



VERDESIAN LIFE SCIENCES

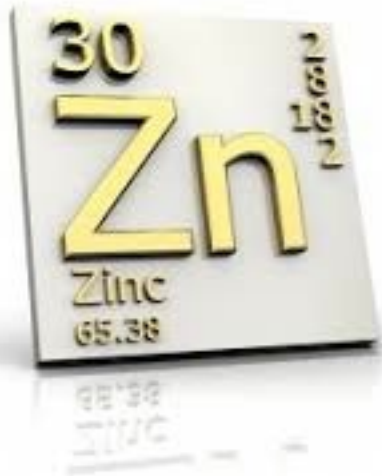
CropSync™

Jill Hanson
Specialty Micronutrients
Technical Product Manager



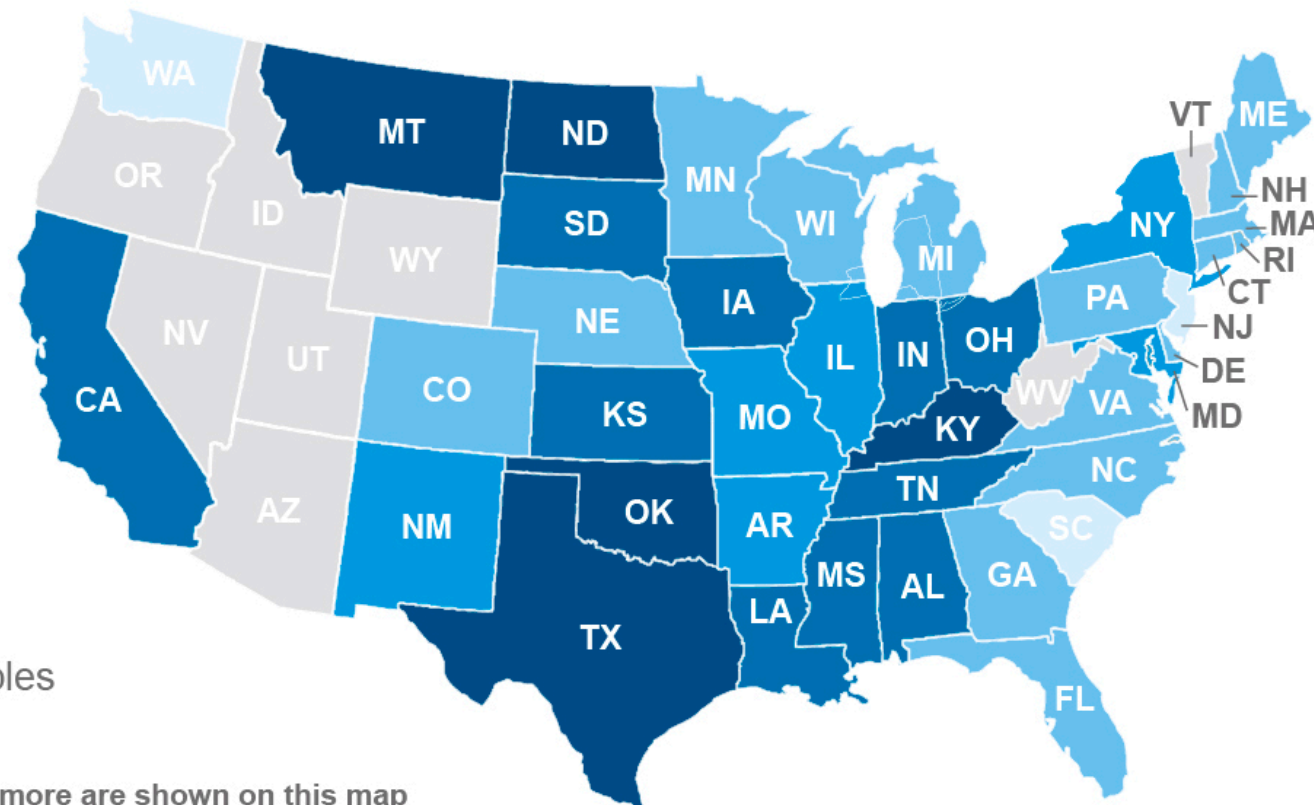
Yield?

