



In-Furrow Placement of Enhanced Urea Products with Wheat

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- Traditionally pre-plant N was applied with tillage
- Large percentage of acres seeded with air-carts
- Producers continually asking about in-furrow urea



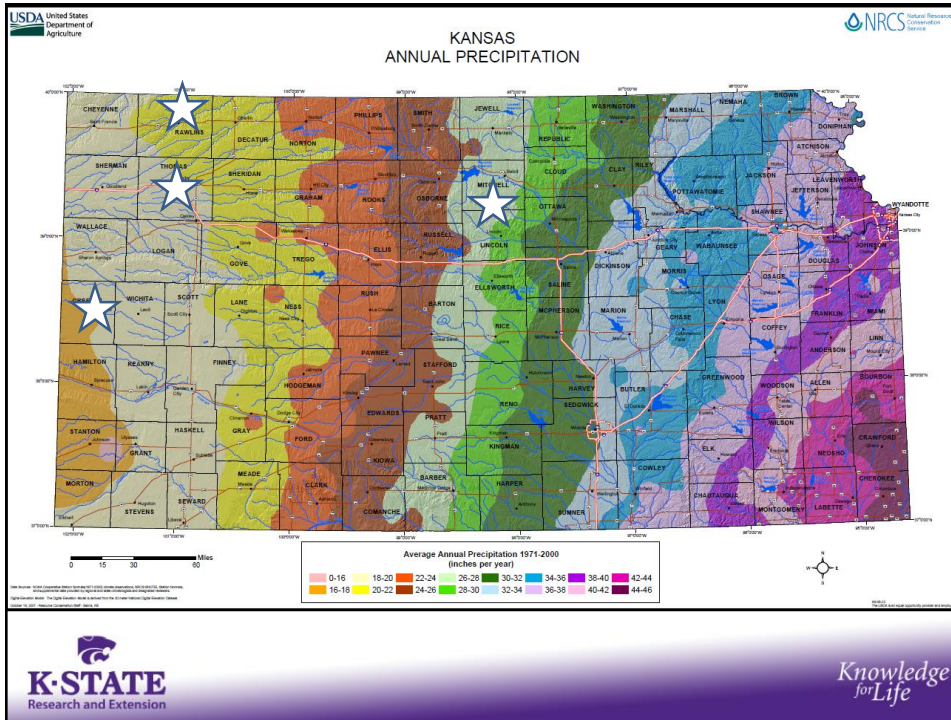
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Rationale

- Current KSU recommendations allow for 20 - 30 lbs ac⁻¹ nitrogen with the seed when in 7.5 – 10” spacing
- However we recommend no seed placed urea
- Research in the Northern Great Plains and Prairie Provinces indicates the use of urea and urea products may be possible

A moment for clarification...

- This study was not designed to evaluate wheat response to N timing, source or placement
- Our objective was to evaluate potential stand reduction and its effect on yield
- A full nitrogen program was performed in-addition to our use of in-furrow urea



In-Furrow Urea Materials and Methods

- Western Sites: No-till into chem-fallow, Certified CSU-Byrd, target 1.05 million seeds/ac
- Hunter 2017: No-till into wheat stubble, Certified KSU-Larry
- Treatments were in addition to grower practice Factorial (4 rates x 3 products, plus two controls)
 - 10, 20, 30, 60 lbs/ac N as ESN, NBPT+NPPT (Limus), or Urea
 - MAP to get 10 lbs/ac N (91 lbs/ac of MAP)
 - Control (no in-furrow product)
- Row spacing was 7.5" in 2016 and 2017, 10" in 2018

