IR-4 Industry Presentation
February 2025

PJ Smith
psmith@indigoag.com

We operate through two business segments: Biological Products & Sustainability Solutions

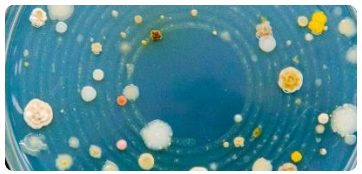
indigo™

Biological Products

biotrinsic™ by indigo

Microbial Seed Coatings

- Manufactures natural biological inputs to protect crops against stresses
- Maintains and increases yields by up to 8%
- Compatible with sustainable practices for Carbon and Source



Sustainability Solutions

carbon™ by indigo

Carbon Credits

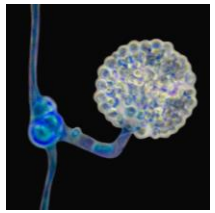
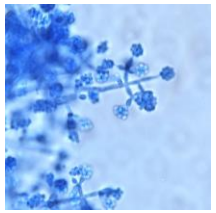
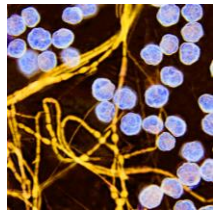
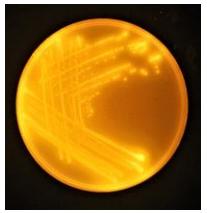
SOURCE by indigo

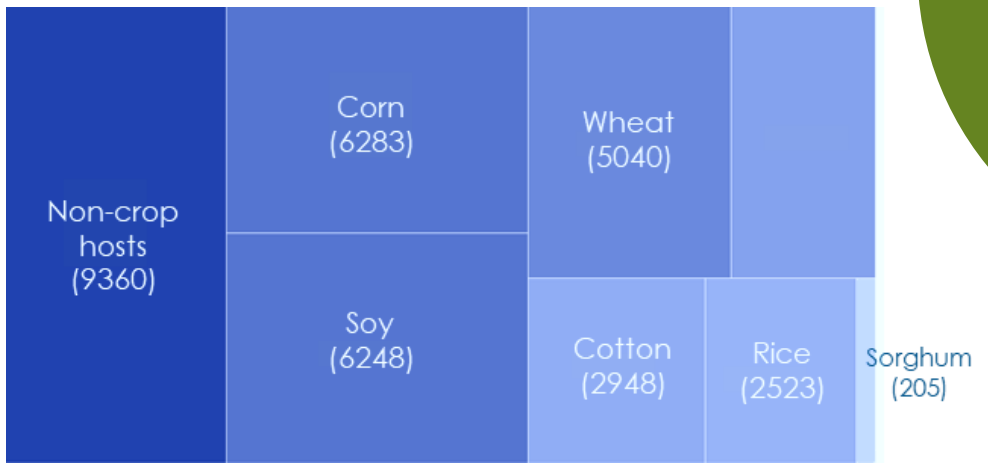
Sustainable Crops (Scope 3)

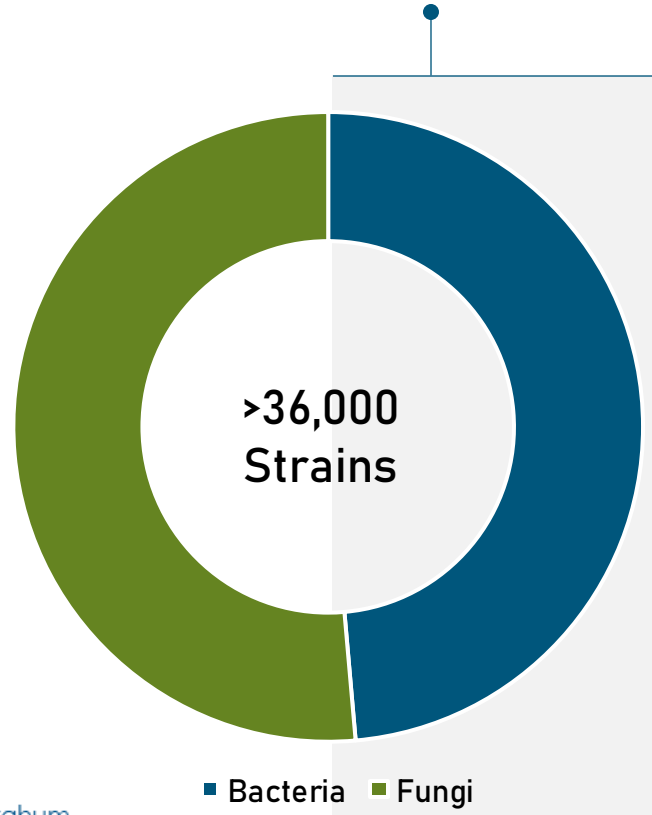
- Produces carbon credits & Scope 3 claims through sustainable practices
- Sold to corporations seeking to meet sustainability goals
- Creates new revenue streams for farmers + agribusinesses

