rhododendron

Luisa Santamaria, PhD, Oregon State University

Objective:

The objective of this study was to test the efficacy of PROUD 3® for the control of *Phytophthora plurivora* on rhododendron plants.

Results

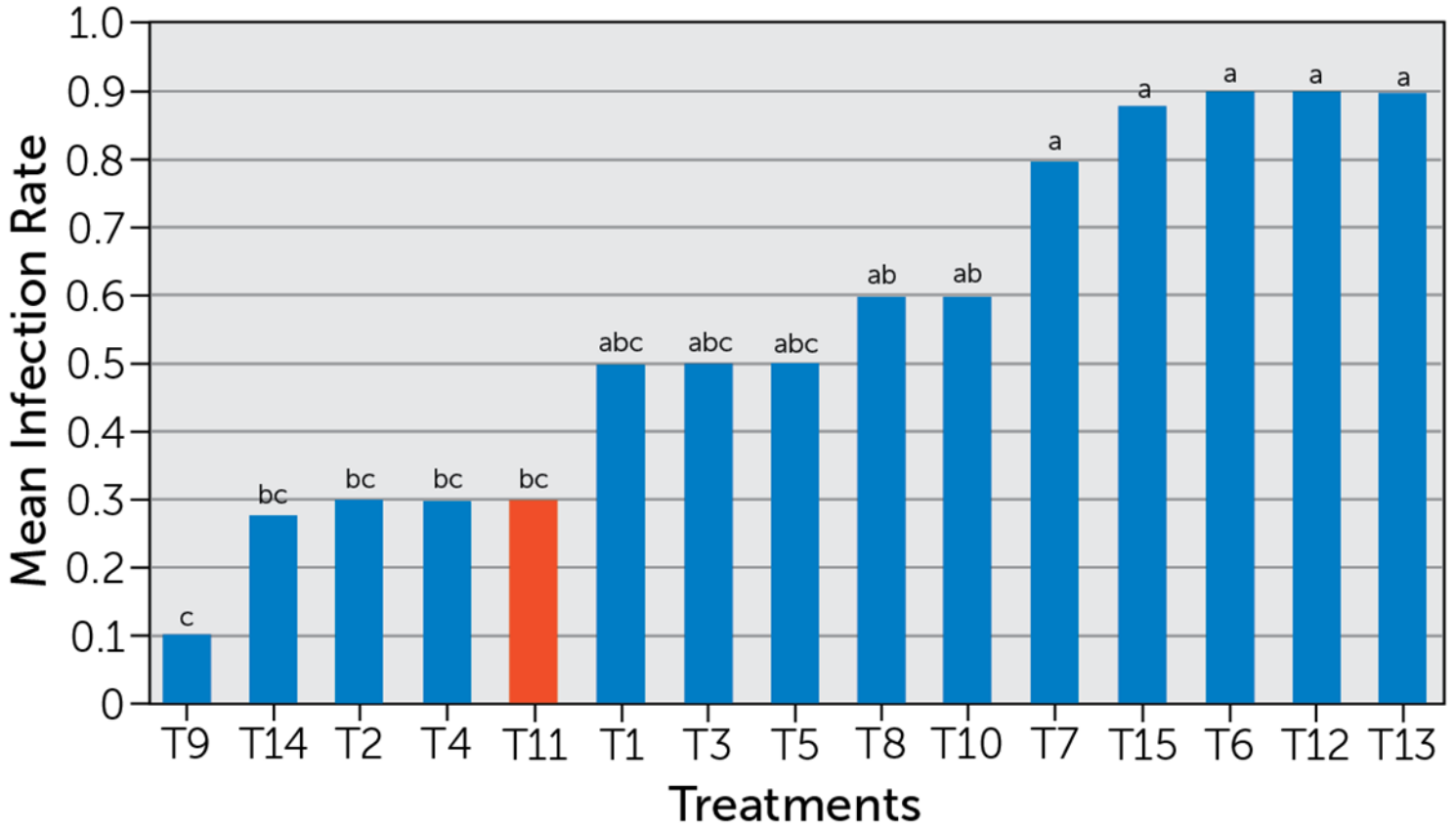


Figure 1. Mean infection rate of *Phytophthora plurivora* on rhododendron plants. Treatments sharing the same letter at the top of their bar graph were not significantly different ($P \leq 0.05$).

Conclusions

PROUD 3® demonstrated efficacy for the control of *Phytophthora plurivora* on rhododendron plants.

Lab Trials

6– In Vitro Bio-Assay Testing of Promax® Efficacy in Controlling Strawberry Pathogens

Plant Sciences, Inc

Objective:

Test the efficacy of Promax® for inhibiting mycelial growth of 8 fungal strawberry pathogens through *in vitro* bio-assay.