Crop Stress?



Percent of Samples Testing Less Than 1.0 ppm DTPA Equivalent Zn in 2015

- No data available
- 1-19% of soil samples report zinc deficiencies
- 20-34% of soil samples report zinc deficiencies
- 35-50% of soil samples report zinc deficiencies
- 51-65% of soil samples report zinc deficiencies
- 66% or more of soil samples report zinc deficiencies



*Only states with 2,000 samples or more are shown on this map

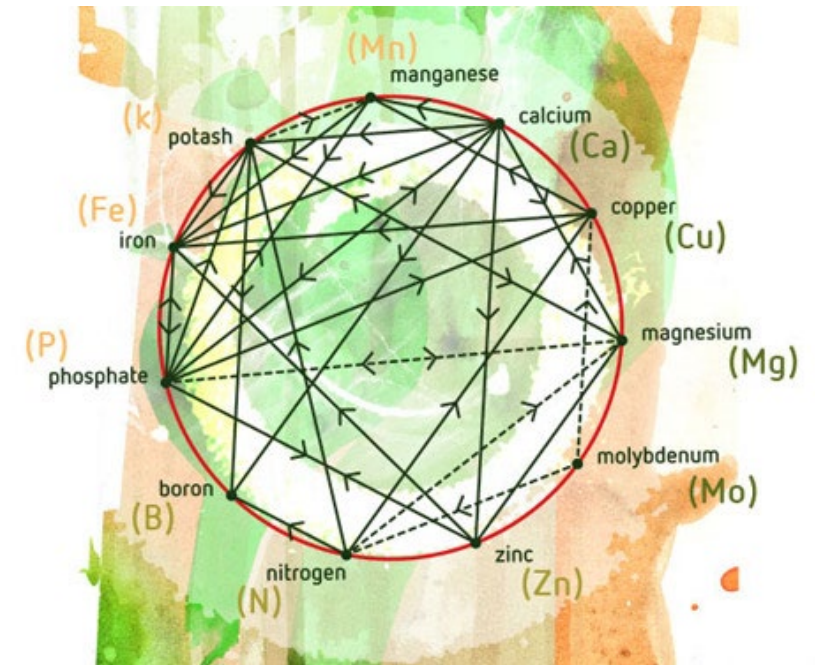
Micronutrients-essential to support growth processes



Germination and Establishment	Vegetative Growth	Flowering and Reproductive	Maturity and Senescence
Micronutrients essential to support growth processes			
Fe, Zn, Mn	Fe, Zn, Mn, Cu, B	Fe, B	Cu, B

