Ag Innovation Conference

Comprehensive Crop Care

2020

Steve Easterby: *Technical Support Agronomist*

Company Highlights

- Leaders in Plant Health
- Naturally Derived & Sustainable
- Driven by Science
- Robust Technologies Platform
- Patent & Other IP Protection
- Proven Performance
- Grower & Value Chain Profitability
- Rapid Sustainable Growth
- Profitable with Strong Cash Flows
- Leadership & Industry Expertise

California Agriculture Regulatory Environment Reality

- Strict regulations regarding pesticide use.
- Difficult and expensive to bring new pesticides to the market.
- Results in few effective choices for growers.
- Reduces available modes of actions against pests.
- Increases pest ability to build resistance against approved chemicals.

FBSciences Response

1. Provide advanced nutrient products that improve plant health.

    - Plants with better nutrition status are more resistance to pest pressure.

CROP NUTRITION

FBS TRANSIT®

2. Develop new biopesticide technologies that are effective and arrive swiftly to the marketplace.

    - Low environmental impact and sustainable products garner regulatory approval quickly.

CROP PROTECTION

FBS DEFENSE™

FBSciences Go To Market

TECHNOLOGIES	CROP NUTRITION FBS TRANSIT®	CROP PROTECTION FBS DEFENSE™	CROP NUTRITION FBS GOLD™
PRODUCTS LINES	NUE Products, Biofungicides, Biostimulants, Seed Treatments, Micronutrients, Nematicides, Humic Acids, Compatibility Aids		
PRODUCT SOLUTIONS	Branded → White Label → Blended Raws → Raw Ingredients → Custom		

