



PRODUCT TESTING

For Product Development & Ag Service Companies



US Patent 8,763,478

US Patent 9,709,471

Patent Pending's

*Please refer to UNIBEST's Data Liability Statement for all conditions

UNIBEST Product Testing Platform Was Designed To Accelerate & Improve The Understanding Of Nutrient Availability Associated With Fertilizers, Soil Conditioners & Biological Product Applications Once They Have Interacted With Your Soils.

For:

- Fertilizers
- Biologicals
- Inoculants
- Conditioners & More

UNIBEST's *Product Testing Platform*

For Product Development & Ag Service Companies



UNIBEST Nutrient Product Testing is a new & disruptive platform that produces quantifiable nutrient availability data associated with fertilizer nutrient formulations, chemistries, release characteristics, soil biology & more.

THE NEXT BIG ADVANCEMENT IN PRECISION AGRICULTURE!

UNIBEST PRODUCT TESTING

Existing and New Products

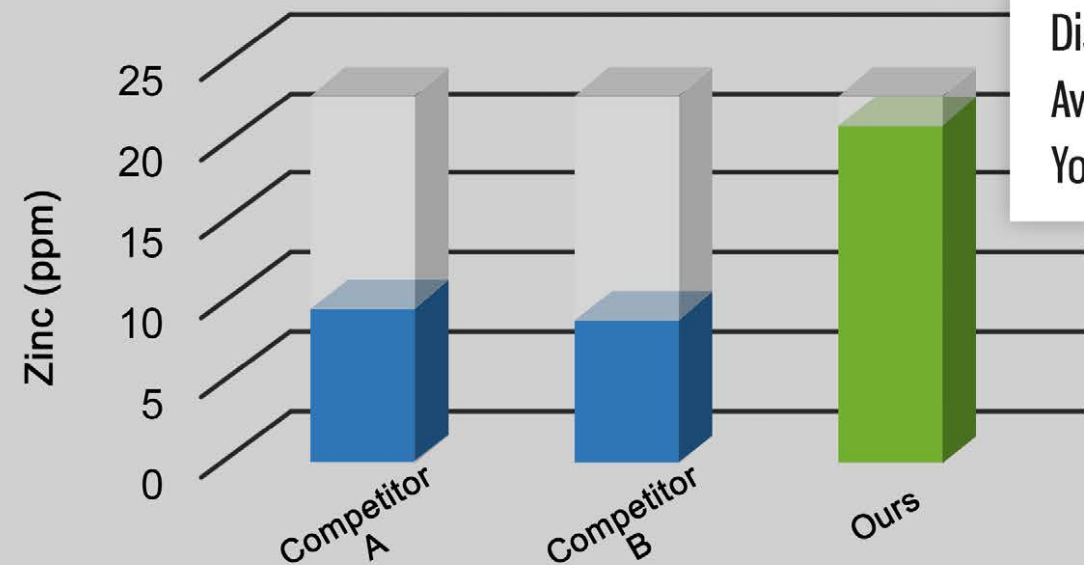
4Rs (Right Source, Right Rate, Right Time, Right Place)

Head-to-Head competition of products

- Only technology to cost-effectively quantify plant-available forms of 14+ nutrients before and after test products interact with soils
- Test in days or weeks, not months or years
- Evaluate & optimize product inventory of fertilizers, biologicals, amendments & more
- Visually market and position products with disruptive data sets
- Compare and evaluate multiple products and alternatives in a single study
- Customizable study designs to meet specific goals, objectives & budgets
- Statistical analyses, reports and professional slide presentations
- Quickly evaluate non-nutrient influences on nutrient availability
- Thousands of replicated data points in weeks or months, not years
- Measurement & development of product characteristics to match crop specific nutrient demands at critical growth stages- Lbs/Acre/Day Release
- Positioning of products by soil type response & match BEST-FIT products by specific regional environments