Results

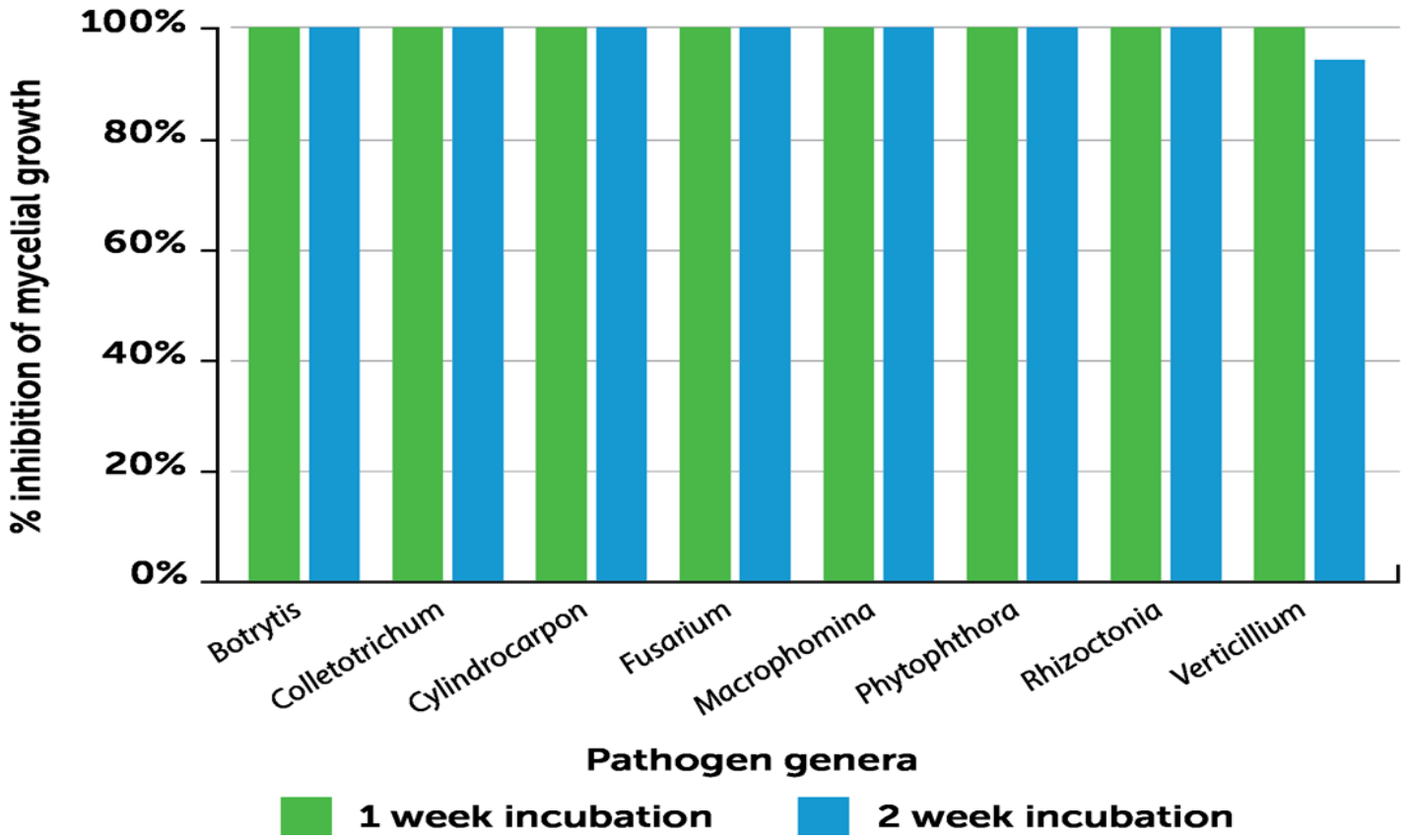
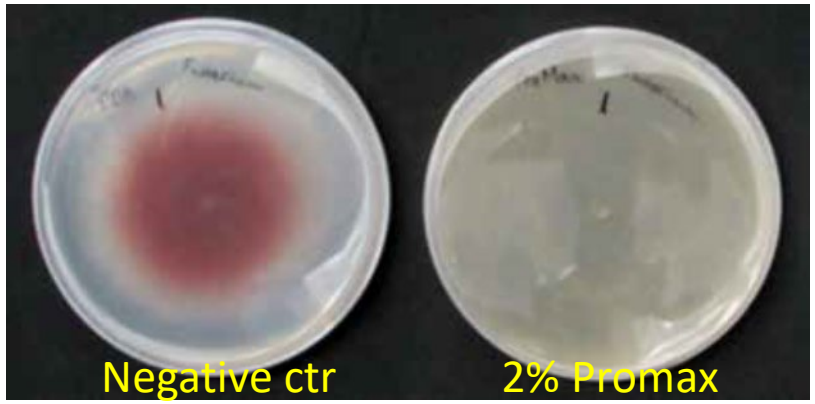