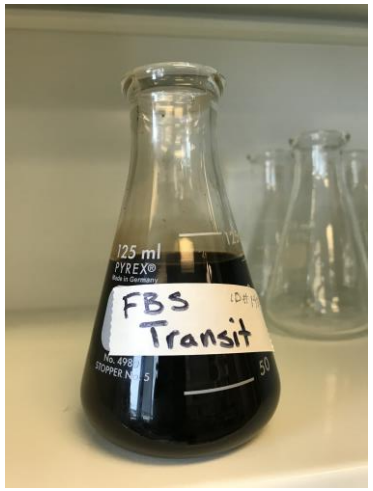
FBS TRANSIT®

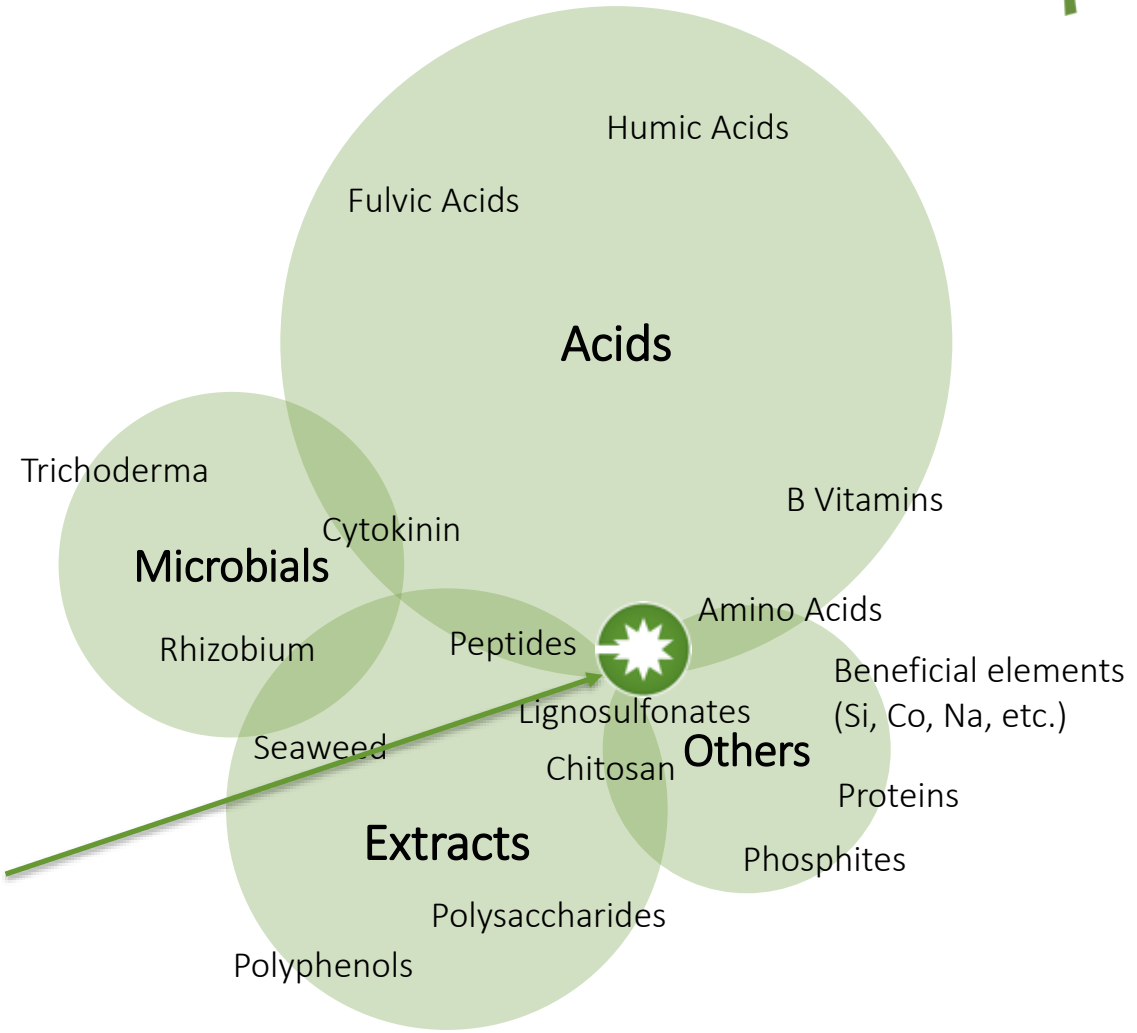
Biostimulant Technology

FBS Transit

Classification: Biostimulant

Definition: A complex mixture of thousands of **organic** compounds derived from freshly decomposed plant matter that is biologically active and stimulates various responses in plants.