Our Product, Your Soil

Zinc Product Availability



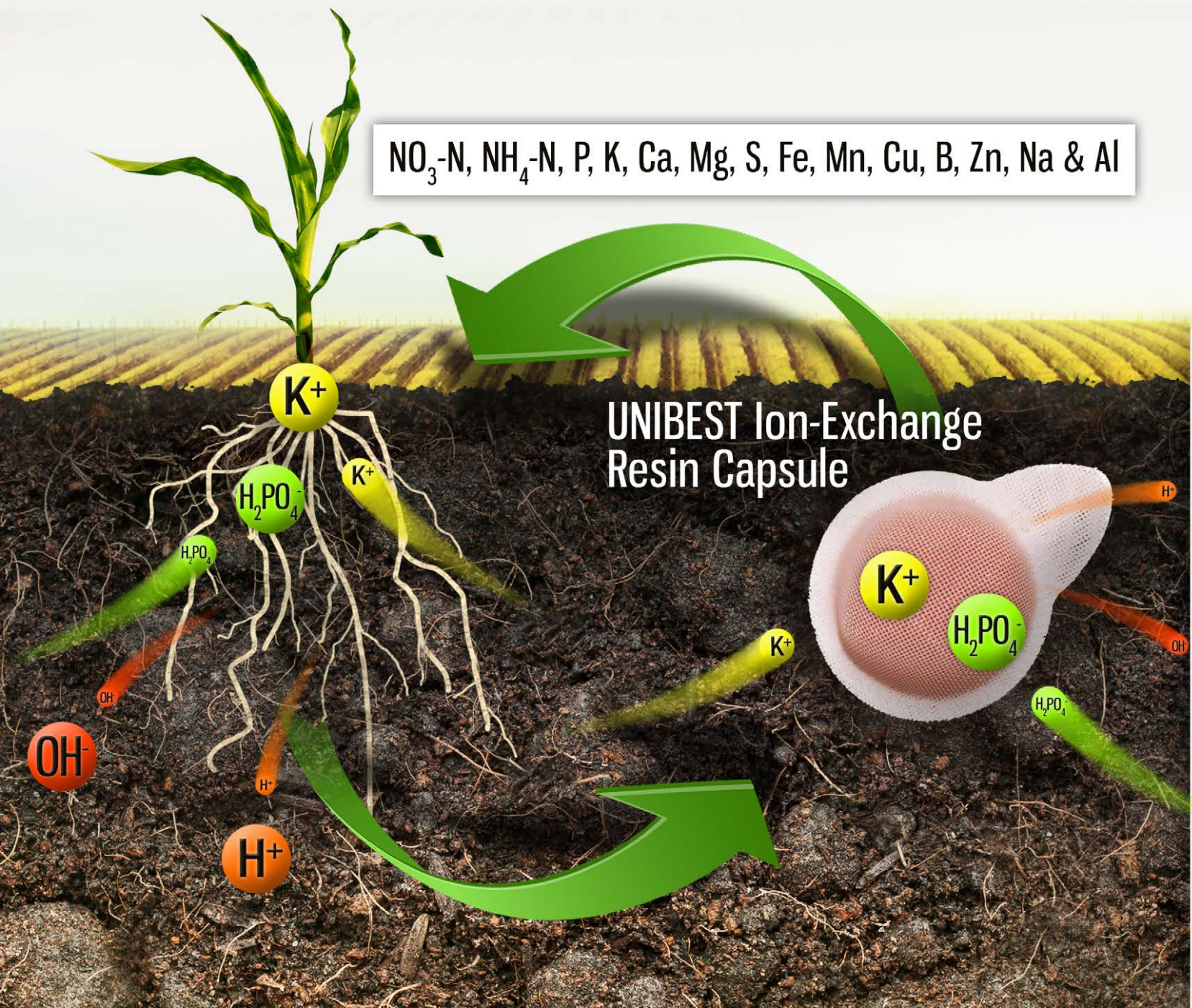
Seamlessly Provide Disruptive Nutrient Availability Data To Your Customers



SAVE TIME, ENERGY & MONEY

The Core Technology

UNIBEST's patented Ion-Exchange Resin Technology is the core component providing this disruptive product performance information. These Ion-Exchange Resin Capsules (IERC's) only adsorb nutrients from the soil if the nutrients are in forms and amounts available for root uptake. Unavailable nutrient forms are not detected.



