

Mosaic® AgriFacts®

CORN



MicroEssentials® SZ™ Phosphorus Uptake in Corn

Objective

- Evaluate the yield response and phosphorus uptake of MicroEssentials® SZ™ (12-40-0-10S-1Zn) compared to MAP (11-52-0) and a MAP + AS (21-0-0-24S) + ZnSO₄ (0-0-0-16.5S-36Zn) blend in spring broadcast applications.

Overview

- Corn removes 0.35 lb P₂O₅ per bushel of harvested grain (IPNI: Table 4.5, April 2014). Along with phosphorus, corn needs other nutrients in a proper ratio to achieve peak nutrient use efficiency and maximum yield.
- MAP is commonly used as a phosphorus source in corn-growing regions of North America. Ammonium sulfate (AS) and zinc sulfate (ZnSO₄) are often blended with MAP to provide sulfur and zinc.
- Through Mosaic's patented Fusion® technology, MicroEssentials SZ contains N-P-S-Zn fused into one nutritionally balanced granule, creating a single source for balanced crop nutrition and promoting more uniform nutrient distribution.
- The chemical composition of MicroEssentials SZ provides a slight pH reduction in a microsphere around the fertilizer granule, and offers more phosphorus in the form preferred by crops (dihydrogen orthophosphate).

Trial Details

Locations and Crop Management:

CROP: Corn (*Zea Mays*)

YEARS: 2012–2013

LOCATIONS: 14 locations across the U.S. United States – AR, IL, KS, MI, MN, ND, NE, OH, TN, VA

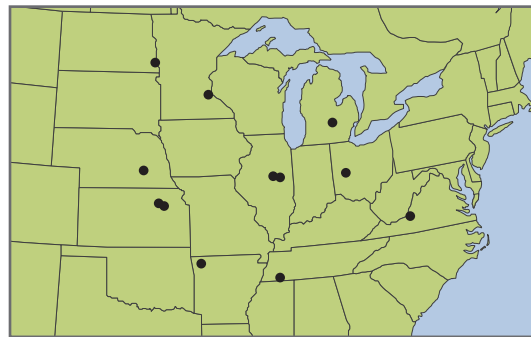
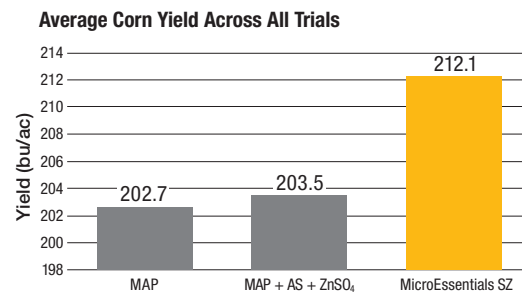
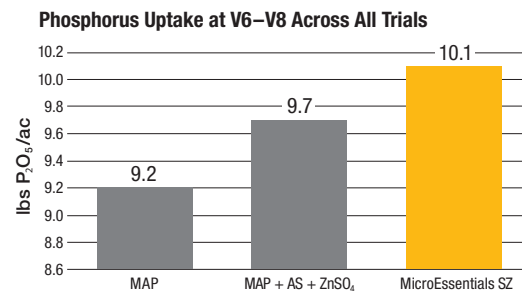
DATA SOURCE: Field studies conducted by third-party, independent researchers.

EXPERIMENTAL DESIGN: Small-plot RCBD with 4 replications

CROPPING CONDITIONS:

- **P Rate:** 90 lbs P₂O₅/ac
- **K Rate:** As required by soil test
- **S Rate:** 22.5 lbs S/ac
- **Zn Rate:** 2.25 lbs Zn/ac
- **Application Timing:** Preplant
- **Application Method:** Broadcast incorporate
- **Tissue Sampling:** Whole-plants samples collected at V6–V8 were used for P concentration and uptake.

Yield



Summary

- With MicroEssentials SZ, phosphorus uptake increased by 0.9 lb P₂O₅/ac over MAP and 0.4 lb P₂O₅/ac over the MAP + AS + ZnSO₄ blend.
- Averaged across 2 years and 14 trials, MicroEssentials SZ outyielded MAP by 9.4 bu/ac (4.6%).
- Averaged across these same years and locations, MicroEssentials SZ outyielded the MAP + AS + ZnSO₄ blend by 8.6 bu/ac (4.2%).
- These results show the increased P uptake and yield that can be achieved when MicroEssentials SZ is applied compared to MAP or a conventional MAP blend.

MicroEssentials

8.6
bu/ac

Corn yield increase compared to conventional MAP blend.

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Individual results may vary, and performance may vary from location to location and from year to year. This result may not be an indicator of results you may obtain, as local growing, soil and weather conditions may vary. Growers should evaluate data from multiple locations and years whenever possible.

For more information, go to MicroEssentials.com.