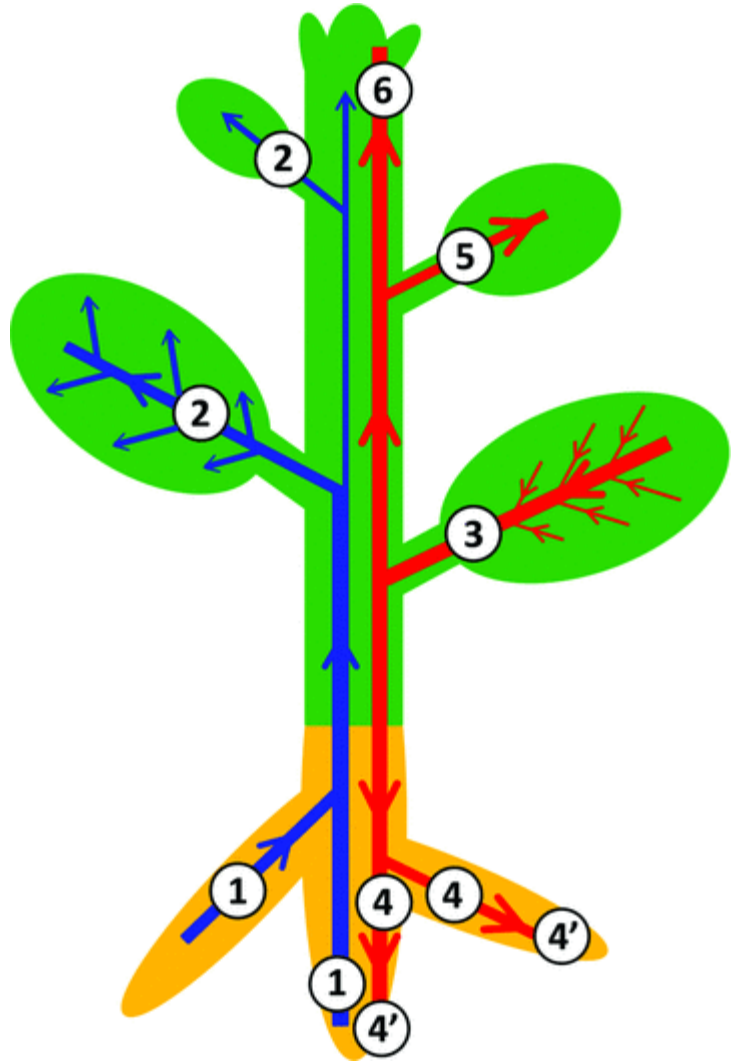




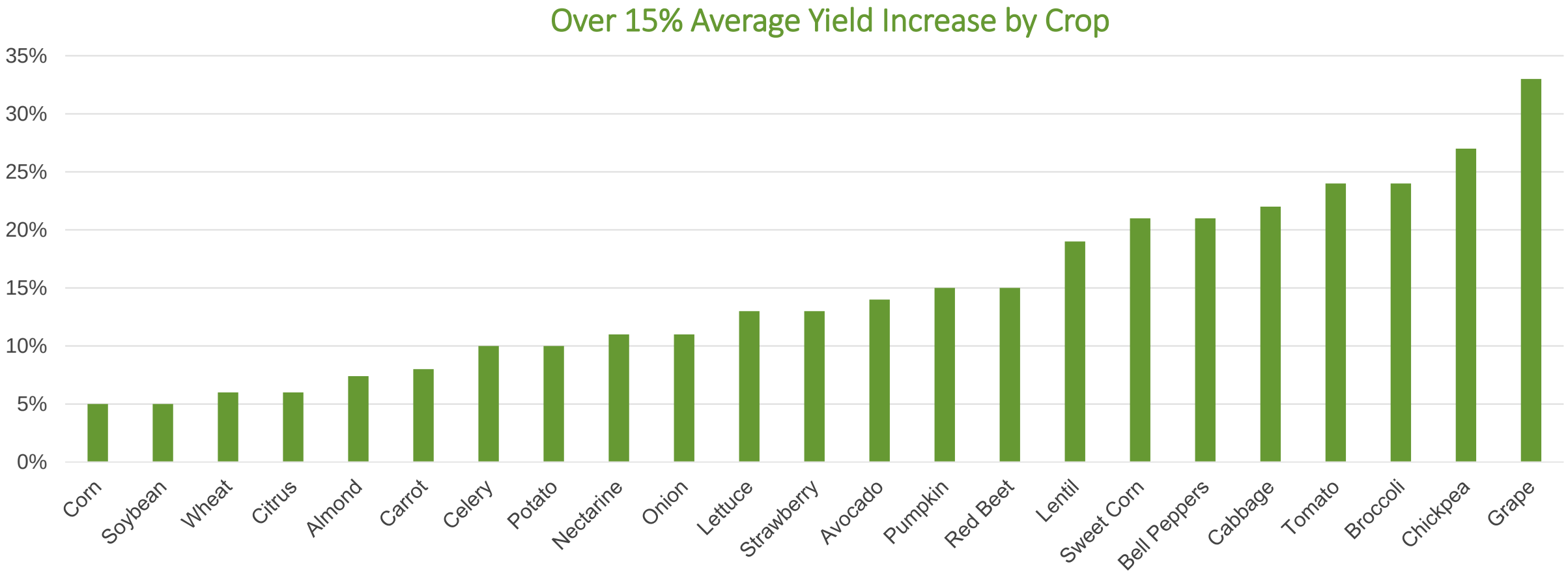
FBS Transit

Effects

1. Improves nutrient movement in xylem and phloem.
2. Reduces effects of abiotic stress.
3. Increases root growth.
4. Enhances metabolism and nutrient uptake.
5. Improves performance of other products.



