# A MECHANISTIC APPROACH TO NITROGEN FERTILIZER RECOMMENDATIONS

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## Abstract

In efforts to improve Nitrogen (N) management, many new methodologies involving advanced technology such as optical sensors are being utilized. Although these new technologies have been proven to improve N management, their use in production agriculture is relatively low. The majority of farmers are still using mechanistic equations or simply pounds per bushel to determine their N rates due to low cost and ease of use. However, most of these N recommendation equations are becoming antiquated, and need to be updated to reflect the advancements made in N management research.

Kansas State University has been conducting research since 2005 to analyze the impacts of N source, placement, rate, and timing under a variety of environmental conditions throughout the state of Kansas. This research is being utilized to revise N recommendation equations for corn, winter wheat, and grain sorghum to establish protocols for highly efficient N management systems that are environment specific. Through sound agronomics these new N recommendation systems will help Kansas producers increase N efficiency, profit per acre, and reduce environmental impact.

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