

POLY-COATED UREA RESPONSES FOR WINTER WHEAT IN THE NORTHERN PLAINS

Ron Gelderman, John Rickertsen, and Bruce Swan
South Dakota State University

Abstract

Managing nitrogen applications for winter wheat production and quality includes limiting N volatilization with surface urea applications in the northern Great Plains. Two winter wheat sites located in central and western (W) South Dakota were established in the fall of 2011. Treatments were broadcast poly-coated urea (ESN) and urea at different blend proportions applied at rates of 0, 40, 60, 80, and 100 lb N/a and two timings (fall and spring). An additional winter wheat site was established in east central (EC) SD that evaluated ESN and urea placement with the seed. A laboratory study also was completed to evaluate ESN placement with the seed. Winter wheat grain yield and protein were increased by rate of N at both the C and W sites at both timings. Grain protein was higher with spring application compared to fall at the W site. As proportion of ESN increased in the blend, grain protein significantly (0.10) increased, especially when applied in the fall. Increased seed-placed N decreased wheat stands in the field and laboratory especially with urea as the N source. In turn, field grain yields decreased with greater N rates with the seed.

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Program Chair:

David Franzen
North Dakota State University
Fargo, ND 58108
(701) 231-8884
David.Franzen@ndsu.edu

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