Over 1,500 randomized, replicated trials with university and independent researchers over 10 years and nearly 20 growing seasons on 53 different crops

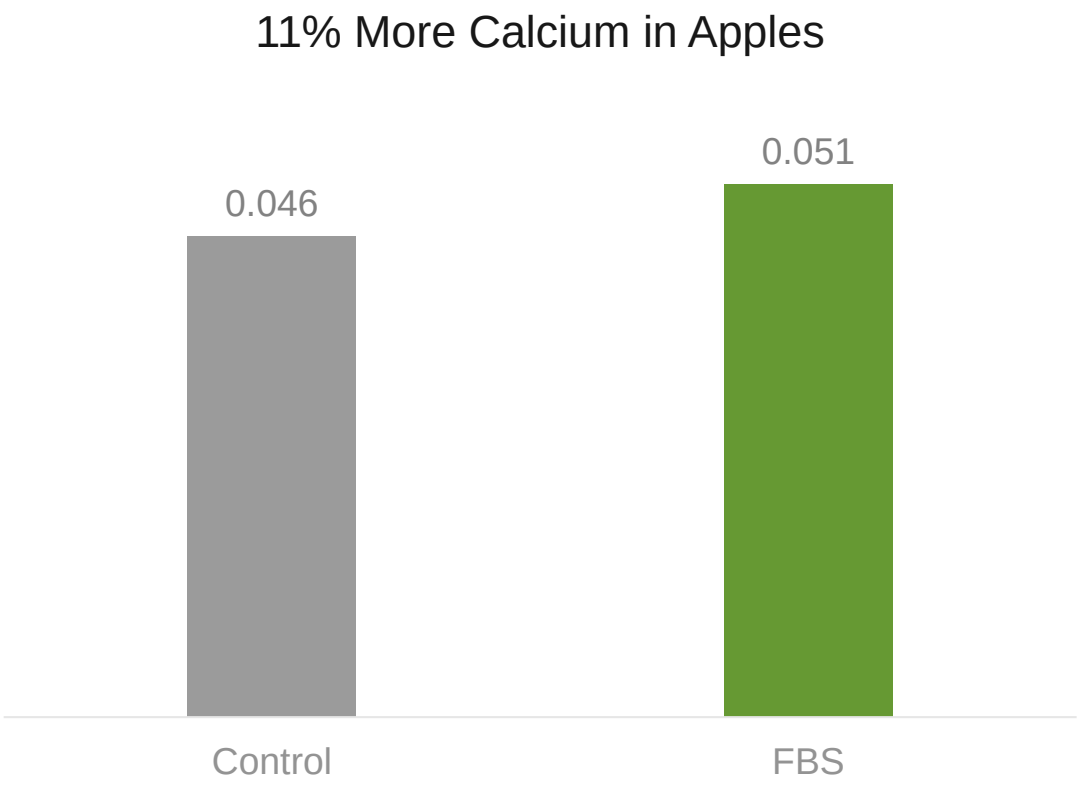


2007-2018, Global Yield Increase

Improved Nutrient Uptake & Mobility

APPLES: 11% MORE CALCIUM AND 30-50% BETTER QUALITY

- 33% reduction in fruit bitterpit
- 30-50% reduction in internal browning and rot
- Improvement on fruit disorders and fruit quality



Improved Nutrient Uptake & Mobility

ALMONDS: 4-26% MORE NUTRITIOUS ALMONDS WITH LARGER KERNELS

- Iron (Fe) up 27%
- Calcium up 18%
- Manganese (Mn) up 16%
- Boron (B) up 15%
- Zinc (Zn) up 10%
- Copper (Cu) up 10%