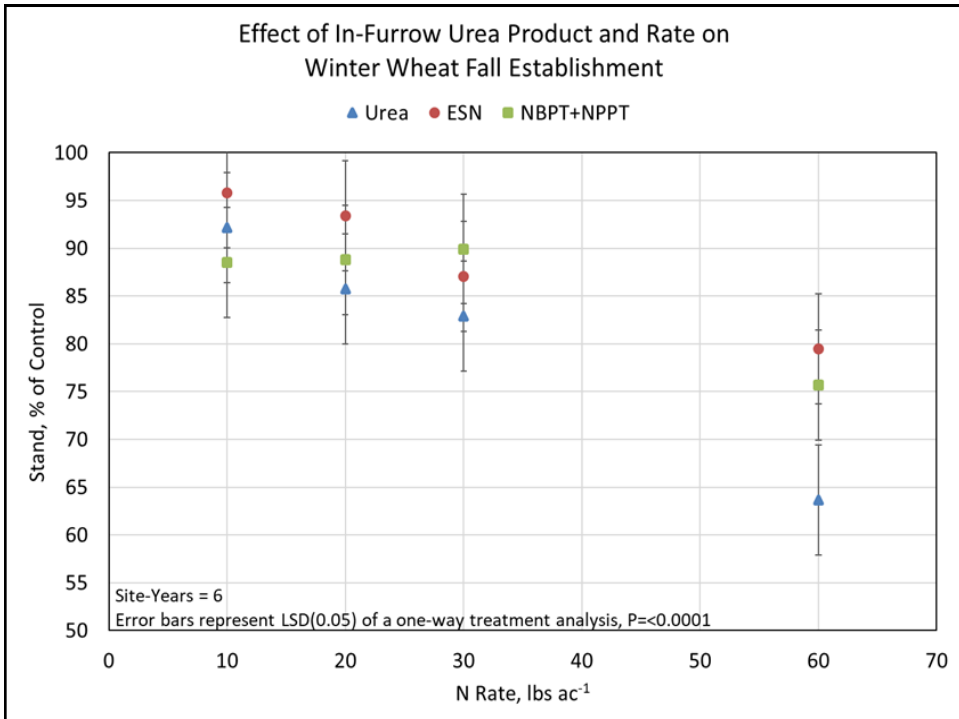
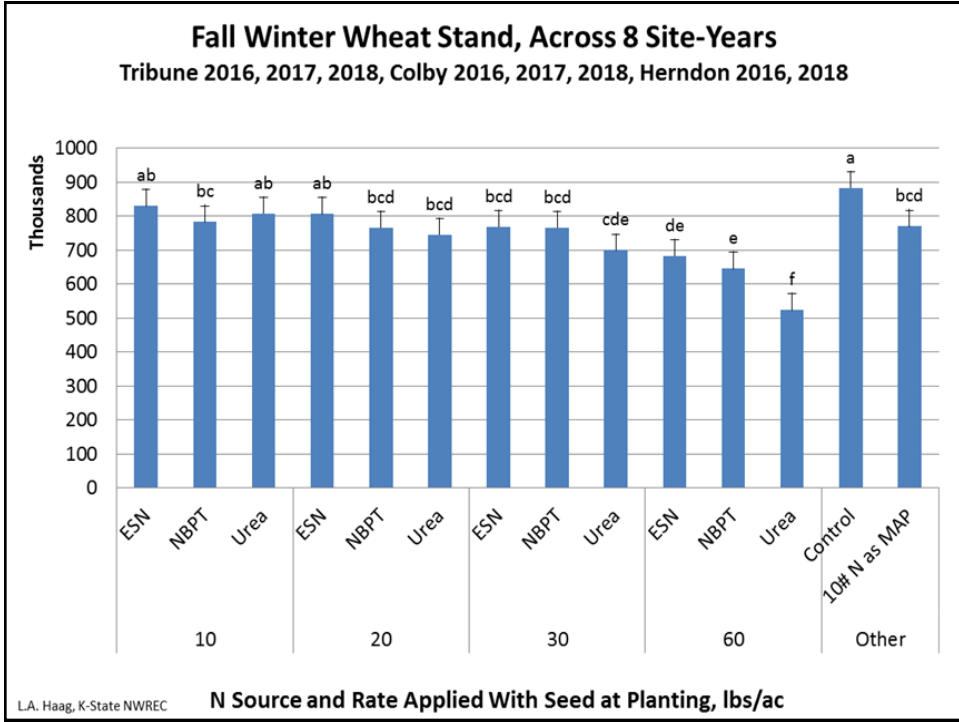
In-Furrow Urea Materials and Methods

