



2024 REPORT

Who is Heliae?

Founded in 2008, we are a leading food and agriculture tech company focuses on addressing climate change threats. For over 15 years, we have pioneered biological and technological platforms, pushing the boundaries of science and commercializing solutions for the challenges facing Earth in the next 50 years.



With our award-winning PhycoTerra® product line, we provide a microalgae “superfood” that feeds and activates the dormant native microbes found in and around a crop’s seed, soil, and leaves. Well-fed microbes are key to building soil health and healthier, more productive crops, proven by our extensive CRO trials. Our microalgae products not only support soil life but also benefit plants, animals, and humans.



Our Impact and Vision

Regenerative Agriculture



Mission

“Our mission is to create sustainable microalgae products and solutions that enhance soil, plant, animal, and human health.”

Vision

Our vision (to support our growers in their sustainable and regenerative agriculture efforts and help them on their path towards **improving soil health** and quality on their farm), has also been a guiding voice in our efforts to enhance the health of the soil, plants, animals, and humans.

FULL MICROBIOME ACTIVATION = HIGHER YIELD & ROI

SOIL AMENDMENT

Recommended Timing:
Around planting -
broadcast pre-emergence,
in-furrow, 2 x 2, post-
emergence or side dress

Recommended Rate:
1 qt/acre

FOLIAR TREATMENT

Recommended Timing:
R1 - R3

Recommended Rate:
8 oz/acre

SOIL AMENDMENT

Recommended Timing:
Apply with fall burndown
application or any post-
harvest pass

Recommended Rate:
1 qt/acre

SEED TREATMENT

Recommended Timing:
Apply on the seed, mix with
fungicide and insecticide seed
treat or over treat

Recommended Rate:
2-5 oz/cwt

SEED / SPERMOSPHERE

SOIL / RHIZOSPHERE

FOLIAR / PHYLLOSHERE

RESIDUE / DETRITUSPHERE

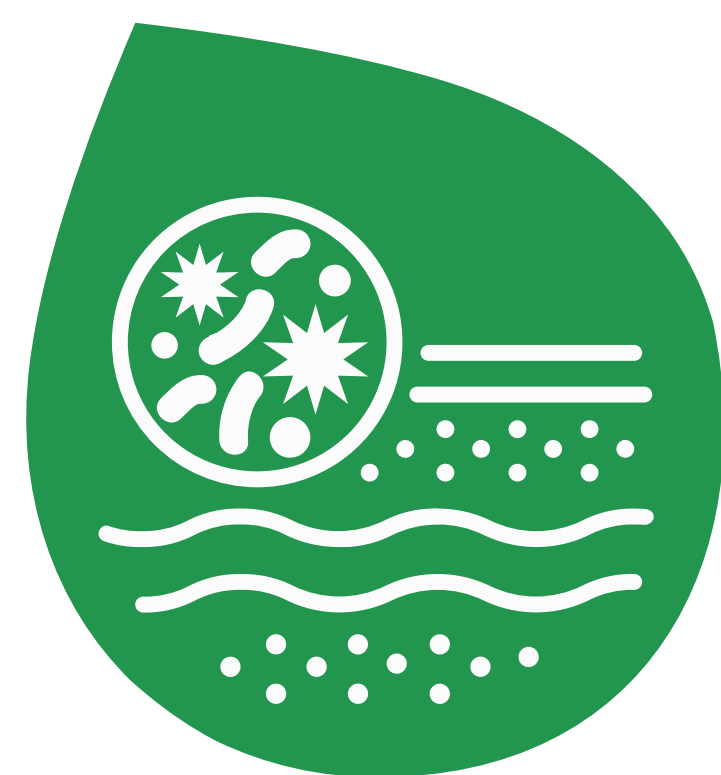


A Superior Food Source for Your Soil

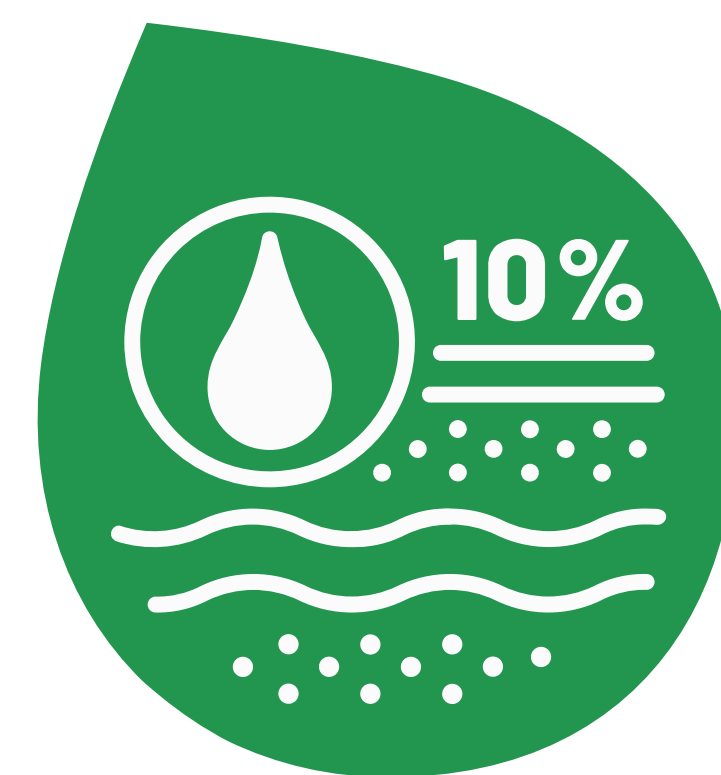
PhycoTerra®

PhycoTerra® products use microalgae to feed beneficial microbes in your soil and on your crops. Your soil microbiome, a community of microbes like bacteria and fungi, supports healthy crop growth but often lacks a proper food source. PhycoTerra® products nourish these microbes, improving soil structure, function, microbial activity, and plant stress, leading to stronger crop