Whole almond size increased by 14% with 18% higher hull weight and a 7.4% increase in kernel weight

fbsciences®

FBS DEFENSE™

BIOPESTICIDE PRODUCT LINE

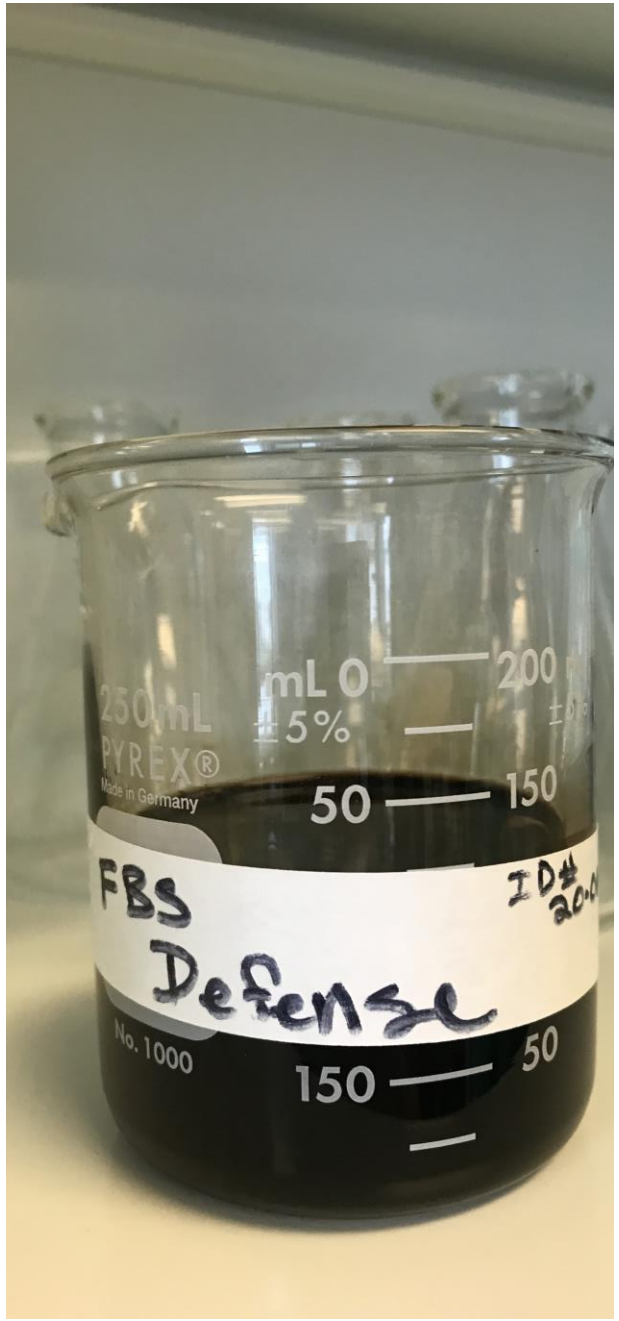
Carbon Defense (*registered*)

NemBlast (*registration process*)

fbsciences®

FBS DEFENSE™

- Similar to Transit, with slightly different chemical composition
- Patented, EPA registered technology
- Enhances activity of other pesticides
- May improve systemic ability of pesticide
- Biostimulant effect observed



Carbon Defense

- Fungicide: Preventative, contact, rotational
- **Potassium Silicate** as the active ingredient and **FBS Defense** as an inert.
- Pre-Harvest Interval of ZERO
- COMPATIBLE
    - Compatible with most fungicides
    - Improves efficacy of some fungicides when used together
- APPROVED FOR use on agricultural crops, fruits, nuts, vines, turf and ornamentals.
    - Rate of 1 – 6 quarts/acre