Interaction with other nutrients

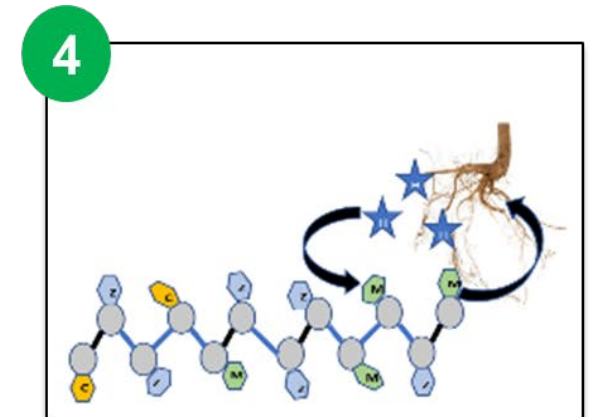
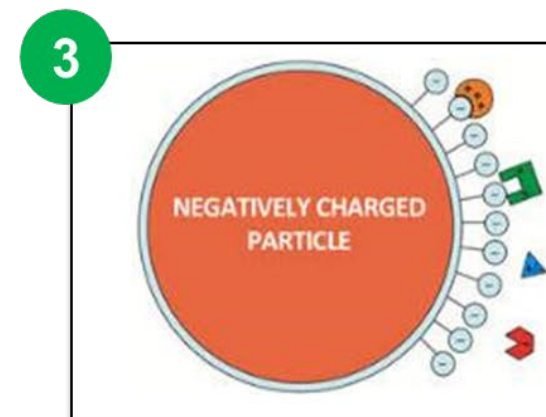
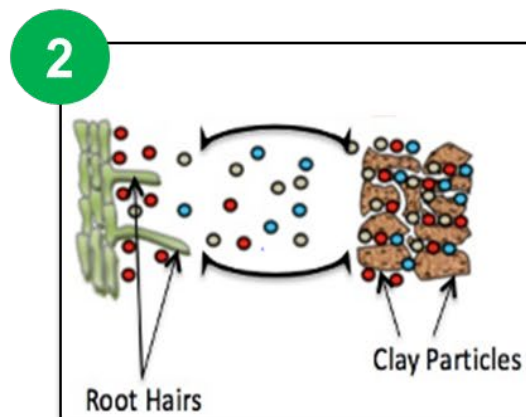
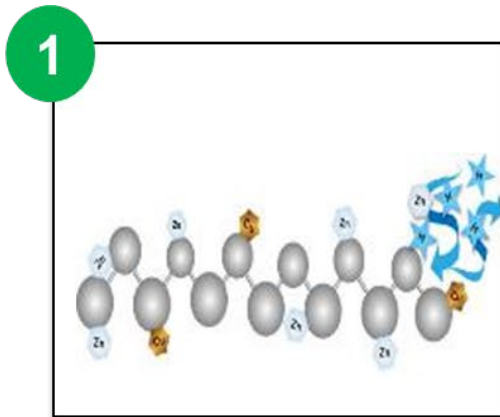
- Most elements interact with each other. This list is not exhaustive, but be aware of how complex it can be:
- Excess Mn may limit Fe uptake and vice versa
- Higher levels of Ca limit Fe uptake
- P uptake can compete with Zn uptake
- Zn has improved uptake of N, Mg and Cu



Exchange Resin Protected Nutrients

Season-long nutrient availability via the Verdesian Exchange Resin or polymer technology:

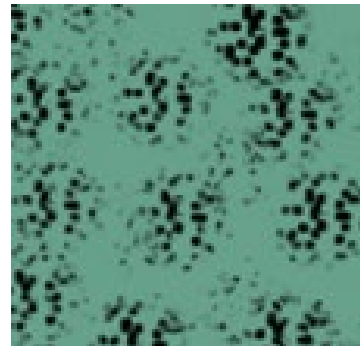
- 50-100x higher CEC than averages soils per gram improving nutrient efficiency, acting as an exchange resin
- Polymer technology “holds” the nutrients in the right place and delivers the nutrients “on demand”
- Protects nutrients from nutrient tie up
- Polymer lowers the pH around the granule, increasing the availability of micronutrients easing uptake



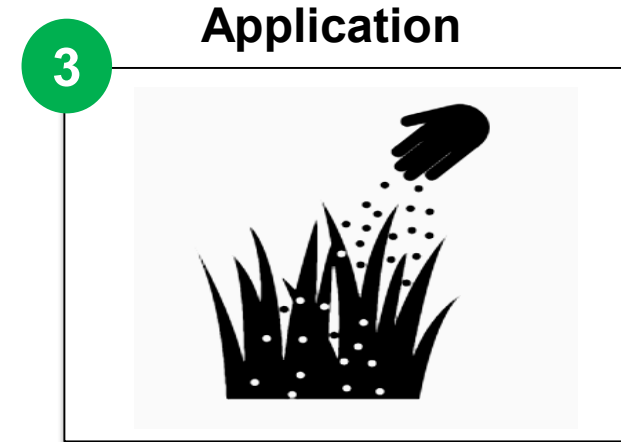
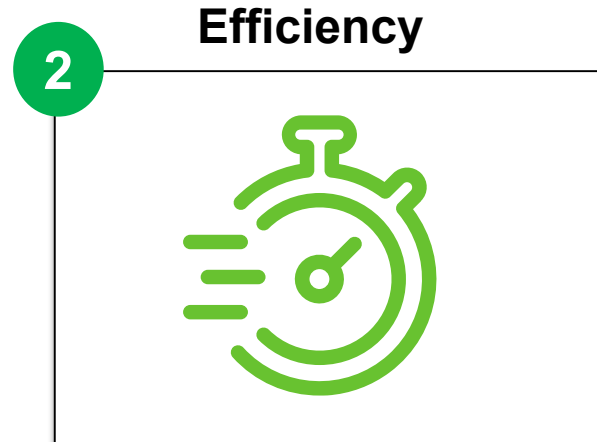
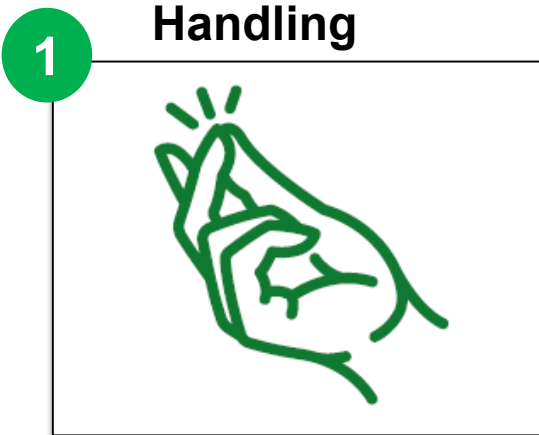
Nutripaction®

