

## OBJECTIVES

The objective was to evaluate the efficacy of Prevent phosphorus management aid for increasing phosphorus availability and efficiency in wheat.

## SEED TREATMENTS

Prevent (AgXplore International, Parma, MO) with CrossLink Technology is a phosphorus (P) management aid that helps prevent P fixation in the soil and enhances P uptake. Prevent is marketed as a product that reduces P fixation, and increases P availability and efficiency.

## MATERIALS AND METHODS

- Two field experiments were established in the fall of 2015 at University of Idaho (UI) Parma Research & Extension Center (Field M2, and Field E1).
- Stephens, soft white winter wheat, was seeded at 155 kg ha<sup>-1</sup> seeding rate into 3 x 6 m plots.
- Nitrogen (N) fertilizer urea (46-0-0) was applied at rates to achieve UI N recommendations for winter wheat of 280 kg ha<sup>-1</sup>.
- One week after planting, wheat plots were treated with monoammonium phosphate (MAP; 11-52-00) at 100, 75, or 50% of recommended rate. The MAP was either treated or untreated with Prevent prior to application. One treatment (P-unfertilized) was fertilized with N only, and MAP was omitted.
- Whole plant above ground biomass samples were collected at Feekes 5-6, and analyzed for P content. At Feekes 5-6, Normalized Difference Vegetative Index (NDVI) was measured to assess crop nutrient status. SPAD meter was used at Feekes 5-6 to estimate chlorophyll content.
- At maturity, the effect of MAP treated and untreated with Prevent P aid applied at various rates on wheat grain yield, test weight, grain protein, protein yield were evaluated.

## DISCUSSION

- Field M2 had 3.0% organic matter (OM) and 26 ppm of P, compared to 1.23% OM and 56 ppm of P (0 -0.3 m depth) at Field E1.
- Wheat grain yield ranged from 7350 to 8169 kg ha<sup>-1</sup> at Field E1, and from 7904 to 11881 kg ha<sup>-1</sup> at Field M2 (Figure 1). Although differences were not statistically significant, notably higher yields were achieved for 75% P + Prevent treatment (Field M2), and for 100% P + Prevent treatment (Field E1) compared to other treatments.
- Grain protein content was significantly affected by P application and Prevent treatments (Figure 2). Higher protein values were obtained for Field M2 (12.2 – 14.0%), compared to Field E1 (10.7 – 11.8%). For both fields, the highest protein values were achieved with 50% P + Prevent treatment.
- Grain protein yield (product of grain yield x grain protein content), enables us to evaluate grain production and grain quality simultaneously. For both fields, the best treatment was 75% P + Prevent treatment (Figure 3).
- Study will be continued in 2016-17 growing season.