Carbon Defense

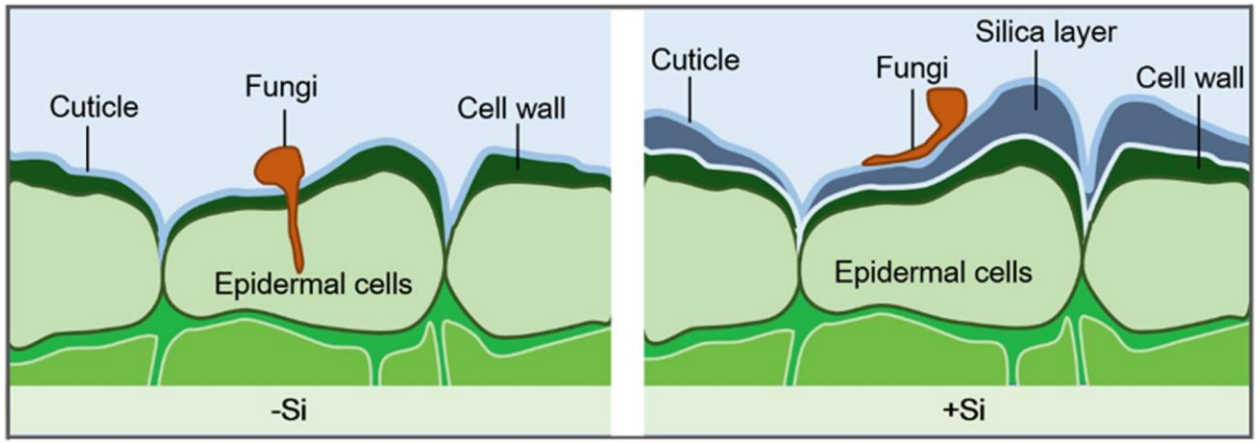
Controls disease by two modes of action (MOA)

1) Stimulating plants natural defense response

- Production of polyphenolic compounds.

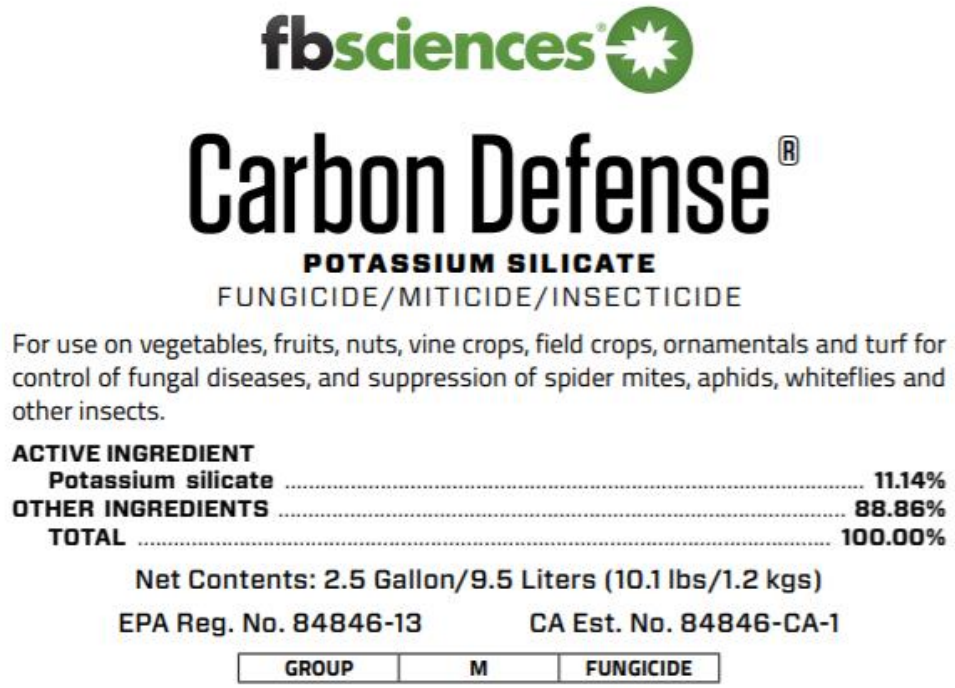
2) Creates a physical barrier

- The assimilation of silica increases rigidity and strength of plant cells.
- Impregnates itself in the epidermal cell layer acting as a barrier against fungal infection.
- A protective silica barrier makes it difficult for the pest to damage plant, interferes with pest ability to sustain itself.