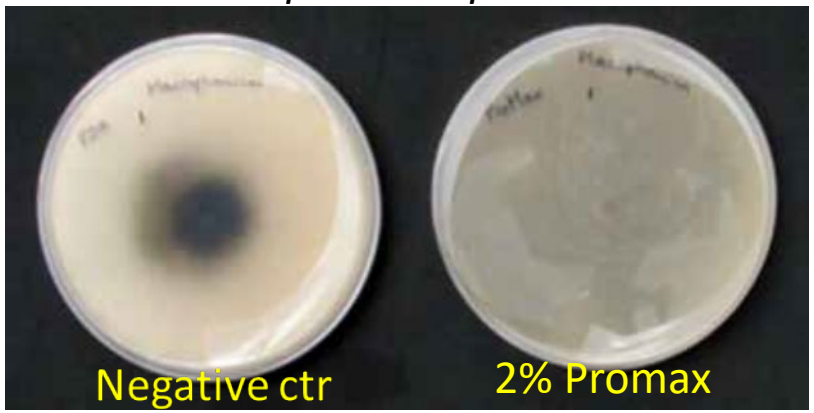
Figure 1. % Inhibition of mycelial growth of 8 strawberry pathogens *in vitro* using agar-based media amended with 2% Promax®

Results (cont'd)
1 week after incubation at 20°C

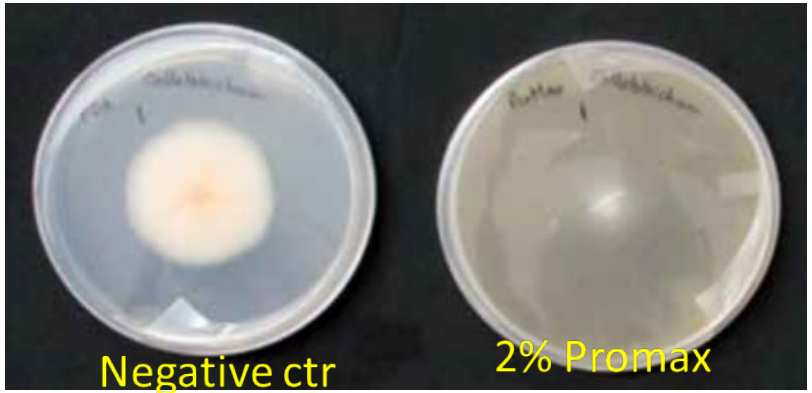
Fusarium oxysporum f. sp. *fragariae*



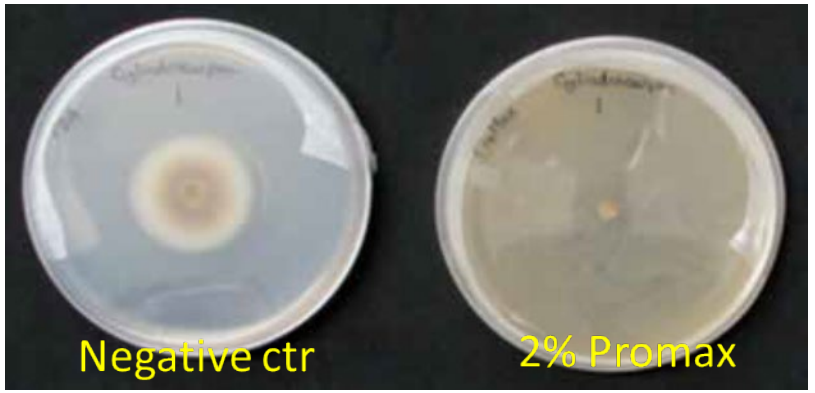
Macrophomina phaseolina



Colletotrichum acutatum



Cylindrocarpon destructans



Conclusions

- After 1 week of incubation, the mycelial growth of the 8 tested pathogens were 100% inhibited with 2% Promax®.
- After 2 weeks, 7 of the 8 tested pathogens were at 100% inhibited. *Verticillium dahliae* was at 94% inhibition with 2% Promax®.
- Promax® was highly effective in *in vitro* control of these 8 strawberry pathogens.