This effort has led to the creation of our microbial library, one of the world's largest, and the foundation of our nomination process

Indigo microbes are obtained from various plant types…





+350 UNIQUE FUNGAL GENERA

+200 UNIQUE BACTERIAL GENERA

70% HAS A HIGH-QUALITY SEQUENCE

We offer three formulations, that when coupled with novel delivery systems, enable our products to service all seed treatment segments

Water Dispersion (WD) | **Wettable Powder** (WP) | **Flowable Powder** (FP) → **FP Application**

- Common for more traditional sporulated bacteria, limitations with novel non-sporulated bacteria
- Cold storage recommended
- Liquid seed treatment

- Trade-offs with sporulated and non-sporulated bacteria
- Ambient temperature storage
- Powder is wetted and applied as liquid seed treatment

- Overcomes limitations of novel non-sporulated bacteria as well as sporulated fungi
- Ambient temperature storage
- Dry powder seed treatment

Upstream *(Seed Suppliers)*

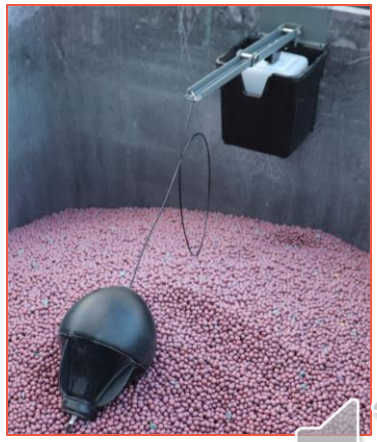
Midstream (Retailers / Distributors)

Downstream (On-Farm)

Novel & Proprietary Delivery System (CLIPS)

Planter Box

CLIPS



We focus on developing products to help plants overcome major stressors that limit yield, quality, and grower profitability

Water Use Efficiency

Drought & water stress

Nutrient Use Efficiency

Nitrogen

Phosphorus

Potassium

Soilborne Seedling Diseases

Fusarium spp.

Pythium spp.

Rhizoctonia spp.

Parasitic Nematodes

Soybean Cyst Nematode

Root Knot Nematode

Reniform Nematode

Lesion Nematode

BIOPESTICIDE PRODUCT DETAILS

Key Benefits:

- Best in class, EPA registered **Bionematicide** containing *Streptomyces* sp. strain SYM00257
- Provides full season protection
- Repels and paralyzes plant parasitic nematodes, including **RKN** and **SCN**
- Activates plant immune system for increased plant health & root growth
- IRAC: N-UNB

Placement:

- Fields that have low-to-moderate nematode counts, especially for SCN or RKN.
- Fields with substantial nematode counts should consider Z15 with an additional nematicide ST, rotating genetics, and having crop rotation.
- Fields with sandy soils which SCN thrives.
- Corn-on-corn or soy-on-soy fields, as continued planting of host crops increases nematode counts in the soil.

