Refining Topdress Nitrogen Applications Using a Response Index. (S04-mullen112151-Oral)

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Abstract:

Crop response to applied fertilizer N has been demonstrated to exist temporally. Supplying fertilizer in those years when the crop has the potential to respond to additional N is one method of increasing use efficiency, yield, and economic returns. A response index (RI) using harvest data was recently developed that indicates the actual crop response to applied N. This response index, RIHarvest, is calculated by dividing the average grain yield of the highest yielding treatment receiving N by the average yield of the check plot. This study was conducted to determine if an in-season estimate of RI using a sensor measurement of NDVI could be used to accurately predict RIHarvest. At Feekes growth stage 5, RIHarvest could be accurately predicted using RINDVI (R2 = 0.68) over 29 winter wheat experiments conducted throughout Oklahoma between 1998 and 2002. This suggests that the in-season response index based on sensor readings from plots with and without N (RINDVI) can be used to predict the potential responsiveness of winter wheat to in-season fertilizer N.

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