PhycoTerra® products are a superior food choice that revitalizes the microbiome and enhances soil productivity. Our product line also includes a microalgae seed treatment and an organic soil microbial food.



Improve Soil
Quality



Improve
Water Holding
Capacity



Optimizes
NPK
Availability



Supports
Residue
Management
after Harvest



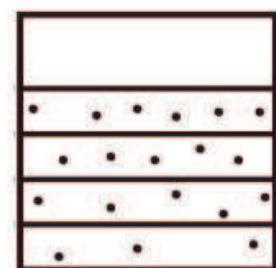
Boosts Crop
Yield and ROI

SOIL AMENDMENT

Made from non-living microalgae, PhycoTerra® Soil Amendment feeds the beneficial microbial life plants rely on to grow. Our proprietary formulation replenishes depleted soil by providing a superior food source for dormant native bacteria and fungi, activating them to improve water holding capacity, enhance soil aggregation, and optimize nutrient uptake.

IDEAL FOR ALL CROP TYPES

- Superior microalgae food for native crop microbiome
- Builds soil health in the rhizosphere and accelerates decomposition in detritosphere
- Highly compatible, easy-to-use and flexible application
- Patented formula from the leader in microalgae research and technology



SOIL

PLANTING / RHIZOSPHERE



RESIDUE

POST-HARVEST / DETRITUSPHERE



RHIZOSPHERE MODE OF ACTION



PHYCOTERRA® APPLICATION

Delivers a balanced, nutrient-dense meal to the soil microbiome



SOIL MICROBIOME RESPONSE

Increases soil microbial activity up to 33x



IMPROVEMENT IN SOIL QUALITY

Improves water holding capacity and aggregation, optimizes nutrient uptake



CROP RESPONSE

Supports crop health for increased yield and ROI

USAGE & STORAGE

For best results, it is recommended to keep this product in its original packaging until use and then use in its entirety after opening.



For multiple uses, the container should be sealed properly after each use and kept in a dry, cool place. Avoid spillage as product may create slip hazard.

DIRECTIONS FOR USE

(doses, rates)

APPLICATION TYPE

SOIL APPLIED

RATE

SOIL APPLICATION

1 pint-1 gallon/acre, per application, in a minimum of 5 gallons of finished solution

RESIDUE MANAGEMENT

1-2 quarts/acre

TIMING

PRE-PLANT

Broadcast, pre-plant

AT PLANTING

In-furrow, 2x2, T-banded, direct spray to seedbed, bare root dip or transplant drench

POST-PLANT

Drip irrigation, side dress or direct spray onto beds

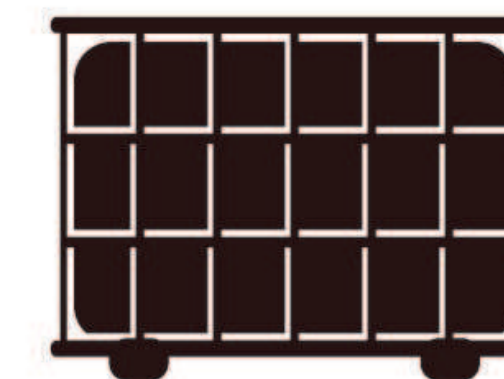
POST-HARVEST RESIDUE

Apply to post-harvest crop stubble

CONTAINER SIZES



2 X 2.5G JUG







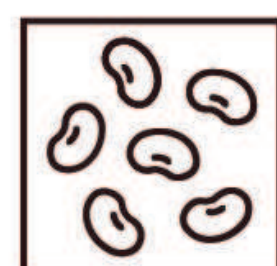
250G TOTE

SEED TREATMENT

Made from non-living microalgae, PhycoTerra® Seed Treatment feeds the beneficial microbial life plants rely on to grow. Our award-winning, proprietary formulation improves the soil on and around germinating seeds, creating an environment to support crop stand establishment and vigor for increased yield and ROI.

