



SPRING WHEAT

# Spring Wheat Response to MicroEssentials® S15®

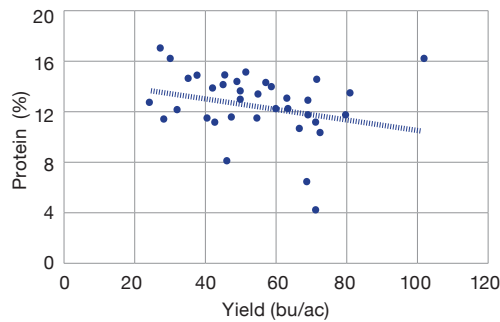
## Objective

- Evaluate the yield and protein response of spring wheat to Urea (46-0-0), MAP (11-52-0), MAP+AS (21-0-0-24S) and MicroEssentials S15 (13-33-0-15S).

## Overview

- Spring wheat requires a balanced crop nutrition program that maximizes both yield and grain protein (%).
- Proper fertility for maximum yield is needed season-long, but research shows that late season nitrogen (N) and sulfur (S) is especially important to maximize grain protein.
- In addition to N, MAP or a MAP+AS blend is commonly applied at planting to meet phosphorus (P) and sulfur (S) requirements.
- Growers are searching for fertilizer sources that can provide both early- and late-season crop nutrition needs; especially important in seasons that are not conducive to late-season fertilizer applications.
- MicroEssentials S15 is a performance phosphate fertilizer that provides two forms of S (sulfate + elemental) for season-long S availability.
- Research has shown that the addition of phosphate fertilizer will increase yield, but maintaining grain protein (%) is more difficult as yields increase. As an example, MAP treatments were selected from the 39 trials in this experiment and yield x protein data was used to demonstrate the "dilution" effect that occurs with higher yield (See Figure 1).

**Figure 1 Relationship between yield and protein (%) for MAP Treatments. Each dot represents the trial mean (n=39)**



## Trial Details

### Locations and Crop Management:

**CROP:** Spring Wheat (*Triticum aestivum*)

**YEARS:** 11 years (2004-10; 2015-18)

**TRIALS:** 39 site-years across the U.S. and Canada.  
 United States: ID, MN, MT, ND, SD;  
 Canada: AB and SK

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

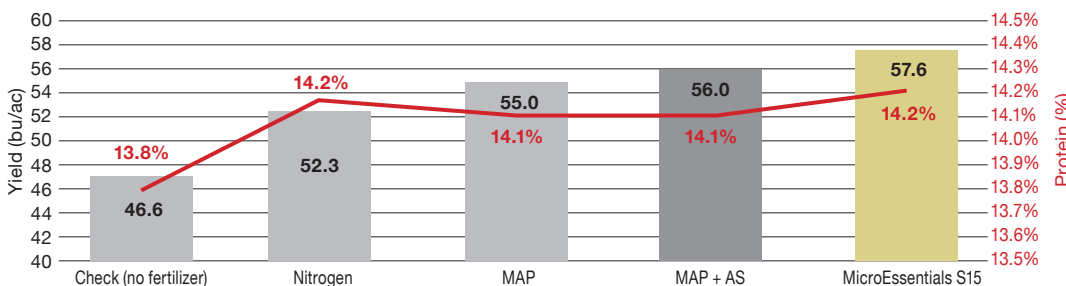
**EXPERIMENTAL DESIGN:** Small-plot RCBD with 4 replications.

### CROPPING CONDITIONS:

- Nitrogen was balanced across all trials. Sulfur treatments were balanced across MAP + AS and MicroEssentials S15 across all trials.
- Phosphorus treatments were balanced across each trial at either 33 lbs P<sub>2</sub>O<sub>5</sub>/ac or 40 lbs P<sub>2</sub>O<sub>5</sub>/ac (Rates were slightly increased over the years.)

**APPLICATION DETAILS:** Cropping systems followed local practices. Fertilizer was broadcast incorporated.

**Figure 2: Spring Wheat yield and protein % by treatment.**



MicroEssentials®

**2.6**  
 bu/ac

MicroEssentials S15 over MAP



> See Summary on back of this page.

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## Summary

- Compared to the Check (no fertilizer), the addition of N increased both yield and protein.
- MAP provided a +2.7 bu/ac yield increase over N, but had a slight drop in protein.
- The addition of S from AS added +1 bu/ac compared to MAP alone.
- MicroEssentials S15 increased yield over MAP (+2.6 bu/ac) and MAP+AS (1.6 bu/ac).
- The largest yield occurred with MicroEssentials S15 (57.6 bu/ac) while maintaining grain protein (14.2%); demonstrating the benefit of two forms of S in meeting spring wheat S demands in flowering/grain fill periods.



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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  
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