MicroEssentials® SZ™ Nutrient Efficiency in Winter Wheat

Objectives
• Evaluate the yield response of winter wheat to MicroEssentials® SZ™ (12-40-0-10S-1Zn), MAP (11-52-0) and a MAP + AS (21-0-0-24S) + ZnSO₄ (0-0-0-16.5S-36Zn) blend at three different phosphorus (P) rates.
• Compare the grain concentration of phosphorus (P), sulfur (S) and zinc (Zn) across treatments of MAP, MAP + AS + ZnSO₄ and MicroEssentials® SZ™ at a rate of 60 lbs P₂O₅/ac.

Overview
• Monoammonium phosphate (MAP) is commonly used as a P fertilizer applied to winter wheat.
• In addition to nitrogen (N) and P, other nutrients like S and Zn are beneficial to achieve maximum yield and better nutritional quality.
• MicroEssentials SZ contains N, P, S and Zn in one nutritionally balanced granule, providing the uniform nutrient distribution, improved nutrient uptake and season-long sulfur availability required for higher yields and profitability.

Trial Details
Crop Management:
CROP: Winter Wheat (Triticum aestivum, winter)
YEARS: 2012–2014
CROPPING CONDITIONS:
• P Sources: MAP, MAP + AS + ZnSO₄ and MicroEssentials SZ
• P Rate: MAP and MicroEssentials SZ: 0, 30 and 60 lbs P₂O₅/ac
  MAP + AS + ZnSO₄: 60 lbs P₂O₅/ac
• K Rate: As required by soil test, applied to entire trial
• Application Timing: Preplant
• Application Method: Broadcast
PARAMETERS MEASURED:
• Grain yield
• Grain nutrient concentration P, S, Zn (12 of 17 locations)

Results
LOCATIONS: 17 trials across the U.S. and Canada
United States – IL, IN, KS, MS, NE, OH, OK, VA
Canada – ON

Fig. 1  Wheat yield response to different P sources and rates.
Note: MAP + AS + ZnSO₄ was only tested at 60 lbs P₂O₅/ac.
Summary

- At 60 lbs P₂O₅/ac, MicroEssentials® SZ™ had a 4.2 bu/ac (6.0%) higher yield than MAP and 2.5 bu/ac (3.5%) higher yield than the MAP blend.
- The 30 lbs P₂O₅/ac of MicroEssentials SZ outperformed the 60 lbs P₂O₅/ac rate of MAP and the MAP blend. This demonstrates the increased P efficiency of MicroEssentials SZ compared to MAP.
- Grain nutrient concentrations were higher in MicroEssentials SZ treatments than MAP or MAP blend treatments. Compared to MAP, MicroEssentials SZ demonstrated the following increases: 3.8% for P, 4.1% for S and 2.4% for Zn.
- MicroEssentials SZ demonstrated higher yield and grain nutrient concentration compared to MAP or a MAP blend. Applying MicroEssentials SZ results in maximum yield and increased nutrient efficiency.