IDEAL FOR ALL CROP TYPES

-  Superior microalgae food for native crop microbiome
-  Supercharges the spermosphere to support seed germination and early vigor, stand establishment
-  Highly compatible, easy-to-use and flexible application
-  Patented formula from the leader in microalgae research and technology



SEED
PRE-EMERGENCE /
SPERMOSPHERE

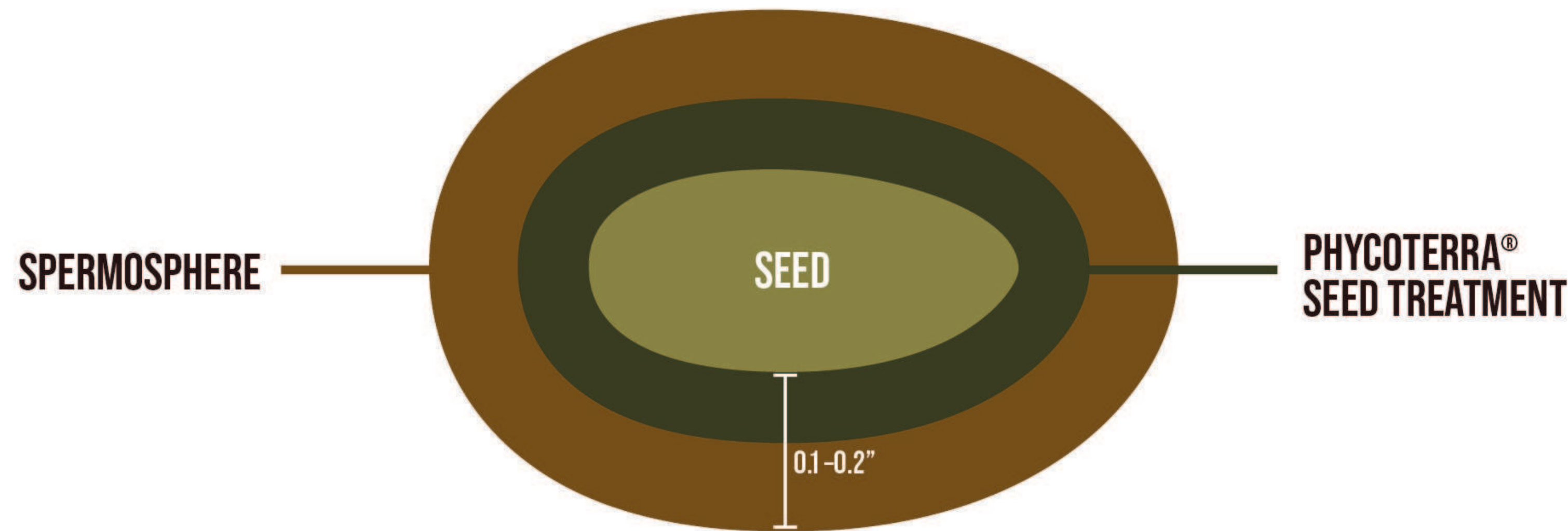


SEED TREATMENT



SPERMOSPHERE MODE OF ACTION

Feeds native microbes on and around the seed



USAGE & STORAGE

For best results, it is recommended to keep this product in its original packaging until use and then use in its entirety after opening.



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DIRECTIONS FOR USE

(doses, rates)

APPLICATION TYPE

SEED TREATMENT

1-5 oz per hundredweight (CWT) in tank mix with other treatments such as fungicides, insecticides, and live biologicals or inoculants for direct application to seeds.

PRECAUTION

PhycoTerra® Seed Treatment pH should be above 6.0 before adding live inoculants or live biological products.



FOR MORE INFORMATION & MIXING INSTRUCTIONS, SCAN QR CODE.

CONTAINER SIZES

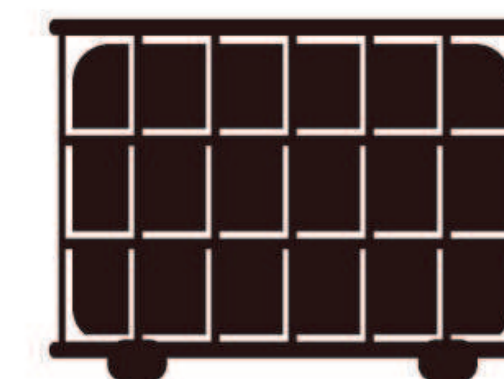


2 X 2.5G JUG



14G KEG

Available upon request



250G TOTE

FOLIAR TREATMENT

Made from non-living microalgae, PhycoTerra® Foliar Treatment feeds the beneficial microbial life plants rely on to grow. Our proprietary formulation improves the unique microbiome of crop leaves during the dynamic growing season, protecting against abiotic stressors such as UV, moisture, and heat stress for improved plant health, increased yield and ROI.

IDEAL FOR ALL CROP TYPES

- Superior microalgae food for native crop microbiome
- Protects the phyllosphere against heat & drought for abiotic stress relief
- Highly compatible, easy-to-use and flexible application
- Patented formula from the leader in microalgae research and technology