Improved nutrient accessibility:

- Uniformly blended combinations of finely divided particles compacted together produces homogenous granules consistent in particle size and analysis
- Uniform distribution improves nutrient root proximity, access and uptake
- Soil moisture activated



Ease of handling and application



Product Benefits:

Low dust, homogeneous formulation for ease of blending and spreading

No special equipment, does not interfere with current workflows.

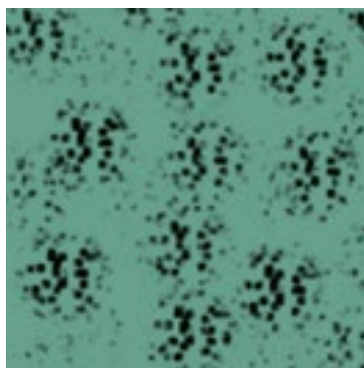
Granule size and densities are similar to MAP, DAP and MOP for consistent blending and spreading characteristics.

Nutrient Load / Particle Distribution

CropSync™ PRO

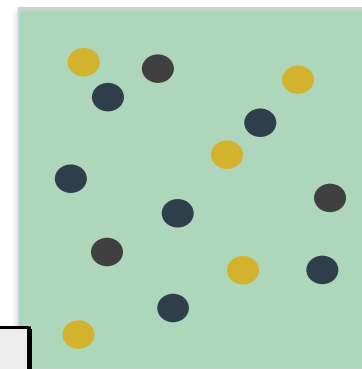
10 lbs / acre use rate

Zinc	0.75#
Manganese	0.5#
Boron	0.125#
Sulfur	0.95#



Zinc Sulfate @ 6 lbs/acre
 + Mn Sulfate @ 3 lbs/acre
 + Granubor @ 7 lbs/acre

Zinc	2.13#
Manganese	0.95#
Boron	1.05#
Sulfur	0.95#



Micro Removals	Zinc	Manganese	Boron
200 Bu Corn	0.2#	0.12#	0.21#
80 Bu Soy Beans	0.08#	0.1#	0.13#