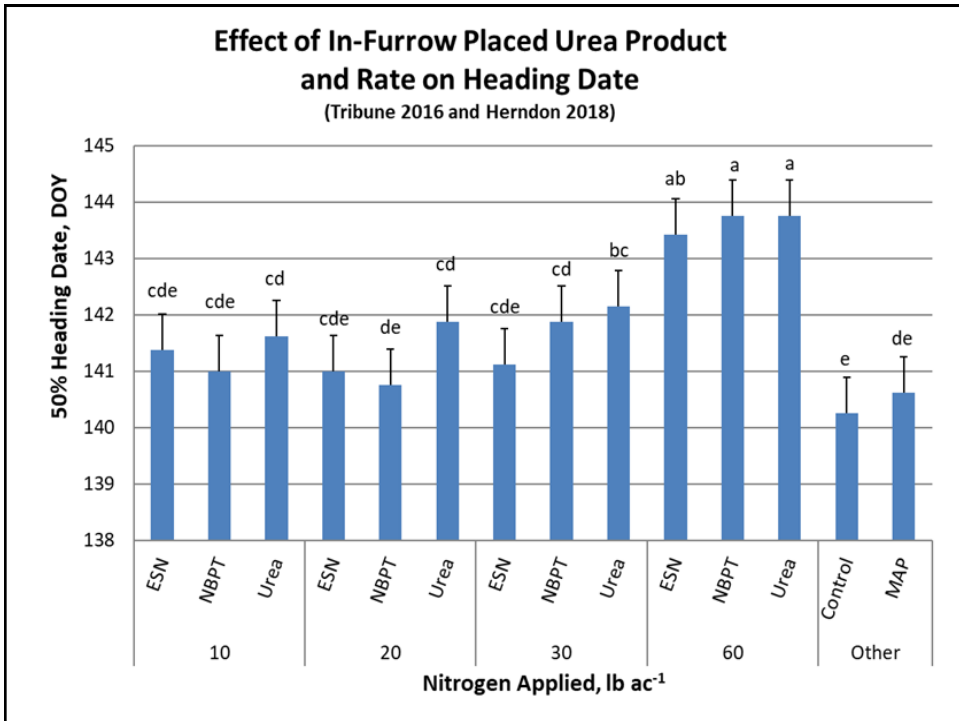
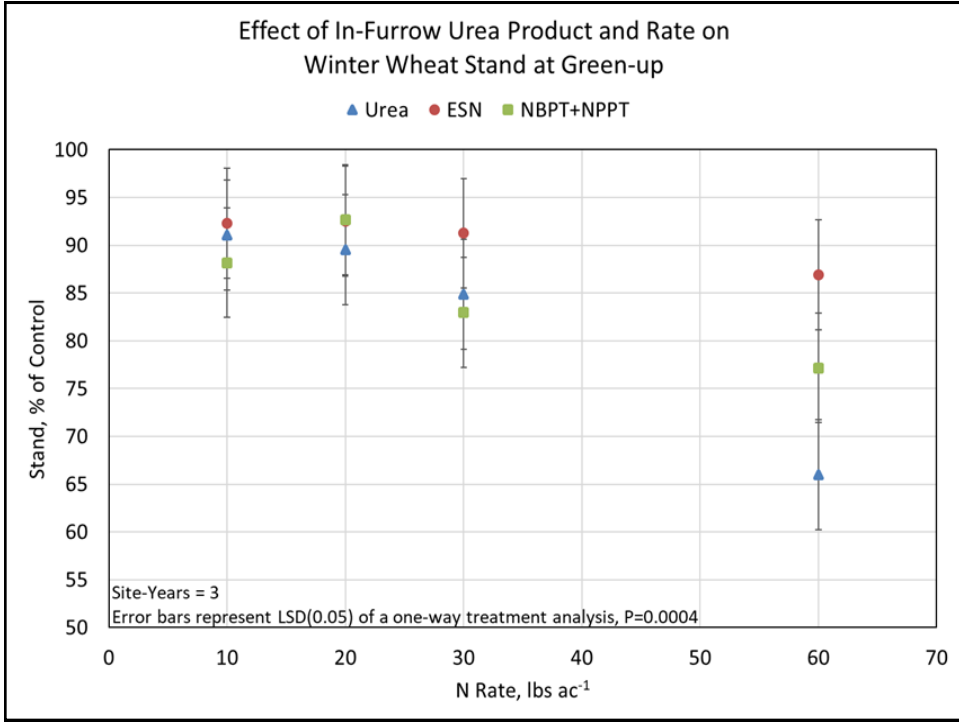
- Measurements
 - Fall stand count
 - Spring Stand Count
 - Head Counts
 - Grain Yield and Protein
- Across-years analysis conducted with Proc GLIMMIX
 - Treatment: one-way fixed effect
 - Replication(Site-Year): random effect
 - LSD means separation with PDMIX800

