Factoring Weather Into Mid-Season Corn Fertility Decisions. (S04-derby135637-Poster)

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Abstract:

The relationship between meteorlogical measuements (i.e., cumulative growing degree days (GDD) and seasonal ET estimation) and corn grain yield and nitrogen fertility under irrigation was investigated from 1990-1995 in Southeastern, ND. Fertility levels on small plots ranged from 0 to 224 kg ha-1 of applied N and were the same on each plot each year. Higher rates were split applied with the last two splits at fifteen leaf (V15) and silking (R1). Cumulative GDD and ET for 1992 and 1993 were below the 30 yr average, resulting in lower yields and less response to applied N, with no yield increase from the application of the last two fertilizer splits in 1993. It was determined that seasonal totals for GDD and ET could be predicted at 10 Jul (V15) with a coefficient of determination (r2) of 0.7 or greater, and that maximum corn yield is highly correlated to seasonal GDD and ET. Standard least squares regression was used to develop equations to predict final grain yield based on GDD or ET from 1 May to 10 Jul and residual soil N plus applied N. The models were greatly improved by including mid season plant N content. Including meteorlogical measurements improves fertilizer management decisions by providing mid-season adjustments to fertilizer recommendations.

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