Wheat Grain Yield Response to Fertilizer Nitrogen estimated Using a Spectral Response Index. (S04raun120032-Poster)

Authors:

- P.J.Hodgen* Oklahoma State University
- K.D.Brixey Oklahoma State University
- R.W.Mullen Oklahoma State University
- W.R.Raun Oklahoma State University

Abstract:

Current nitrogen use efficiency for cereal grains is only 33% world-wide. Being able to accurately estimate the responsiveness of winter wheat to additional N can help increase NUE and returns on fertilizer investment. In 2001, five experimental sites were established-two near Stillwater, two near Hennessey, and one at Kingfisher, Oklahoma. At Feekes 5, NDVI values were obtained from which a response index (RINDVI) was calculated. The response index was computed by dividing the mean NDVI reading of a nitrogen rich area by the mean NDVI of check plots (0 N). No significant differences were measured between yields of common practices used by winter wheat producers, although economic differences were found. The common practices of applying all N pre-plant (90 kg N/ha) or as a split (45 kg N/ha pre-plant and 45 kg N/ha topdress) were compared to variably applied topdress applications. No yield differences were found among treatments, but economic differences were noted. By applying N based on yield potential and responsiveness to N, the profit margin was 30 and 14 dollars/ha higher than applying all N pre-plant or as a split application, respectively.

Corresponding Author Information:

William Raun	phone: 405-744-6418
Oklahoma State University	fax: 405-744-5269
044. N. Ag. Hall	e-mail: wrr@mail.pss.okstate.edu
Stillwater, OK 74078	

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