FOLIAR

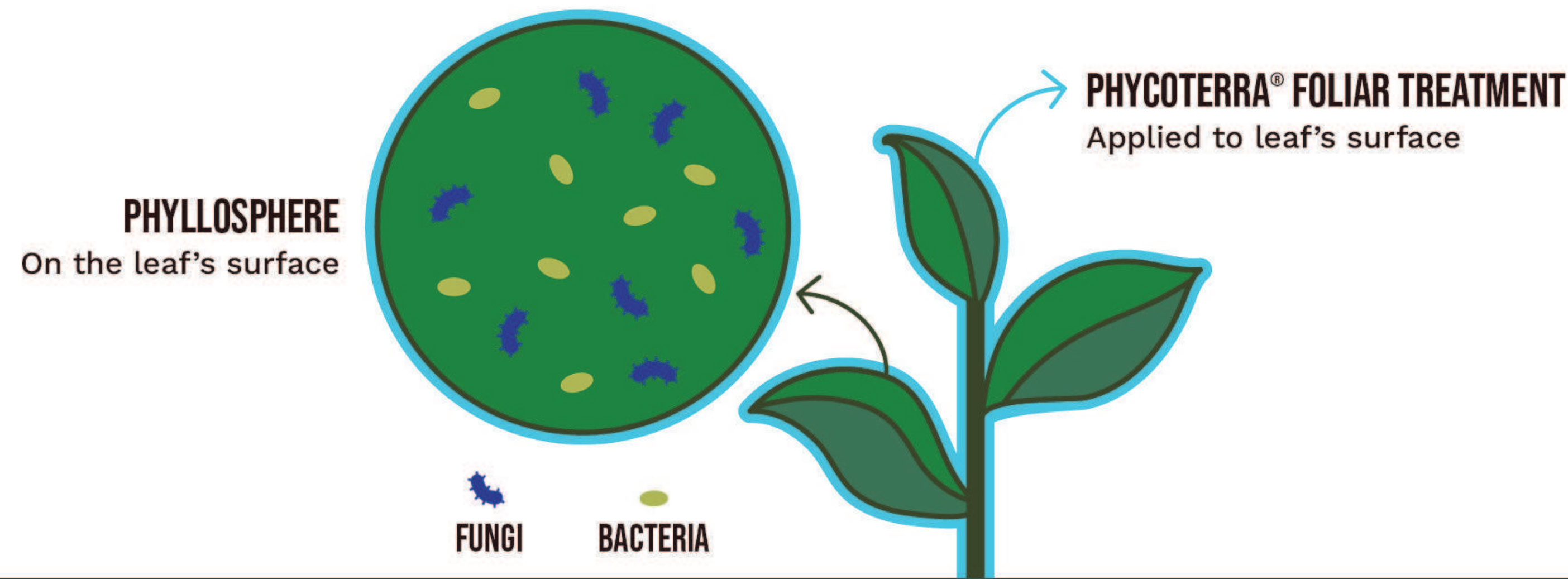
POST-EMERGENCE / PHYLLOSHERE



FOLIAR TREATMENT

PHYLLOSHERE MODE OF ACTION

Feeds native fungi and bacteria



USAGE & STORAGE

For best results, it is recommended to keep this product in its original packaging until use and then use in its entirety after opening.



For multiple uses, the container should be sealed properly after each use and kept in a dry, cool place. Avoid spillage as product may create slip hazard.

DIRECTIONS FOR USE

(doses, rates)