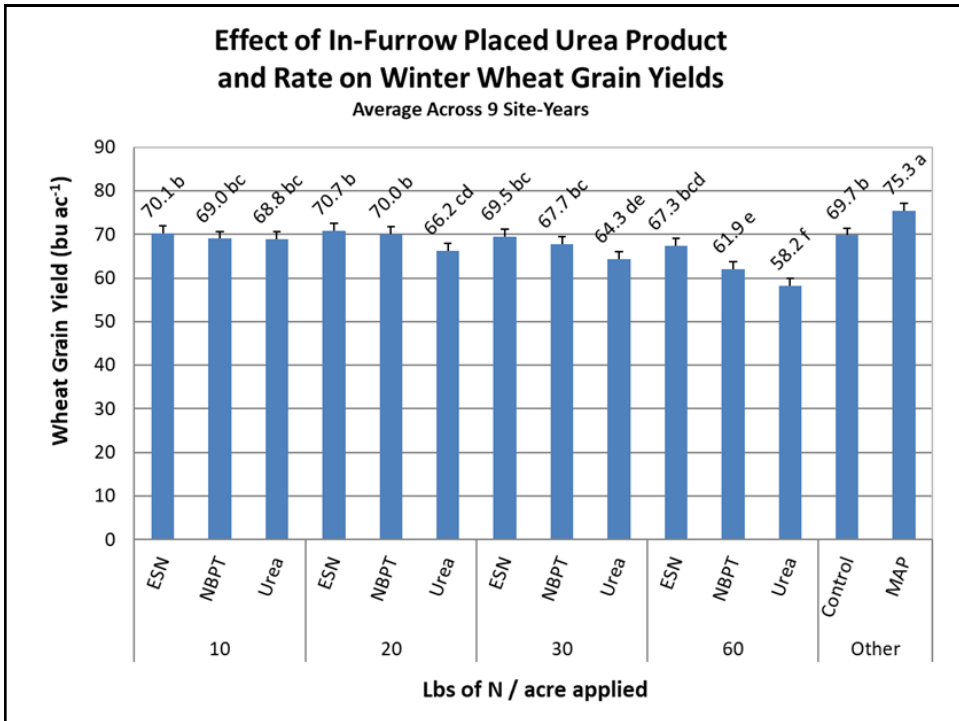
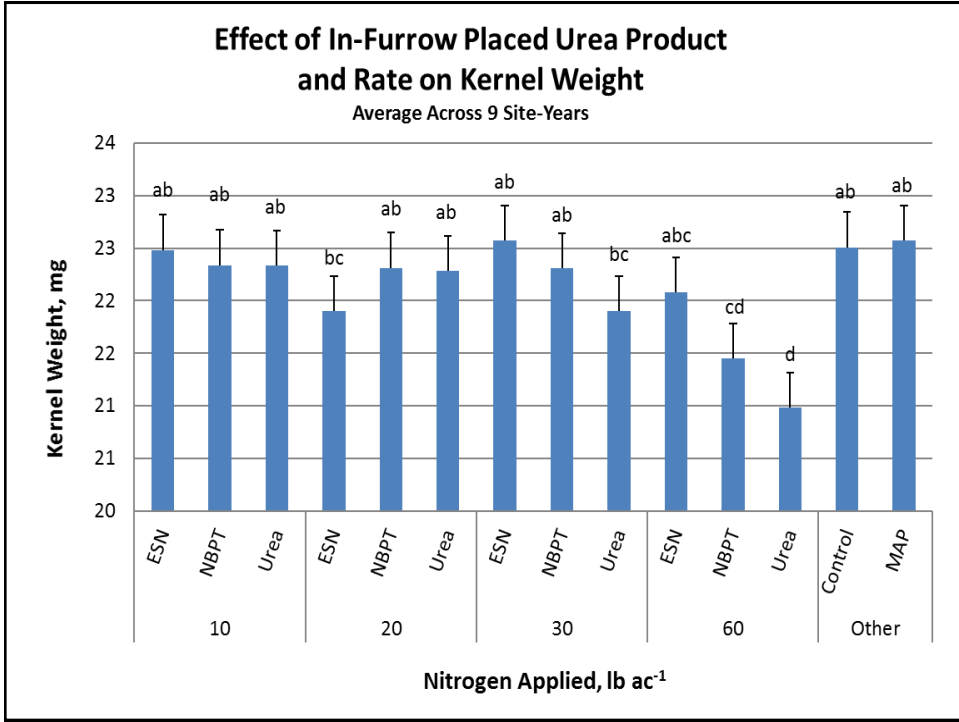
Visual – Mitchell Co. 2/9/17