Sun, W., Zhang, J., Fan, Q., Xue, G., Li, Z., and Liang, Y. (2010). Silicon-enhanced resistance to rice blast is attributed to silicon-mediated defence resistance and its role as physical barrier. *Eur. J. Plant Pathol.* 128, 39–49.

Carbon Defense Label



- Over 50 trials in 4 different countries.
  - 15 different crops covering most major crop groups

- Carbon Defense alone versus Untreated Control (UTC) versus Commercial Standard

Powdery Mildew on CUCUMBERS

Research Summary:

Treatment Program:
Applications were made 2x per week

Results:
Mildew infection was found to be reduced by 90% - 18 days after the trial was started.

Control Carbon Defense

Source: Trontheim, Norwegian University of Science & Technology

Powdery Mildew on TABLE GRAPES

Research Summary

- Chuck Doty at Syntech in Lindsay, CA

Results

- Carbon Defense provided statistically significant control of powdery mildew on the leaves versus the UTC, and results were comparable with the industry standard treatments.

- The best treatment was Carbon Defense plus the half rate for the industry standards.

- Statistically significant control of powdery mildew in the fruit bunches at harvest but poorer than the industry standard. However, no difference in the severity of the infestation on the bunches.

- This assessment was a full 36 days after the last application.

Botrytis on STRAWBERRIES

Research Summary

David Holden (2009) to evaluate the difference between Carbon Defense and Sil-Matrix's ability to decrease the incidence of Botrytis in Strawberries

Treatment Program

- Carbon Defense & Sil-Matrix both applied 3 times at a rate of 2 quarts per acre
- A total of 7 assessments were made for botrytis.
- The industry standard was Switch at 12 fl. oz./ac.

Results

- All treatments were assessed for phytotoxicity, but none was observed.
- In 5 out of the 7, Carbon Defense significantly reduced the botrytis compared to the UTC and was comparable to the industry standard.
- 3 out of 7 times, Carbon Defense provided significantly better control of Botrytis than the Sil-Matrix.