Key Benefits:

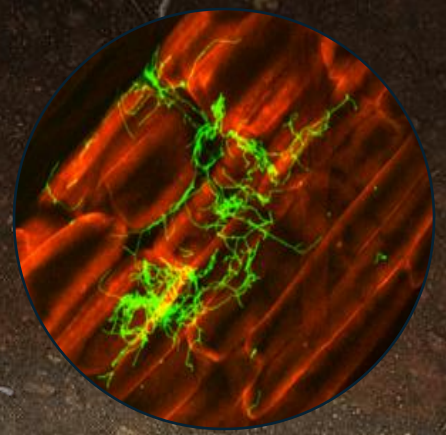
- Best in class, EPA registered **Biofungicide** containing *Kosakonia cowanii* strain SYM00028
- Colonizes and protects roots while BioBlocker™ technology restricts pathogen growth
- Stimulates ISR via Acetoin production
- Protects against damping-off complex, including ***Pythium***, ***Fusarium*** and ***Rhizoctonia***
- FRAC: BM-02

Placement:

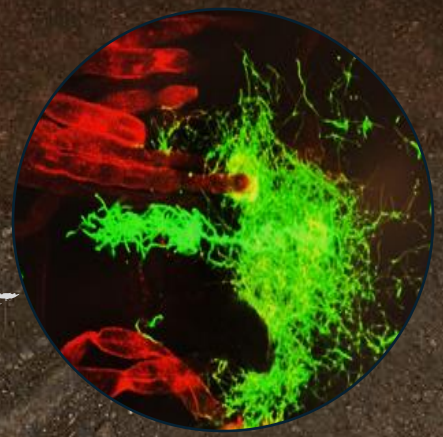
- Early planted fields
- On acres with corn planted after corn or soy after soy
- On no-till, minimal till, or mulch till acres
- For corn on acres following a cover crop, due to increased risk of *Pythium* pressure
- Heavier soil types with poor drainage, with expected seedling disease pressure

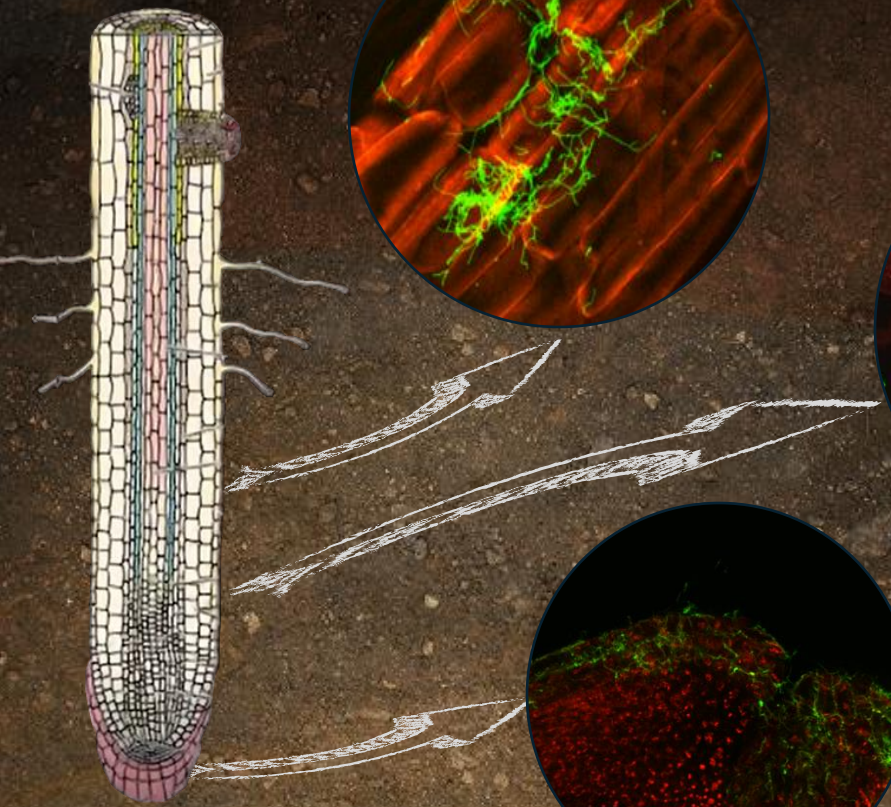
biotrinsic Z15 is an endophyte

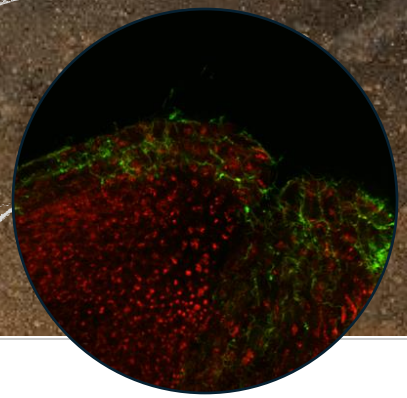
biotrinsic Z15 growing on the outside surface of roots (corn)



biotrinsic Z15, is a living filamentous bacteria that grows with roots to expand its defensive protection (corn)