APPLICATION TYPE

FOLIAR APPLIED

TIMING

Apply at vegetative to reproductive stages

RATE

.25-1 quart per acre in standard tank mix

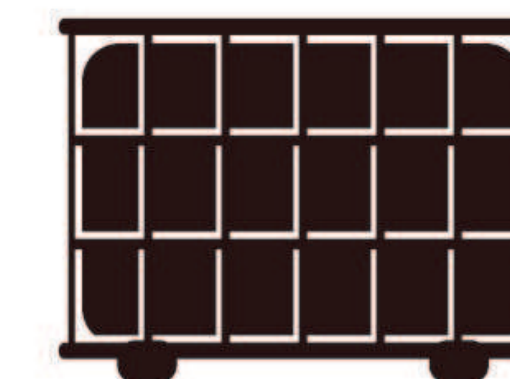
GENERAL RECOMMENDATION

Apply at typical foliar nutrient and crop protection timings

CONTAINER SIZES



2 X 2.5G JUG



250G TOTE





On-Farm Research 2024

Grower Advisory Panel

**Over 1,600 Acres Under Contract
500+ Data Points Collected**



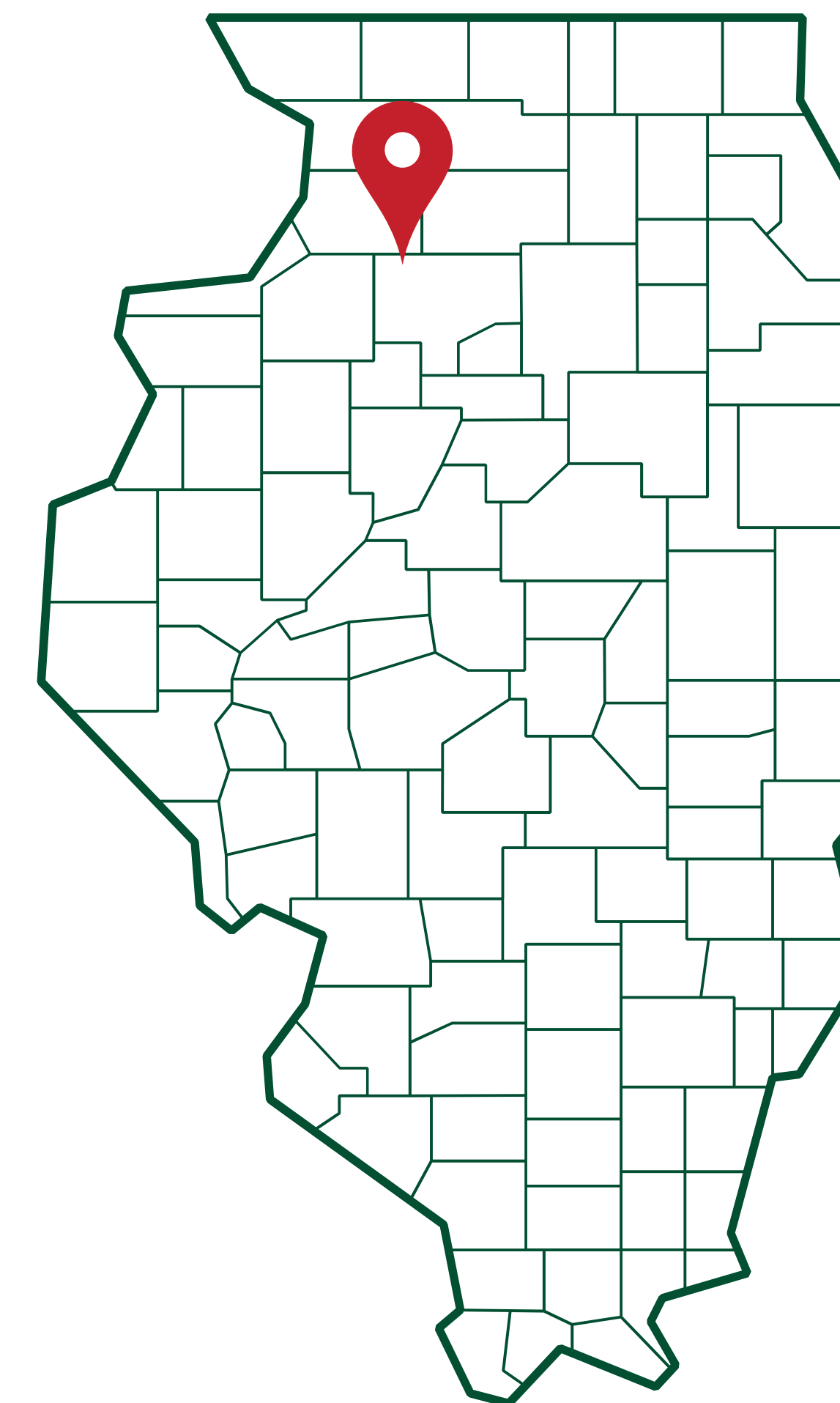
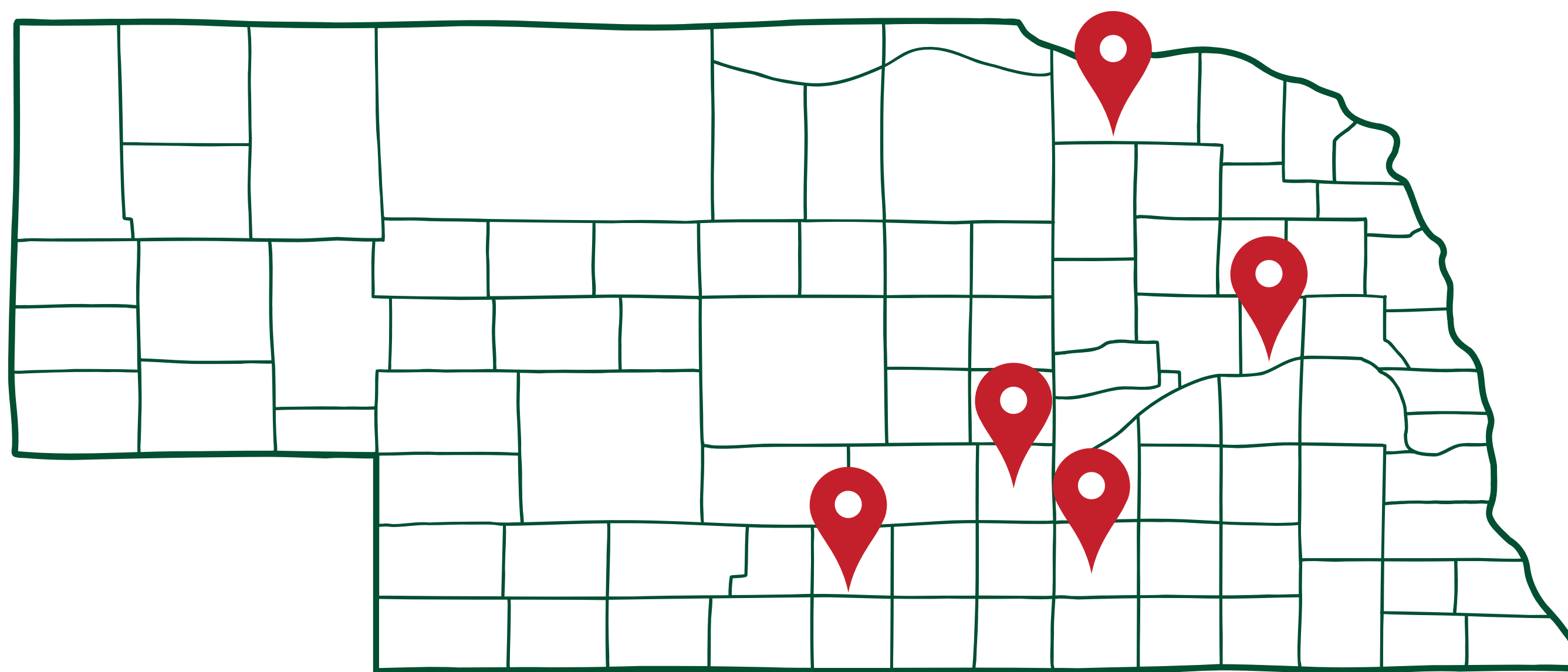
Background of our Grower Advisory Panel