Field Trials

7 – Promax® Controls Nematodes for English Boxwood Ornamental Plants

Virginia Tech Kentland Experimental Research Farm, McCoy, Va.

Objective:

This trial aimed to assess the efficacy of Promax® and 2 types of beneficial nematode treatments (*Steinernema feltiae* and *S. riobrave*) versus a control on plant-parasitic nematodes (Stunt, Lance, Ring, and Spiral) for English Boxwood ornamental plants.

Results

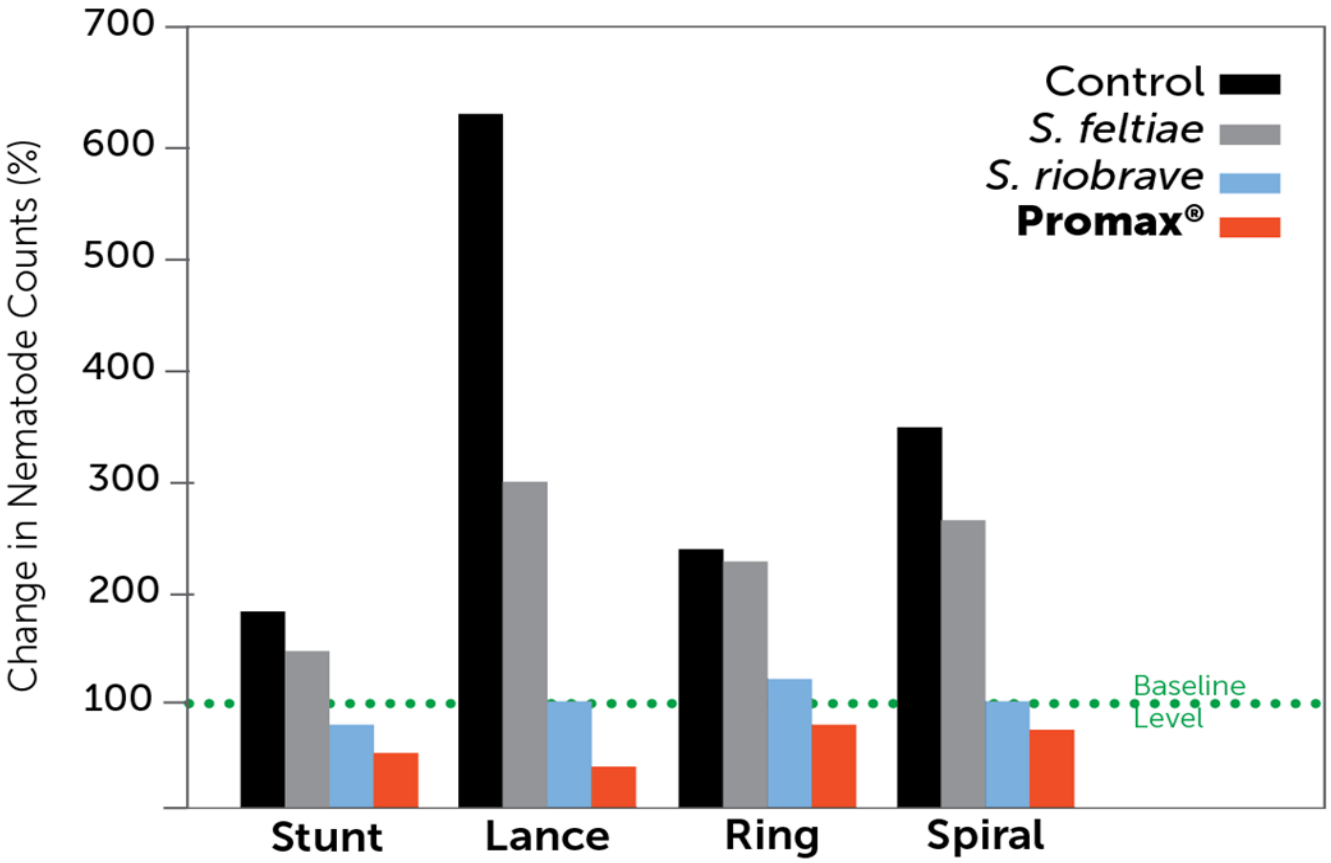


Figure 1. Year 1 percentage change in nematode counts for English Boxwood plants, 30 days after treatment.