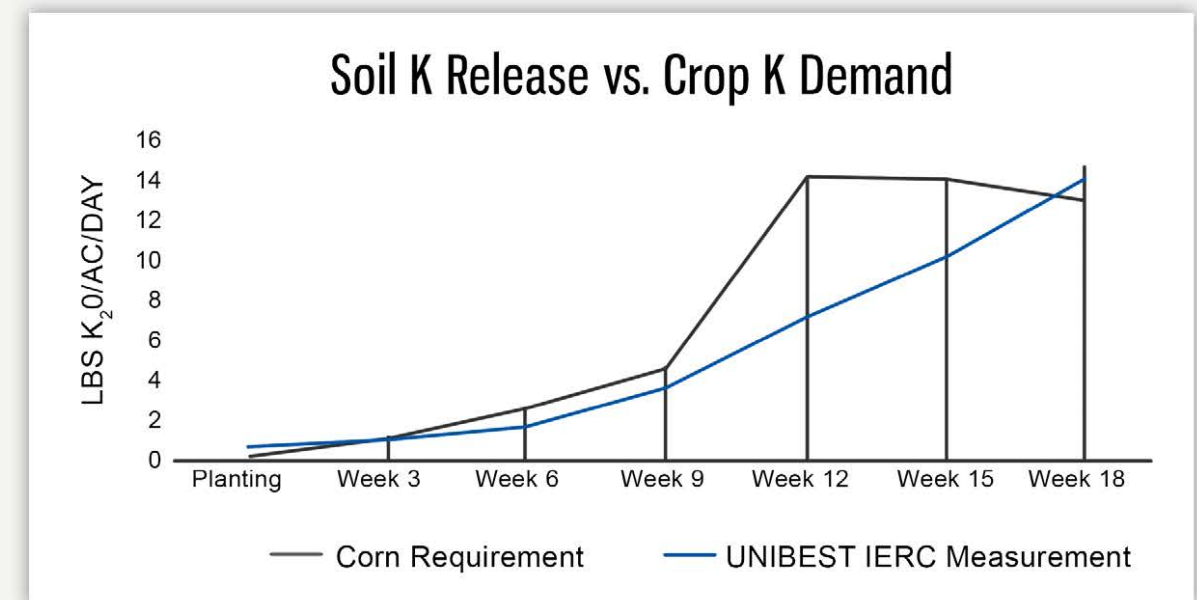
Nutrient Availability

UNIBEST uses FIELD-MOIST SOILS to measure nutrient availability to a crop where traditional soil testing methods dry and grind soils, two processes which change the physical and chemical characteristics of a particular soil.

This disruptive measurement of nutrient availability under natural soil environments, is what allows UNIBEST to quantify nutrient availability once products have interacted with soils following an application.

The ability to detect and quantify product applications once they have interacted with a particular soil, provides the precision data to position specific products and rates by soil type.

Its not the total amount of nutrient in a given soil, but rather the soils ability to release nutrients at a rate that matches plant uptake demands (lbs/A/Day) at critical growth stages.



Quantify Products & Rates

Evaluate BEST-FIT products and rates by soil type. In this case, the product is applied to a particular soil type in the laboratory and product response/release is evaluated to quantify its ability to supply nutrient in forms and rates that match specific crop uptake demands (lbs/A/Day).