Objective

The PhycoTerra Grower Advisory Group creates a direct connection between end users and PhycoTerra Ag Science. This creates an opportunity to conduct field level, broad acre research with a high probability of success and reliable, farm applicable results. It creates an excellent feedback loop between PhycoTerra and farmers for not just yield, but also product experience and direction for future product development and improving customer experience.

Who

Our objective is to create a group of growers located across the Midwest region that utilizes a variety of management practices in different environments. These growers should have the capabilities and willingness to conduct on-farm trials of a product or practice on clean 40 acre plot.





24 oz. (1.5 pt) PhycoTerra® Soil Amendment Fertigation

Application: 6/6/2024 @ V5 and 6/25/24 @ V8

Field Check: 7/9/2024 (V10)



Water Holding Capacity +8.8%

FIELD INFORMATION:

Planted 4/24/2024 | **Harvested** 10/8/2024 | **Population** 31,000 Seeds/A.

Row Width 30 in. | **Previous Crop** Seed Corn

Fertigation

Purpose: Fertigation is a flexible, easy to use method for applying products into the soil profile with water at specific timings throughout the growing season. These trials were designed to evaluate whether fertigation of the PhycoTerra Soil Amendment is a viable application method for increasing microbiome activity and initiating positive crop response.



Treatments	Moisture	bu/A	DIFF
Control: No Treatments	15.1%	240	--
24 oz. (1.5 pt) PhycoTerra® Soil Amendment @ V5 & V8	16.1%	244	+4
8 oz. PhycoTerra® Foliar Treatment @ R2	15.4%	245	+5
24 oz. (1.5 pt) PhycoTerra® Soil Amendment @ V5 & V8 + 8 oz. PhycoTerra® Foliar Treatment @ R2	15.8%	247	+7

32 oz. (1 qt) PhycoTerra® Soil Amendment Starter



Application: 5/11/2024 @ Plant

Field Check: 6/3/2024 @ V4



Grower Standard

PhycoTerra®

Increased Root Development

Seed Full (Conserving Energy)

Early Root Hair Growth



FIELD INFORMATION

Planted 5/11/2024 | **Harvested** 10/16/2024 | **Population** 32,700 Seeds/A.

Row Width 30 in. | **Previous Crop** Corn

Starter

Purpose: Incorporation into Starter programs is the most common application method of the PhycoTerra Soil Amendment. These applications provide precise placement of the product for early rhizosphere interaction. These trials evaluate the performance of the crop in that standard placement specifically with the benefit of providing irrigation moisture.