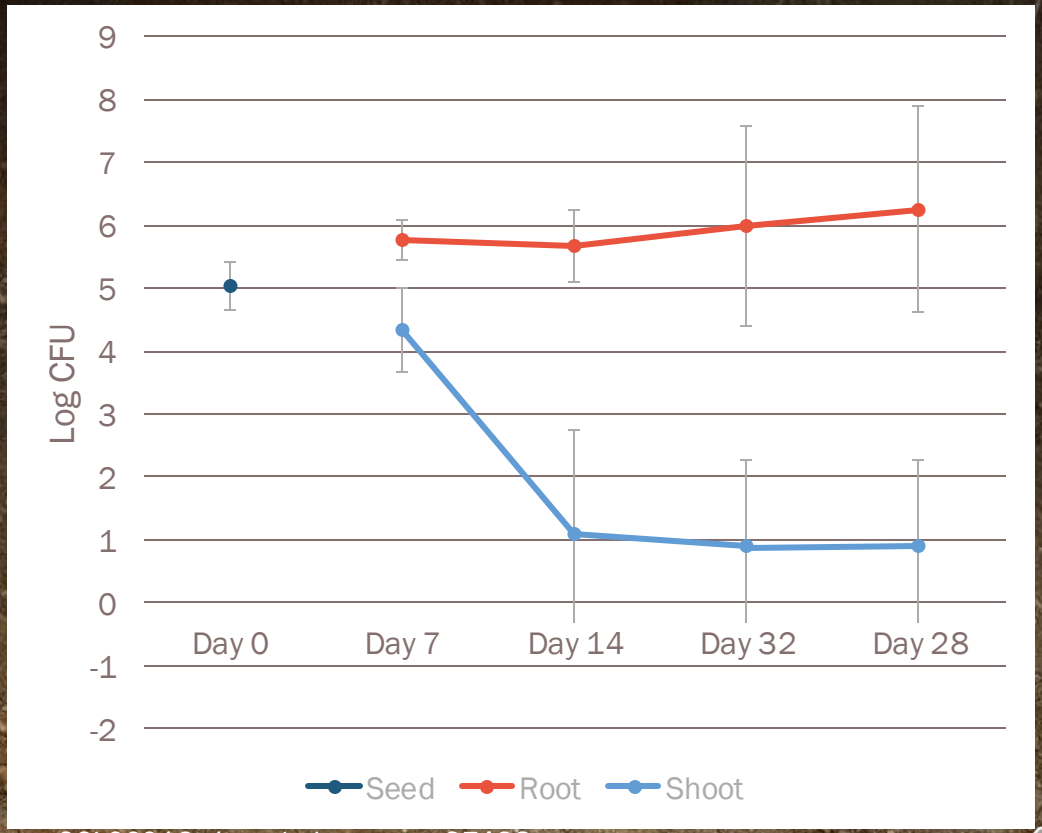






biotrinsic Z15 colonizes roots to create an expansive defensive zone of protection