Results (cont'd)

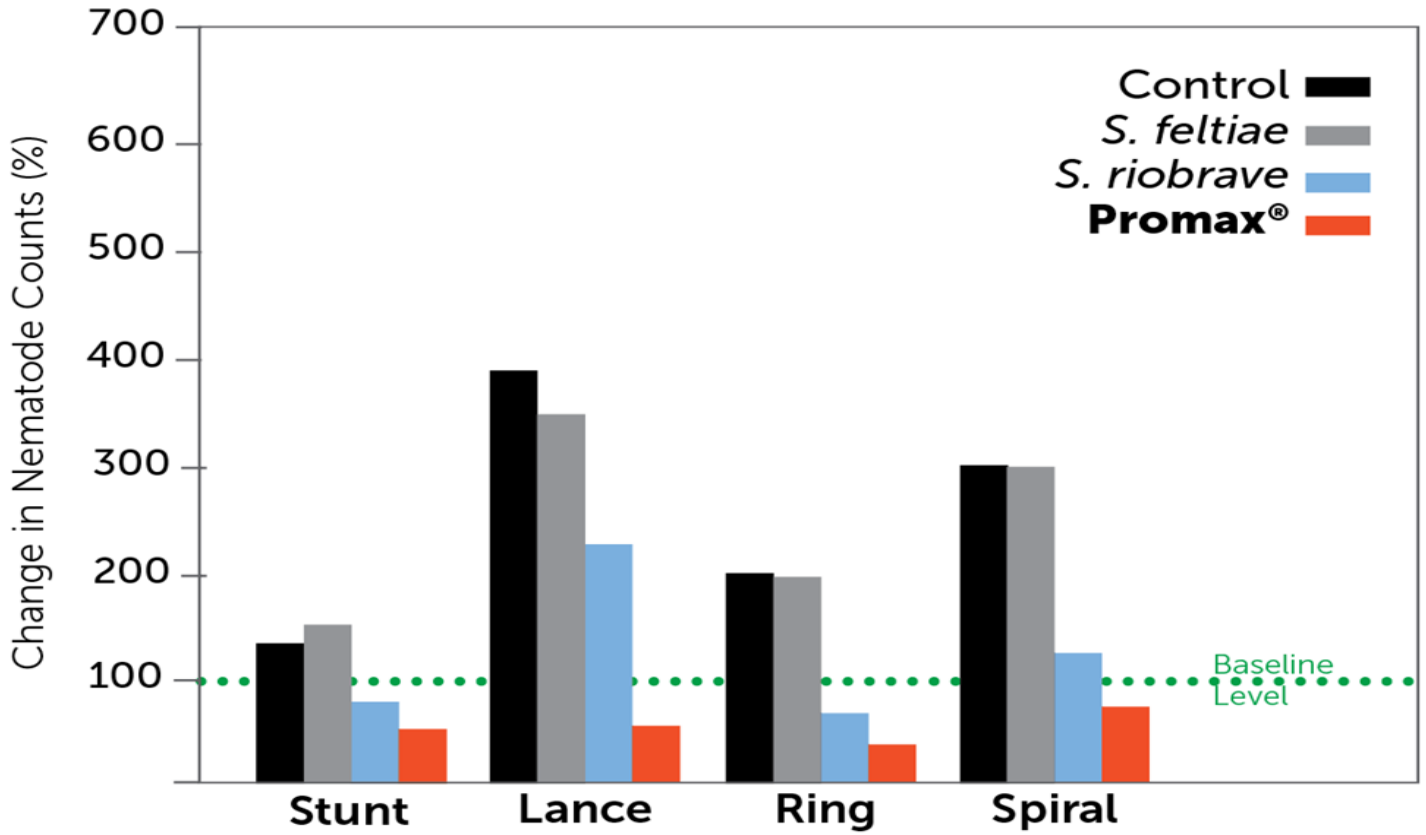


Figure 2. Year 2 percentage change in nematode counts for English Boxwood plants, 30 days after treatment.

Conclusions

- The results demonstrate that Promax® reduced the population of the 4 plant-parasitic nematodes in years 1 and 2, with Promax® more effectively than the other 2 treatments.
- Repeated applications may be required to achieve suppression for periods longer than 30 days.

Summary of 2017/18 Research, Lab, & Field Trials

Research Trials:

1 –Liquid Sili-Max® Improves Wheat Yield at Much Higher Efficiency Than Conventional Dry Silicon Fertilizer.

2 –Super Phos® Applied at 1/8 Rate of Conventional Phosphorus Improves Soybean Yield.

3 –Super Phos® Improves Alfalfa Yield.

4 –Proud 3® Controls Anthracnose on Geranium.

5 –Proud 3® Controls *Phytophthora* on Rhododendron.

Lab Trials:

6 – In Vitro Bio-Assay Testing of Promax® Efficacy in Controlling Strawberry Pathogens.

Field Trials:

7 – Promax® Controls Nematodes for English Boxwood Ornamental Plants.

THANK YOU