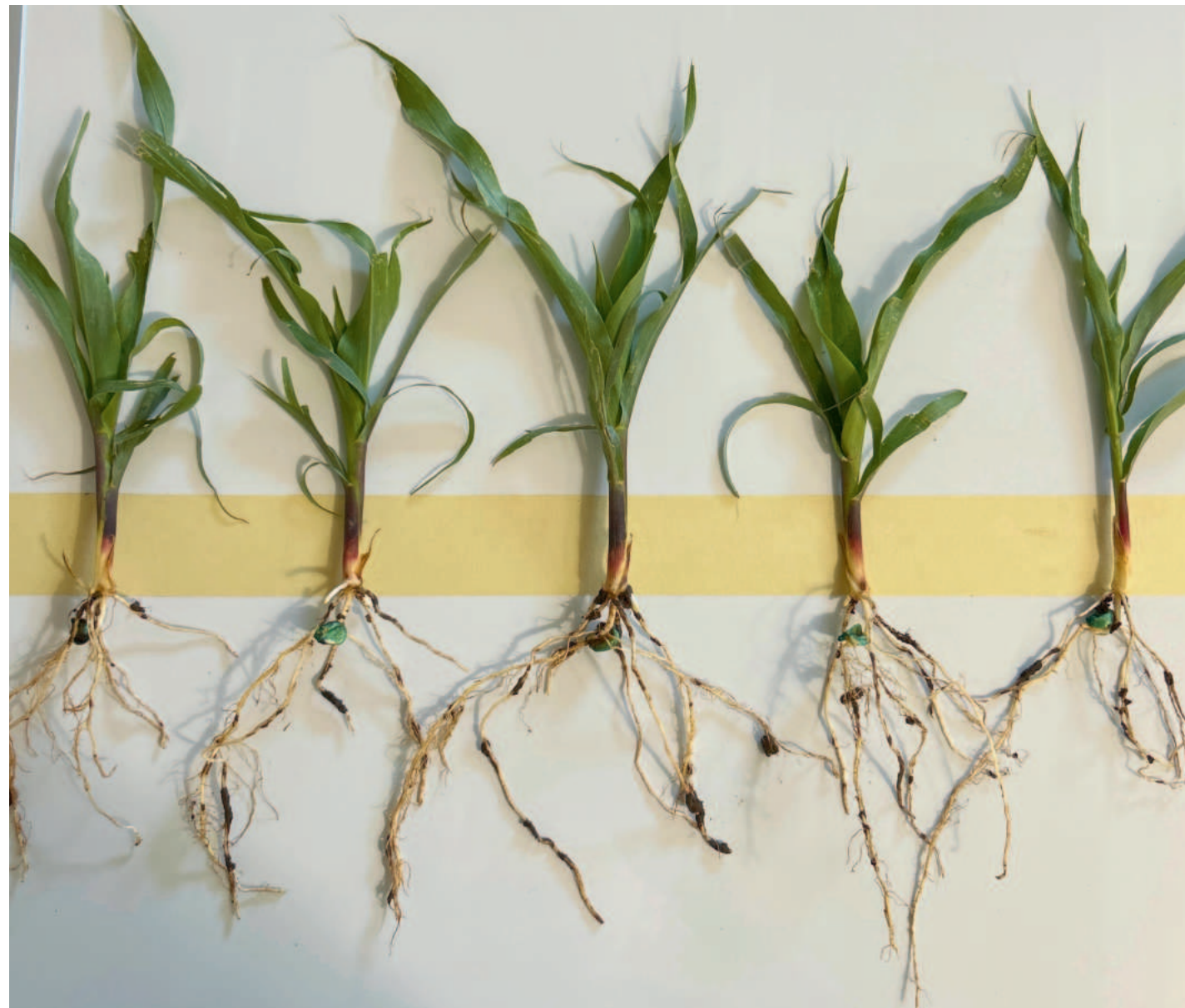
Treatments	Moisture	bu/A	DIFF
Control: No Treatments	17.5%	244	--
32 oz. (1 qt) PhycoTerra® Soil Amendment @ Plant	18.8%	260	+16
8 oz. PhycoTerra® Foliar Treatment @ R2	19.8%	255	+11
32 oz. (1 qt) PhycoTerra® Soil Amendment @ Plant + 8 oz. PhycoTerra® Foliar Treatment @ R2	18.8%	262	+18



32 oz. (1 qt) PhycoTerra® Soil Amendment Pre-Emerge

Application Date: 4/24/2024 @ Plant

Field Check: 5/23/2024 @ V3



Grower Standard

PhycoTerra®

Plant Health/Plant Recovery

Deeper Green

Root Growth

***May 20th** - Damaging Weather Event (Tornadoes, large hail, damaging winds, and flooding)

FIELD INFORMATION

Planted 4/24/2024 | **Harvested** 9/23/2024 | **Population** 34,000 Seeds/A.

Row Width 30 in. | **Previous Crop** Soybeans

Pre-Emerge

Purpose: Pre-Emerge applications provide an easy way to deliver PhycoTerra to the broad soil profile early in the season. These trials evaluate and compare the performance of utilizing this broadcast application method to deliver microalgae food to the soil microbiome.



Treatments	Moisture	bu/A	DIFF
Control: No Treatments	16.7%	242	--
32 oz. (1 qt) PhycoTerra® Soil Amendment @ Plant	17.2%	252	+10
8 oz. PhycoTerra® Foliar Treatment @ R2	16.9%	245	+3
32 oz. (1 qt) PhycoTerra® Soil Amendment @ Plant + 8 oz. PhycoTerra® Foliar Treatment @ R2	17.7%	245	+3



32 oz. (1 qt) PhycoTerra® Soil Amendment Post-Emerge

Application Date: 6/18/2024 @ V5
Field Check: 6/23/2024 @ V7



Grower Standard

PhycoTerra®

Abiotic Stress Relief

Deeper Green

Plant Health

***June** - Heat Stress (Multiple 100+ Degree Days)

FIELD INFORMATION

Planted 5/11/2024 | **Harvested** 10/8/2024 | **Population** 33,000 Seeds/A.

Row Width 30 in. | **Previous Crop** Corn

Post-Emerge

Purpose: These application passes are essential for weed control and effective crop production. By incorporating PhycoTerra soil amendment with this application method we can evaluate how well a later season application can increase microbiome activity and a positive crop response.