Combination Nutrient Packages

CropSync™ PLUS™

A VERDESIAN NUE SOLUTION™

10 lbs / acre use rate

Zinc	0.75#
Boron	0.125#
Sulfur	1.0#

CropSync™ PRO™

A VERDESIAN NUE SOLUTION™

10 lbs / acre use rate

Zinc	0.75#
Manganese	0.5#
Boron	0.125#
Sulfur	0.95#

CropSync™ ULTRA™

A VERDESIAN NUE SOLUTION™

10 lbs / acre use rate

Zinc	0.5#
Manganese	0.4#
Boron	0.1#
Sulfur	0.75#
Humic Acid	1.0#

CropSync™ COMPLETE™

A VERDESIAN NUE SOLUTION™

10 lbs / acre use rate

Zinc	0.5#
Manganese	0.5#
Iron	0.25#
Copper	0.125#
Boron	0.125#
Sulfur	0.75#



Micro Products, Macro Results®

Single Element Nutrient Packages

CropSync™ ZINC™

A VERDESIAN NUE SOLUTION™

- +Zinc
- +Sulfur
- +Polymer Tech

10% Zn

CropSync™ MANGANESE™

A VERDESIAN NUE SOLUTION™

- +Manganese
- +Sulfur
- +Polymer Tech

8% Mn

CropSync™ COPPER™

A VERDESIAN NUE SOLUTION™

- +Copper
- +Sulfur
- +Polymer Tech

5% Cu

**IRONCLAD IDC™
microSync™**

A VERDESIAN NUE SOLUTION™

- +EDDHA Fe
- +Iron Chelate
- +EDTA Zinc
- +Zinc Chelate
- +Sulfur
- +Polymer Tech



4R Alignment

Right Source:

- Both immediate and season-long nutrient availability
- Polymer inclusion for Nutrient Use Efficiency

Right Rate:

- Rate utilized is dictated by the plant
- Rate is only available to the growing crop

Right Time

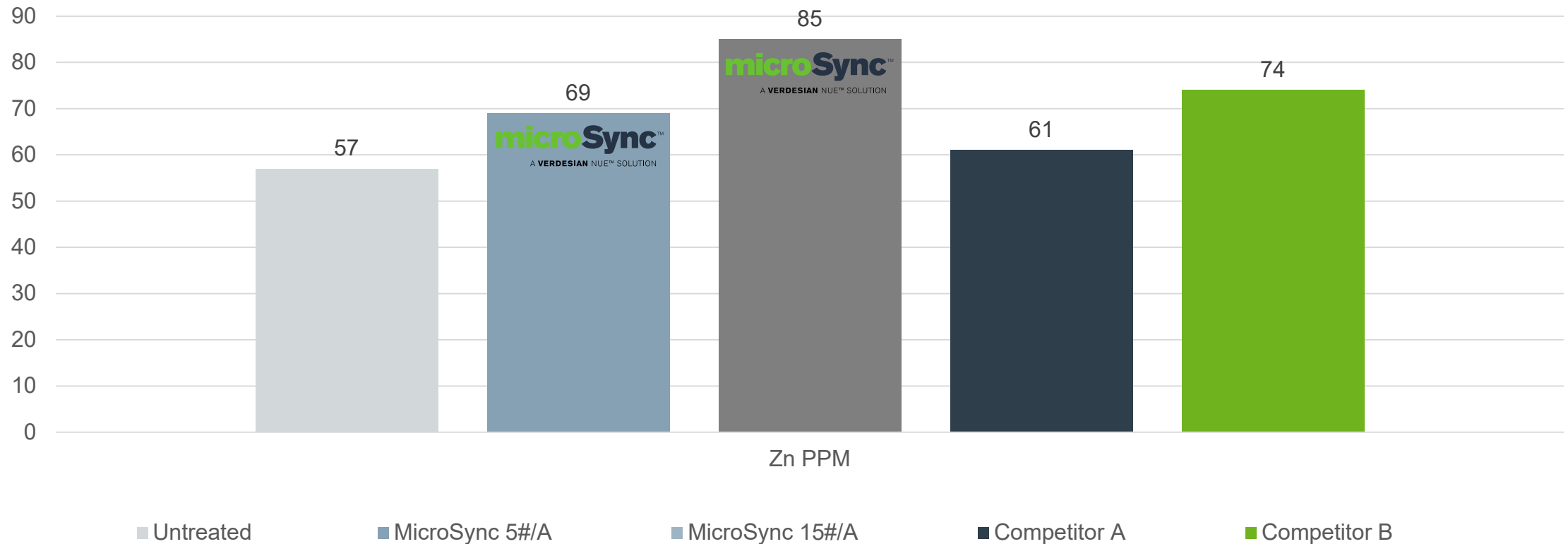
- The timing of uptake is dictated by plant metabolic requirements
- Nutrients are spoon-fed to the plant based on plant requested needs

Right Place

- Nutripaction Technology allows for homogeneous formulations which increase nutrient particle distribution and soil contact

MicroSync vs. Competitors for Zn Uptake

Zn Uptake in Corn GH Trial at V6



2018DL-ZEAMX-10

Each bar is a composite sample of 10 replications. Treatments applied PPI with DAP at 100#/A.