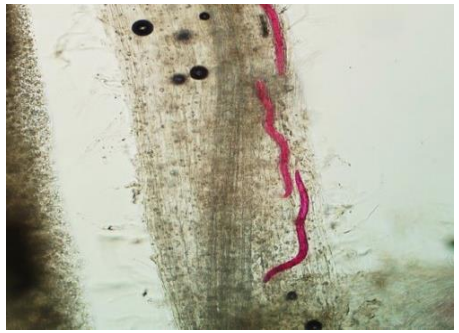
Soybean Colonization by Tissue Type

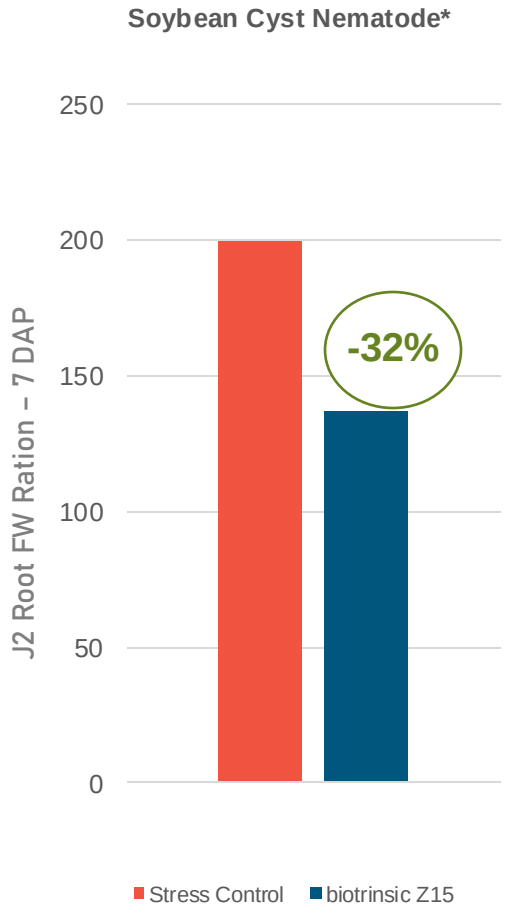


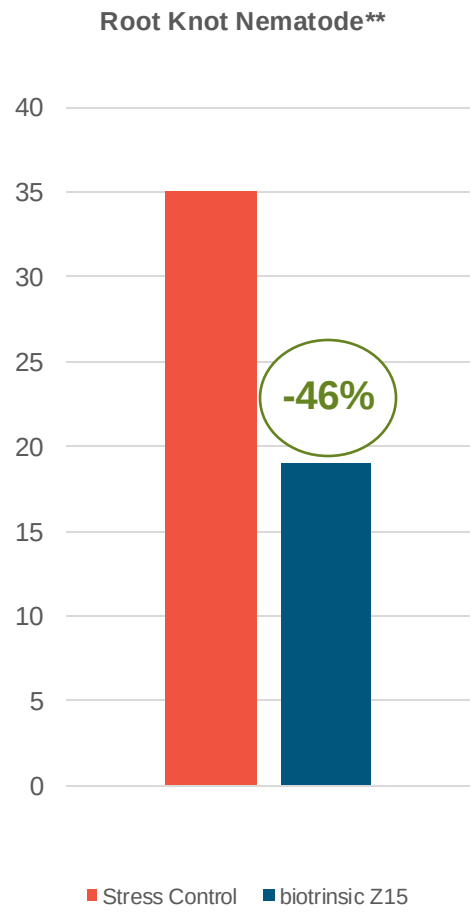
COL00019_1 analysis request 27428

Root cell walls are shown in red. biotrinsic® Z15 shown as green

biotrinsic Z15 reduces SCN and RKN infection of roots