60 lb/ac Urea 60 lb/ac ESN







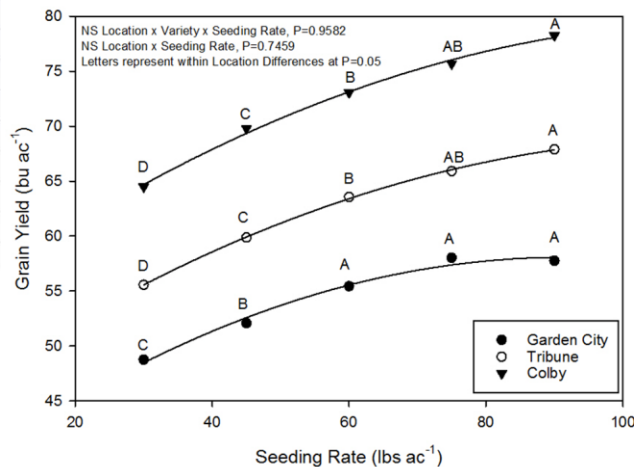


Summary

- In general our data would suggest we could place up to 10 lb ac^{-1} of urea in-furrow
 - However, at 2 of 9 site-years (Tribune 16, Colby 16) yields were reduced by 7 bu ac^{-1}
- Across site-years NBPT+NPPT did not reduce yields up to rates of 30 lb ac^{-1}
 - some individual site-years did see reductions
- Across site-years ESN at 60 lb ac^{-1} did not reduce yield relative to the control
- ESN was never detrimental at the 30 lb ac^{-1} rate

Potential for a seeding rate interaction

Wheat Grain Yield Response to Seeding Rate
2015-2018 Garden City, Tribune, and Colby
average of TAM111/114, Byrd, Winterhawk, and T158
14 Site-Years and 960 Individual Plots



Conclusions

- ESN and NBPT+NPPT coated urea provides some safety over untreated urea when used in-furrow in western Kansas
- Not enough site-years yet to truly evaluate the risk of various levels
- Rates of 10, 20, and 30 lb ac⁻¹ for urea, NBPT+NPPT, and ESN appear to be safe in most instances



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