In the field, Iowa

microSyncPRO™

A VERDESIAN NUE™ SOLUTION

@ 10# / Acre



microSyncPRO™

A VERDESIAN NUE™ SOLUTION

Untreated

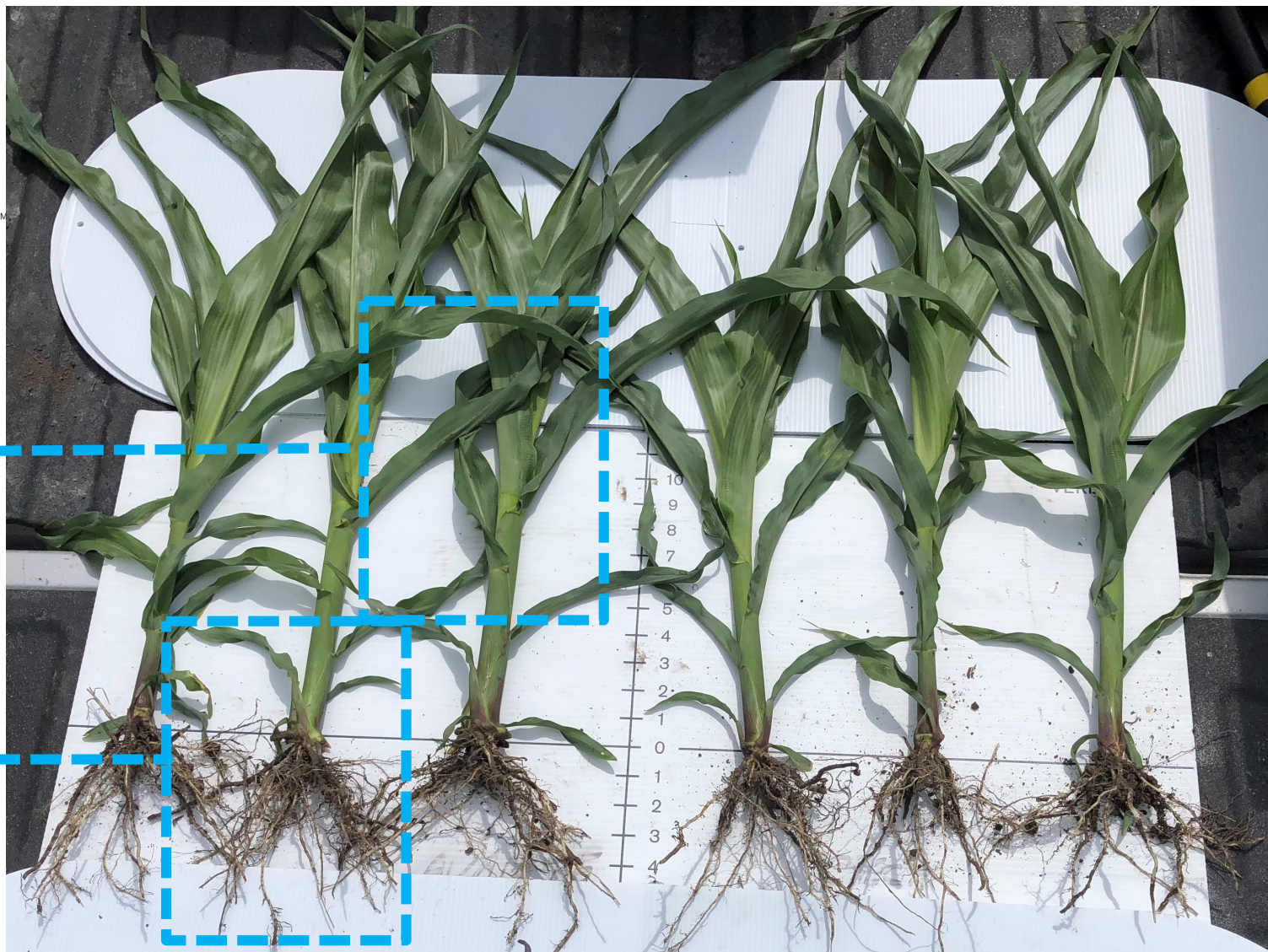
In the field, low
microSyncPRO™

A VERDESIAN NUE™ SOLUTION

@ 10# / Acre

Thicker stalks

Better root
development



microSyncPRO™

A VERDESIAN NUE™ SOLUTION

Untreated

In the field, Nebraska

microSyncPRO™

A VERDESIAN NUE™ SOLUTION

@ 7 lbs/acre

Better root development and productive nodulation

1 full trifoliolate ahead in foliar development



microSyncPRO™
A VERDESIAN NUE™ SOLUTION

Untreated

Planted 4/24/2018

PHOTO 5/31/2018



6/22/2018

In the field, Nebraska
microSyncPRO™
A VERDESIAN NUE™ SOLUTION
@ 10 lbs/acre

Application over the
top with Urea

PHOTO 7/24/2019
6-7 WAT



microSyncPRO™
A VERDESIAN NUE™ SOLUTION

Untreated



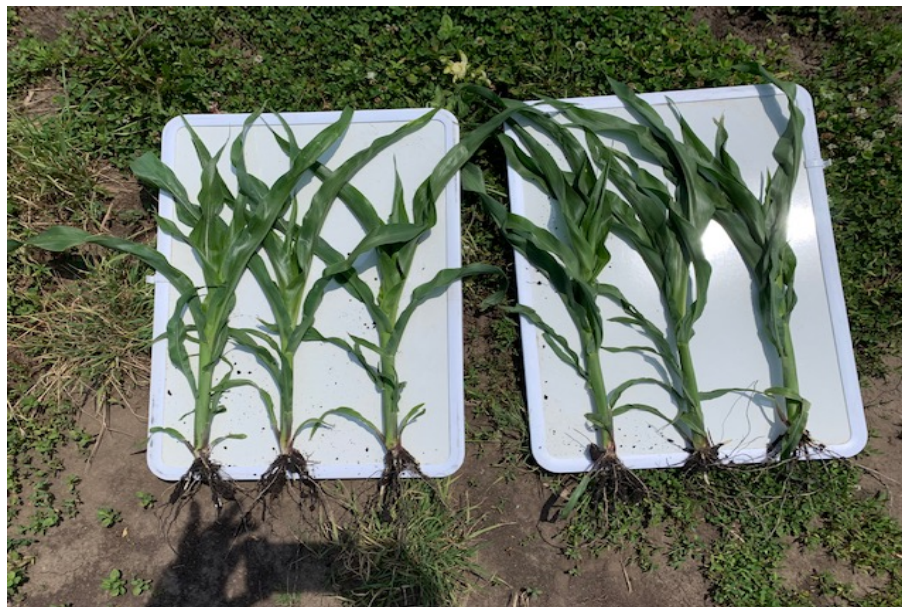
microSyncPRO™
A VERDESIAN NUE™ SOLUTION



Untreated

In the field, Iowa
microSyncPRO™
A VERDESIAN NUE™ SOLUTION
@ 10# / Acre

Norton Farm
MicroSync Pro Trial
10 lbs / acre
Scouted June 17, 2019
MicroSync Pro trial applied 4/18/2019
with dry P & K program.



Untreated

microSyncPRO™
A VERDESIAN NUE™ SOLUTION



Untreated

microSyncPRO™
A VERDESIAN NUE™ SOLUTION

Why CropSync?

Nutrient **Availability:**

- Polymer technology acts as an exchange resin, providing season long protection and “on demand” availability of nutrients

Nutrient **Accessibility:**

- Nutripaction Technology allows for homogenous granules to be more evenly distributed improving accessibility of nutrients to growing roots.

Nutrient **Uptake:**

- The completeness of formulation and delivery system make the CropSync family the best 4R solution. Prescriptive micronutrients in the right place and available at the right time.



Thank You

Jill Hanson
Specialty Micronutrients
Technical Product Manager