## PRELIMINARY RESULTS

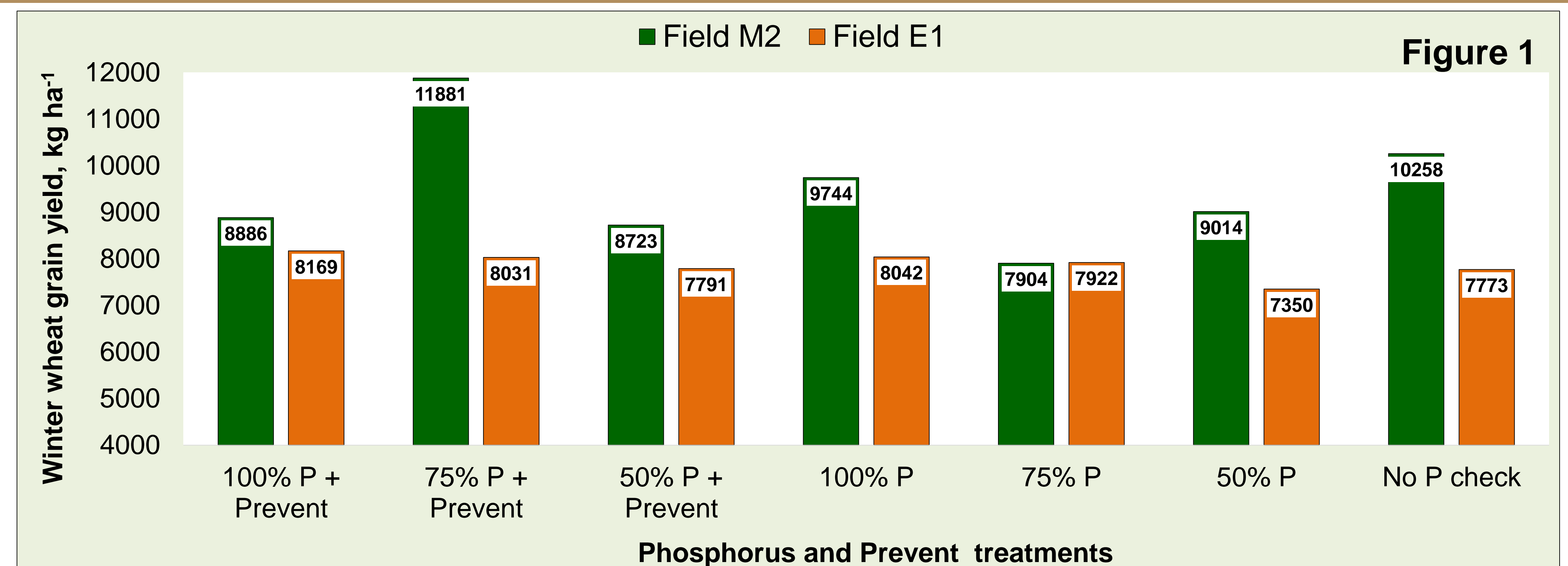


Figure 1. Winter wheat grain yield response to phosphorus application rates and Prevent treatments, 2015-2016.

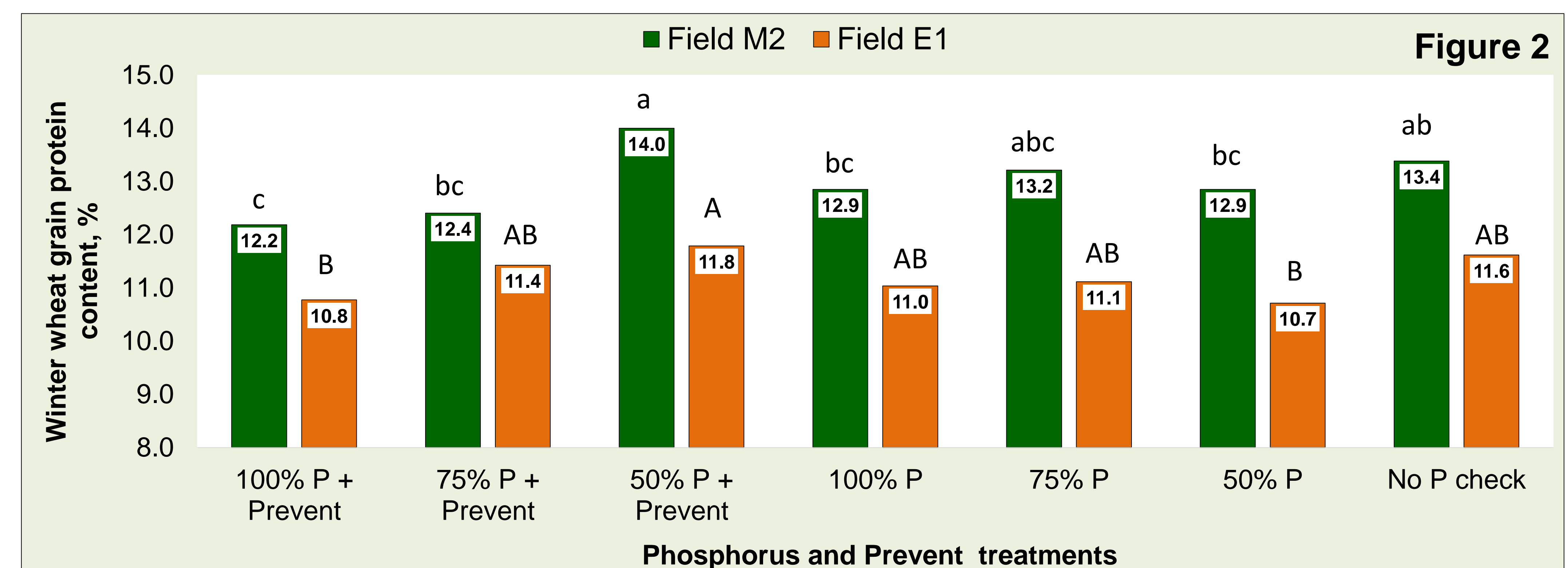


Figure 2. Winter wheat grain protein content response to phosphorus application rates and Prevent treatments, 2015-2016.