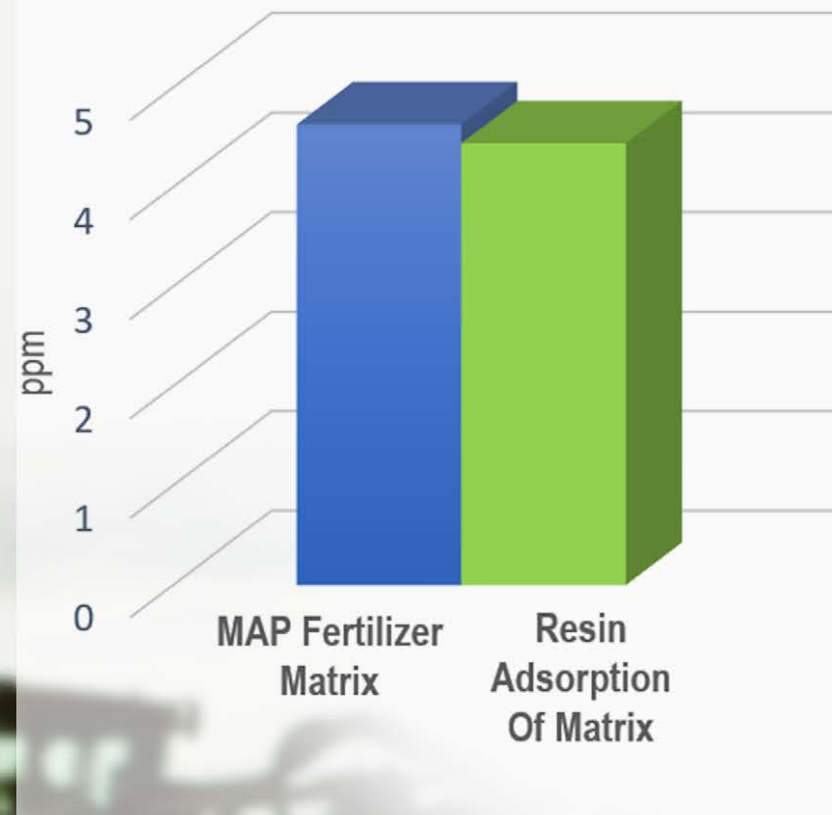
Confirms that the resins adsorb the total amount of available P from the fertilizer solution/matrix prior to its addition to the soil

Case Study:

Monoammonium Phosphate (MAP)

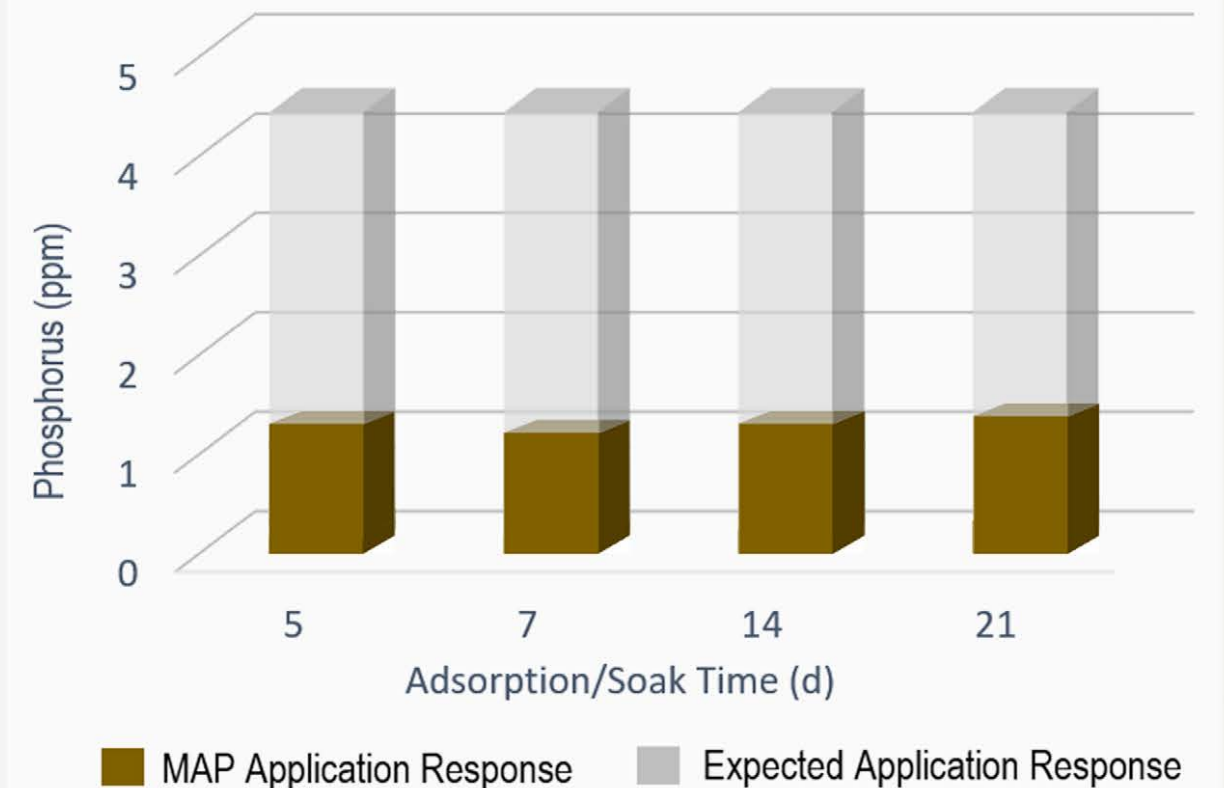
Each parameter in the study was replicated 25 times, for a total of 350 samples. This study confirms that the applied MAP has the true bioavailable amount of phosphorus, but when applied to the soil a large portion of the MAP is not available for plant uptake. This kind of decision can be costly and yield goals may not be achieved due to unavailable nutrient levels at critical growth stages.