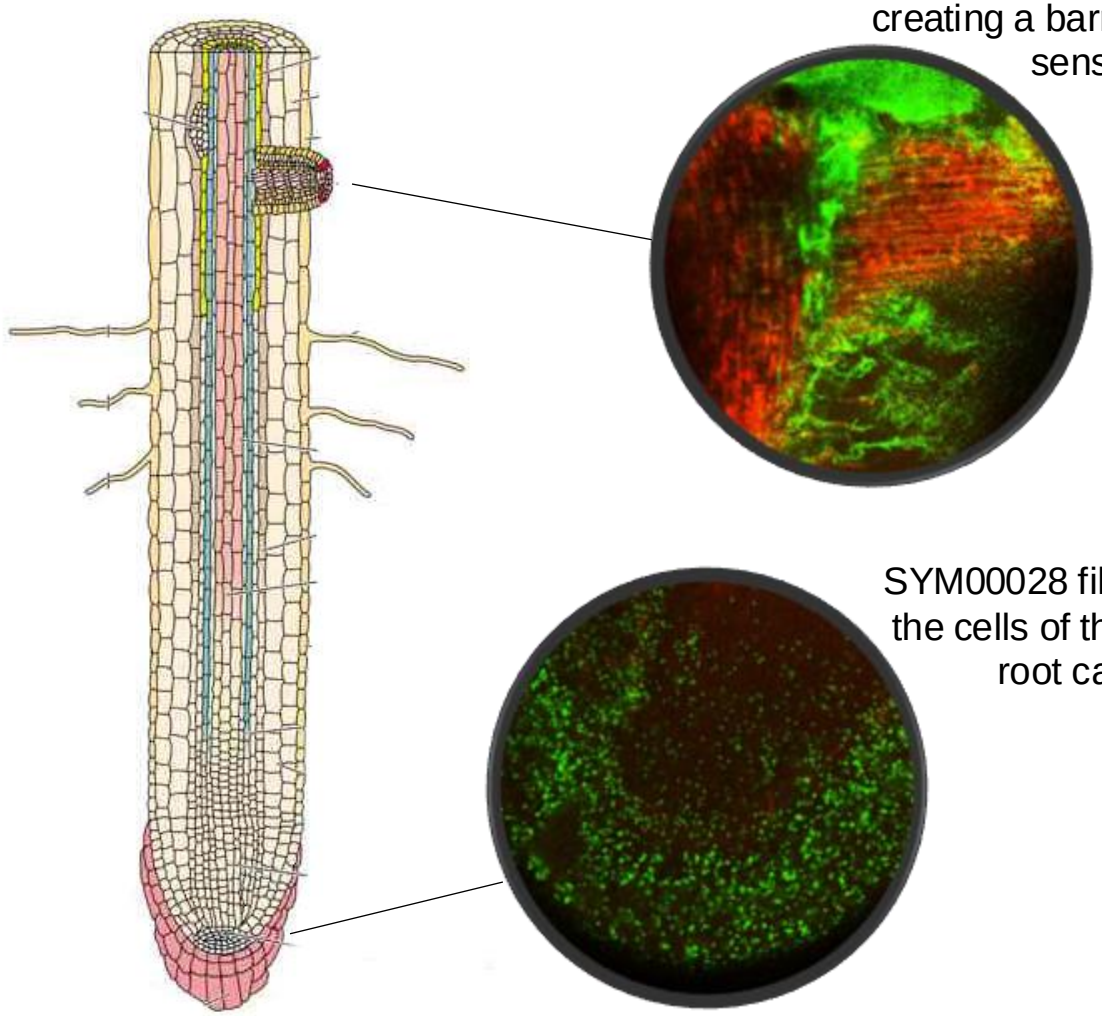


- The *Stemptomyces* sp. strain in biotrinsic Z15 produces multiple compounds including **Geosmin**, which acts as a repellant to reduce nematode infection
- This reduction was done without killing J2 juveniles or killing eggs, which **reduces risk** of injuring beneficial nematodes in the soil.

