Corn Response to Nitrogen Across Landscape Positions. (S06-kaspar163108-Poster)

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Abstract:

Variable rate nitrogen application within agricultural fields will require the identification of field areas that are more or less responsive to applied N fertilizers. In this study, we examined the grain yield response of corn to N fertilizers applied at either 27 kg N/ha or 251 kg N/ha along a transect that was oriented parallel to a hillslope. In addition to yield, plant height, stalk nitrate concentration, grain protein, and 100 kernal weight were measured along the transect. Yield responses to nitrogen fertilizer were greatest at the summit and shoulder positions of the hillslope, moderate along the backslope and upper footslope, and least at the lower footslope and toeslope positions. There were also three small areas along the transect where yields did not differ much between the two N rates. All three of these areas showed signs of past erosion or rills and probably represent areas where other soil factors are more limiting to yields than N. Early season plant height was useful for identifying these localized areas, but did not identify major hillslope trends in N responsiveness.

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