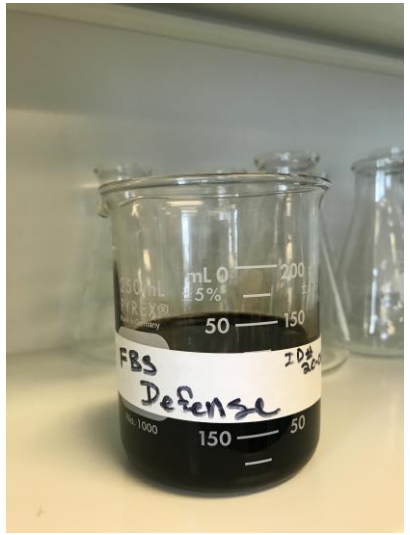
Nematode Control

Problem

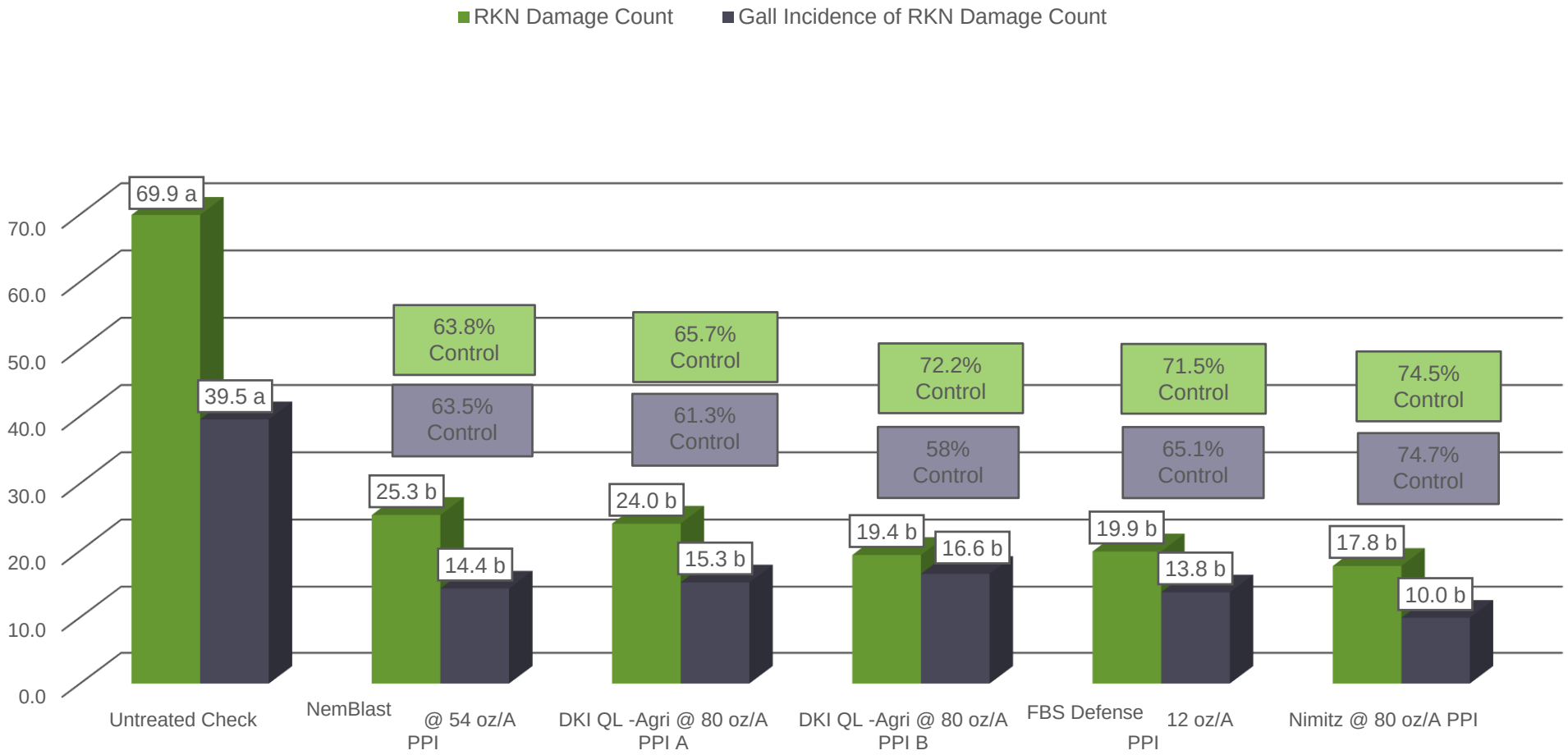
- Options for nematode control in agriculture are extremely limited
- Of those available, many are expensive and require high rates
  - *Quillaja saponaria (soapbark) extract*

Solution

- Inclusion of FBS Defense allows for significant reduction of rate
- Incorporated into *quillaja extract*
- NemBlast creation
- Research and registration process



FBSciences NemBlast on Carrots 2020
Root Knot Nematode (RKN) Damage Count
Gall Incidence of Root Knot Nematode
Joe Martinez, Valley Research Weslaco, Texas USA 2020



Means followed by same letter or symbol do not significantly differ (P=.05, Student-Newman-Keuls). t=Mean descriptions are reported in transformed data units, and are not de-transformed. Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Questions