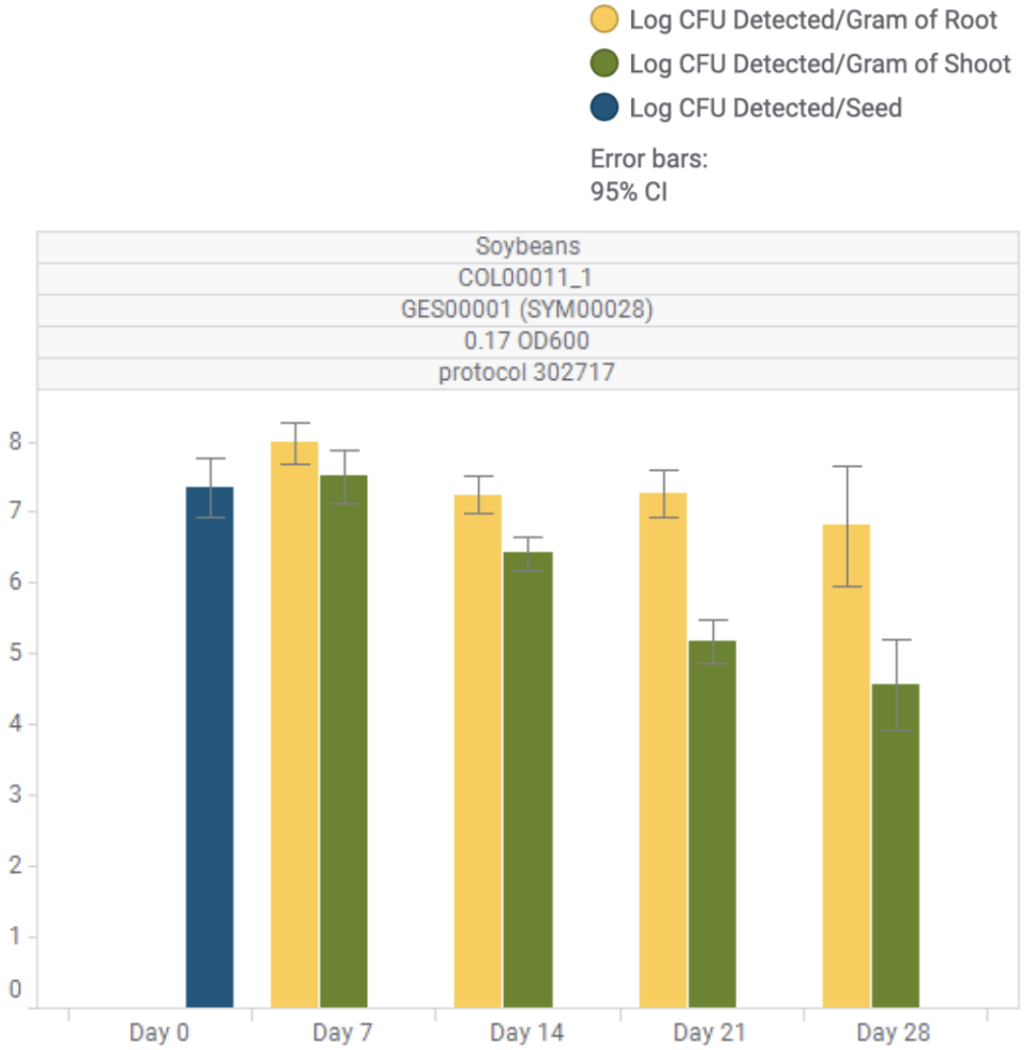
* Average of 3 SCN Soy runs in J2 *in planta* root staining assay
** Average of 2 RKN Soy runs in J2 *in planta* root staining assay

biotrinsic X19 Colonizes Plants for Season-long Protection

SYM00028 surrounds the erupting lateral root, creating a barrier in this sensitive area



SYM00028 fills the cells of the root cap

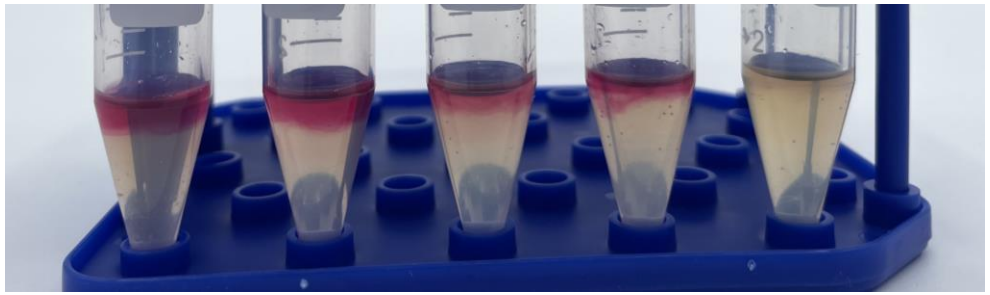


Root cell walls are shown in red. SYM00028 are shown as green

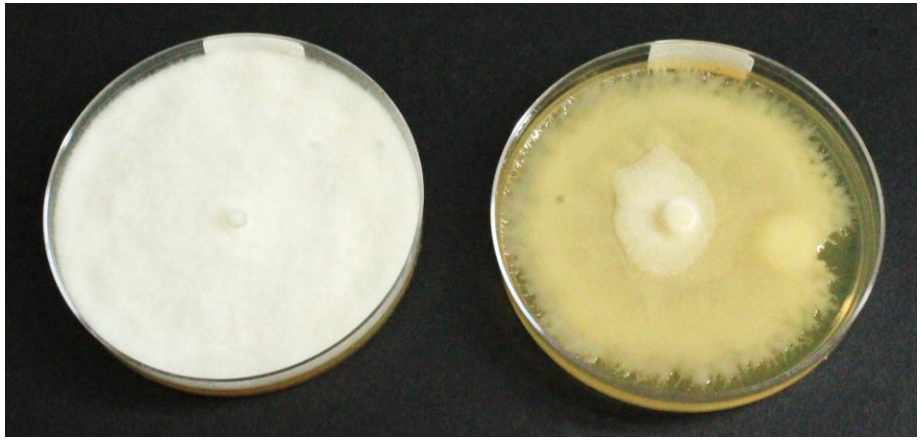
biotrinsic X19 has both Indirect and Direct MoAs