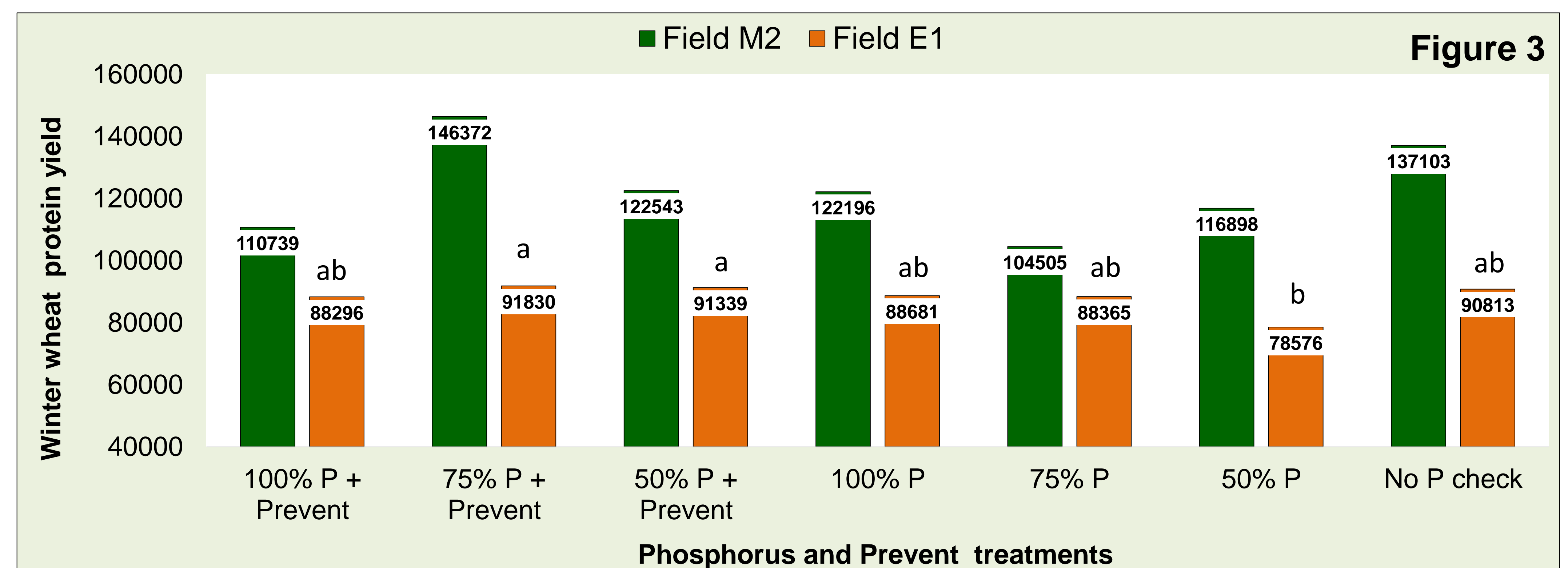
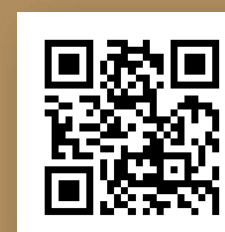


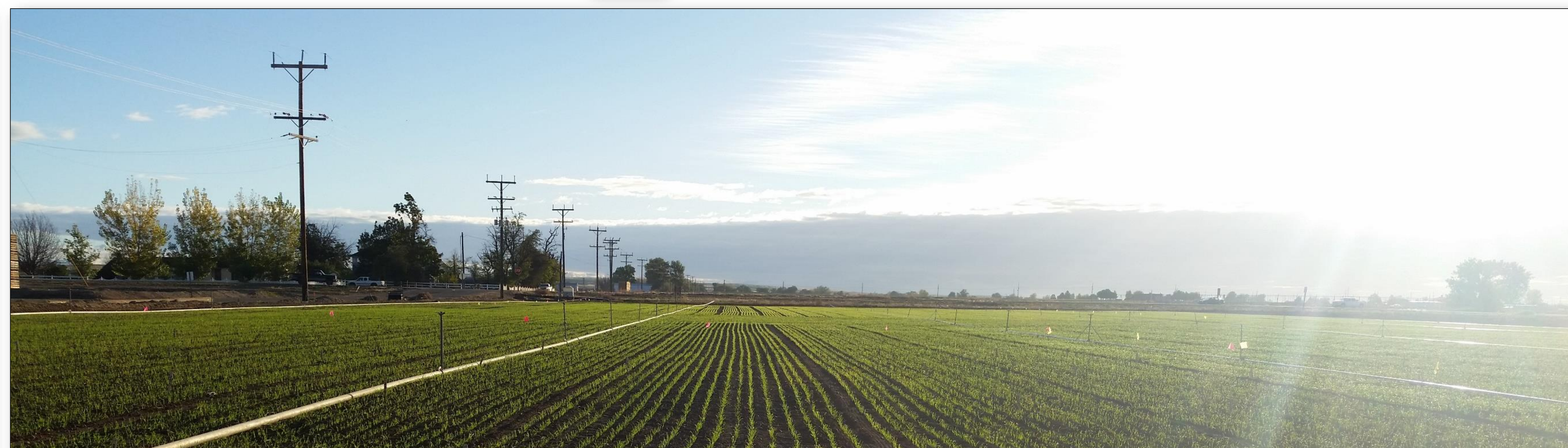
Figure 3. Winter wheat protein yield response to phosphorus application rates and Prevent treatments, 2015-2016.



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Contact: Dr. Olga Walsh, University of Idaho, Parma Research & Extension Center; Address: 29603, U of I Lane, Parma, ID 83660; Telephone: (208)722-6701