MAP FERTILIZER MATRIX & RESIN RESPONSE
Phosphorus (P)



TEST SOIL RESPONSE TO FERTILIZER APPLICATION

MAP Application of 4.44 ppm Phosphorus (P)



Quantify Products & Rates

Evaluate multiple product chemistries across many different soil types. Guides product positioning by soil type/geographical regions, evaluation of potential ROI and develops disruptive marketing materials - *Our Product, Your Soil.*

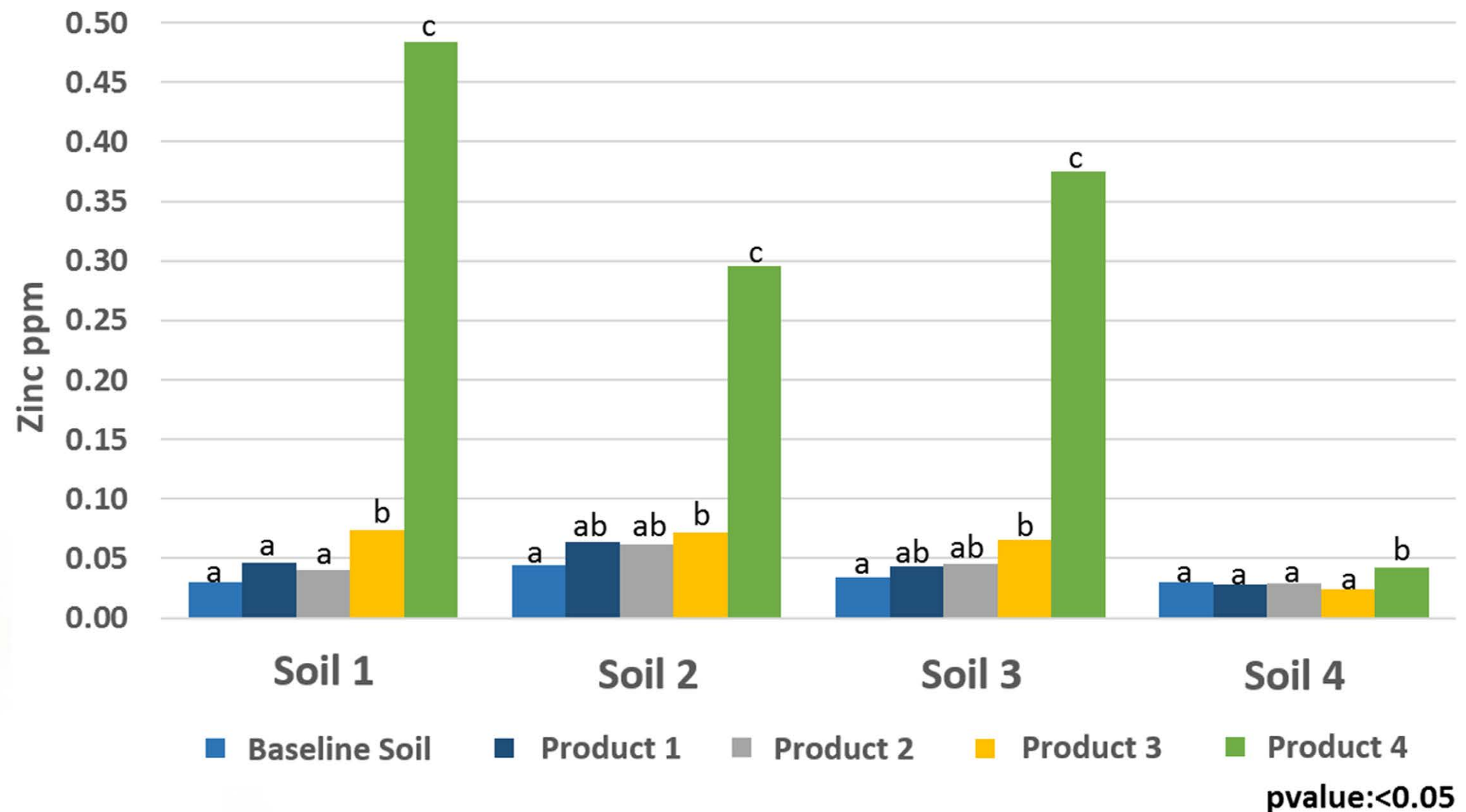
Case Study: Zinc Fertilizer Chemistries

Each Treatment was replicated 10 times and produced 200 data points for Zinc in 1 week.

Results showed that Product 4 provided statistically more available Zn in all four soils when Zn was banded. Banded or broadcast Zn may not be cost effective in Soil 4 and one may want to consider foliar or seed treatment Zn additions.

Product 4 showed great statistical significance in Zn availability in 3 of 4 soil types over competitor Zn chemistries

Change in Soil-Available Zn At Equal Application Rates



Pulling It All Together To Maximize The Value

- Position products with growers by soil type response - by Zone or Field