Induced Systemic Resistance

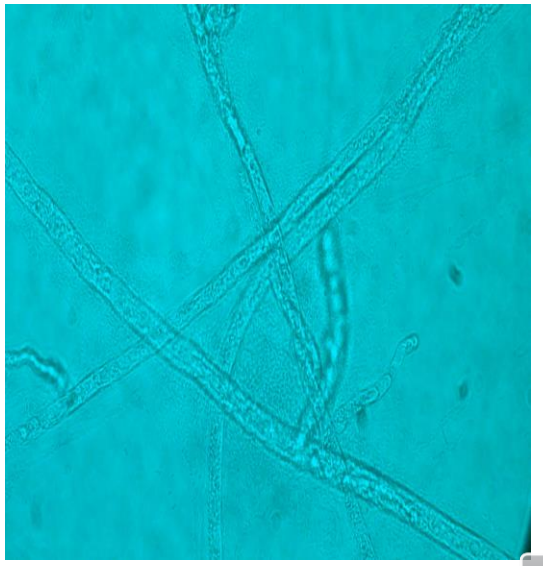
The SYM00028 *K. cowanii* strain in biotrinsic X19 produces Acetoin, which turns on Induced Systemic Resistance (ISR). ISR turns on the plant immune system at the molecular level, providing robust protection against a multitude of pathogens. (https://doi.org/10.4161/cib.3.2.10584)



BioBlocker Technology



The SYM00028 microbes rapidly replicate and grow, surrounding the mycelium of disease pathogens. This activity restricts growth and the pathogen's ability to infect plant roots.



NATIONAL YIELD DATA

Product	Crop	Yield Result	Win-rate	ROI	# of Locations	Trial Summary
	**Soybean**	+1.1 bu/ac	74%	>2:1	42 locs	2023-2024 National commercial strip trial harvest data. These 42 locations are across commercially relevant States, which include Iowa, Illinois, Ohio, Missouri, and others.
	Corn	+3.5 bu/ac	75%	>5:1	12 locs	2023-2024 National commercial strip trial harvest data. These 10 locations are across commercially relevant States, which include Illinois, Indiana, Alabama, Missouri, and Nebraska. 2024 strip trial data is pending.
	**Soybean**	+1.7 bu/ac	78%	>3:1	18 locs	2022-2024 National commercial strip trial harvest data. These 18 locations are across commercially relevant States, which include Iowa, Illinois, Ohio, and others.
	Corn	+3.3 bu/ac	71%	>5:1	41 locs	2022-2024 National commercial strip trial harvest data. These 41 locations are across commercially relevant States, which include Iowa, Kansas, Nebraska, and others.

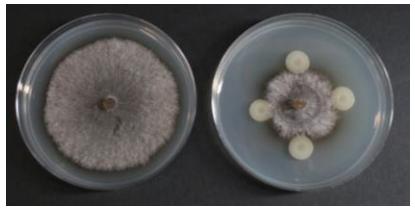
Why work with Indigo's biopesticide portfolio?

Existing Products

Seed applied solutions that have shown efficacy in multiple row crops, to help tackle different crop and pest targets in IR-4.

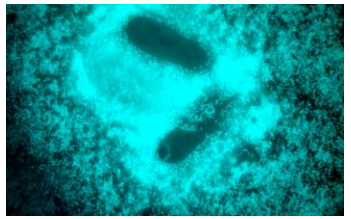
Future Products

Multiple new active ingredients currently under EPA review. These actives can likely be used in alterative application methods like drench, in-furrow, or even foliar application.



Antibiotic *Priestia* strain with broad chemical compatibility.

Trichoderma strain with mycoparasitism activity.



Pseudomonas strain which reduces parasitic nematode egg hatch rate.

Thank You!

PJ Smith
Global Product Manager
781-801-8763
psmith@indigoag.com