Treatments	Moisture	bu/A	DIFF
Control: No Treatments	14.1%	240	--
32 oz. (1 qt) PhycoTerra® @ Soil Amendment V5-V10	14.0%	243	+3
8 oz. PhycoTerra® Foliar Treatment @ R2	14.1%	245	+5
32 oz. (1 qt) PhycoTerra® Soil Amendment V5-V10 + 8 oz. PhycoTerra® Foliar Treatment @ R2	14.3%	244	+4

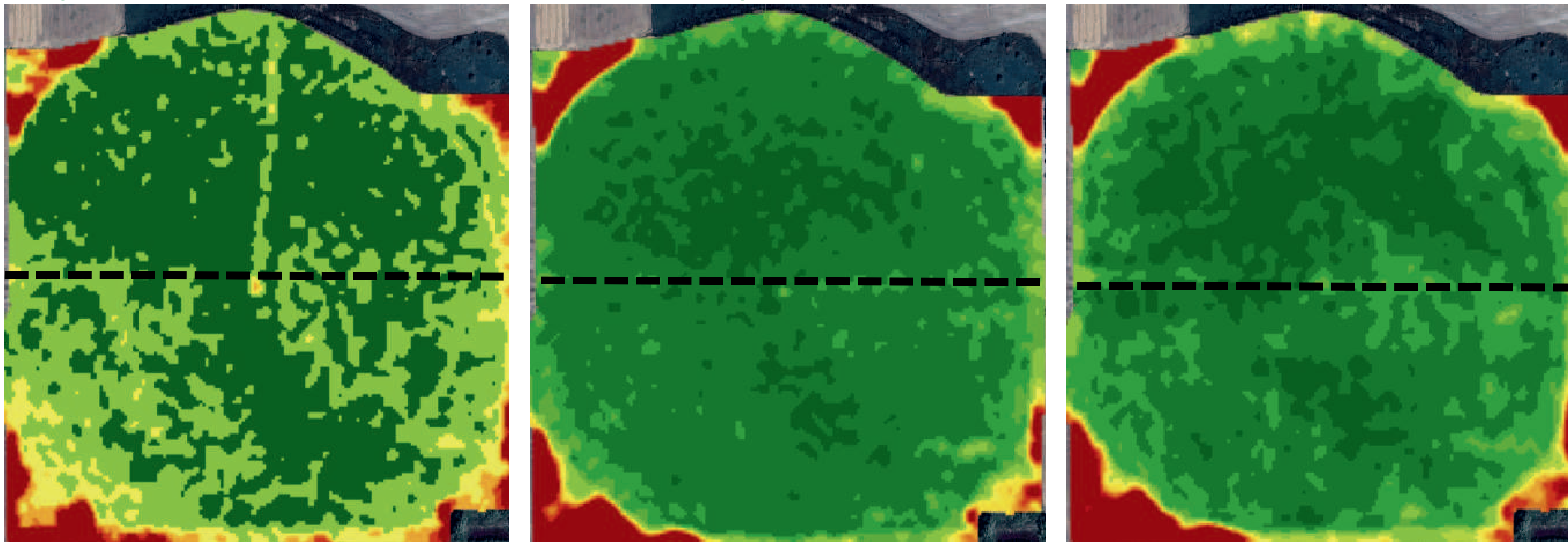


32 oz. (1 qt) PhycoTerra® Soil Amendment + 8 oz. PhycoTerra® Foliar Treatment Foliar Treatment

PhycoTerra® Soil Amendment: 5/11/2024 @ Plant

PhycoTerra® Foliar Treatment: 8/5/2024 @ R2

PhycoTerra® Soil Amendment + PhycoTerra® Foliar Treatment (North Half)



Late Season Plant Health

Stress Management

Increase Kernel Fill

8/19/2024

Grower Standard (South Half)

9/8/2024

9/13/2024

FIELD INFORMATION

Planted 5/11/2024 | **Harvested** 10/11/2024 | **Population** 34,000 Seeds/A.

Row Width 30 in. | **Previous Crop** Corn



Foliar Treatment Study

Purpose: PhycoTerra Foliar Treatment is a relatively new concept. The focus of a foliar treatment is to feed the phyllosphere microbiome to improve plant health and resilience. These trials were designed to evaluate foliar treatment in high management corn production situations as both a standalone application and a combination with stacking on top of a PhycoTerra Soil Amendment application.

Treatments	bu/A	DIFF
Control: No Treatments	229	--
PhycoTerra® Foliar Treatment (Ground)	238	+9
PhycoTerra® Soil Amendment + PhycoTerra® Foliar Treatment (Ground)	240	+11

Treatments	bu/A	DIFF
Control: No Treatments	251	--
PhycoTerra® Foliar Treatment (Aerial)	253	+2
PhycoTerra® Soil Amendment + PhycoTerra® Foliar Treatment (Aerial)	256	+5



Nebraska & Illinois Data Summary

Purpose:

Treatments	NE Average	DIFF	IL Average	DIFF
Control: No Treatments	236	--	260	--
PhycoTerra® Soil Amendment	243	+7	264	+4
PhycoTerra® Foliar Treatment	237	+1	267	+7
PhycoTerra® Soil Amendment + PhycoTerra® Foliar Treatment	244	+8	267	+7



Data Summary

Treatments	bu/A	DIFF	Break-Even
Control: No Treatments	248	--	--
PhycoTerra® Soil Amendment	254	+6	2.4 bu/A
PhycoTerra® Foliar Treatment	252	+4	1.0 bu/A
PhycoTerra® Soil Amendment + PhycoTerra® Foliar Treatment	256	+8	3.4 bu/A

***Corn \$4.11/Bu. | PhycoTerra® Soil Amendment \$40/gal | PhycoTerra® Foliar Treatment \$80/gal**

Farm forever. That's pretty cool. And that's what
i'm going to do. I'm going to farm forever, mom.

— Stetson, 8 years old



phycoterra.com