- Guides variable rate & variable product applications
- Aligns with and precisely guides the 4R's (right products, right rates, right time, right location)
- Regional, national & global positioning of products by soil type response
- Easily run economics on product performance
- Rapid product evaluation prior to years of field studies that can be inconclusive
- Measurement, development & modeling of slow release product characteristics in Lbs/Acre/Day- regional adaptation/positioning

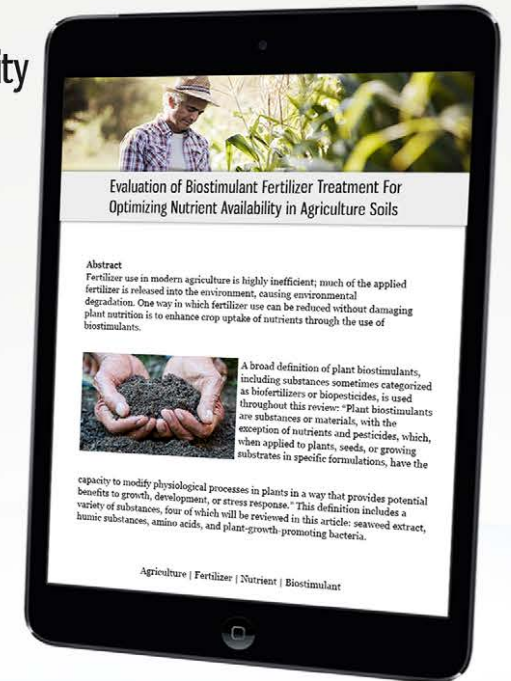
Process & Deliverables

Starting The Process

- UNIBEST provides clearly defined scope & proposal documents
- UNIBEST provides methods & materials document agreed upon by all parties
- Pre-evaluation of study product(s) & platform compatibility prior to starting the study

Professional Deliverables

- Complete statistical analysis
- All raw data files clearly labeled & packaged
- An independent final research report
- PowerPoint presentation of study overview & results



Get Started With UNIBEST'S Product Testing Platform



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