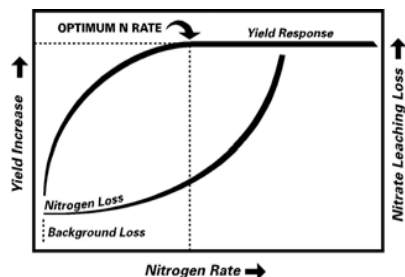
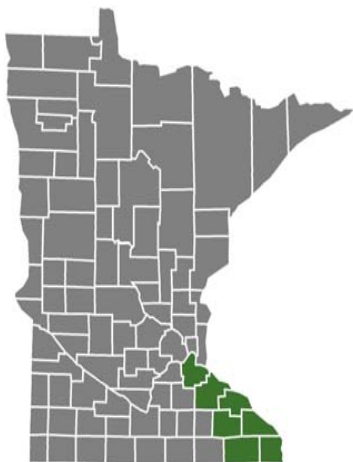


NITROGEN RATES FOR CORN IN SOUTHEASTERN MINNESOTA

This poster is a synopsis of a recent publication, “Validating N Rates for Corn on Farm Fields in Southern Minnesota”, by Gyles Randall, Michael Schmitt, Jeffery Strock, and John Lamb.

It is also a product of the **Karst Campaign Program** to provide information about Best Management Practices for crop production in the karst region of southern Minnesota (shaded area). The region has some of the most productive cropland in Minnesota that have permeable soils overlying porous limestone bedrock (karst).

The purpose of the poster is to inform farmers about the Best Management Practices for Nitrogen use in producing crops on this permeable landscape.



Randall et al., 2003

The graph above illustrates the effects of N rate on yield and nitrate loss from leaching. Nitrogen rates beyond the optimum rate do not increase yield, will cost more per acre and the N not used by the plant is susceptible to loss.

Nitrogen Rate Research

The following table shows the yield results for continuous corn over a ten year period from 1992 to 2001. Nitrogen (N) rates were applied in the spring and immediately incorporated. Lawler Farm, SE Minn.

N rate lb/A	10 year average
	-----bu/A-----
0	64.7
60	123.3
90	135.4
120	143.0
150	146.6
LSD (0.10)	3.9

Gyles Randall and Jeff Vetsch, SROC

The optimum corn yield over the ten year period of the study was 143.0 Bu/A for the 120 lb. rate of N applied per acre.

For corn following soybean, N rate recommendations can be found in University of Minnesota Extension Service bulletin # 03790, *Fertilizing Corn in Minnesota*.



Manure can contribute substantial amounts of N. It is beneficial to the producer to have a laboratory analysis of the manure for N content. When effectively managed the nutrients in manure can save the farmer on purchases of commercial fertilizer.

Best Management Practices for Nitrogen Use in Southeastern Minnesota

Many years of on-farm research provided by the scientists at the Research and Outreach Centers have shown profitable and environmentally sound results for managing nitrogen in crop production systems. The following are a summary of those trials.

- 1) Fall applied commercial fertilizer is not a good practice due to the risk of lower yields and groundwater contamination.
- 2) Spring apply N prior to planting and incorporate broadcast urea or UAN within 3 days.
- 3) Sidedress applications need to be completed before corn is 12 inches high and injected or incorporated to a minimum depth of 4 inches.
- 4) A nitrification inhibitor may be needed with pre-plant N if soils are poorly drained.

Gyles Randall, et. al., 2003



Plan N fertilizer applications for spring just before planting and/or to be sidedressed for the most effective use of nitrogen. Having N applied as close as possible to planting, will optimize yields and reduce the potential for excess nitrate leaching beyond the root zone.

Picture from www.extension.umn.edu

This poster was designed by Tim Wagar, Regional Extension Educator, Crops and Soils Rochester, MN, and is presented as part of the Karst Campaign for the promotion of best management practices in Southeast Minnesota. This effort is headed by the University of Minnesota Extension Service in partnership with the Basin Alliance for the Lower Mississippi in Minnesota (BALMM). Funding is provided by the USDA Cooperative States Research, Experiment and Extension Service (CSREES). Research data and input were provided by Dr. Gyles Randall and Jeff Vetsch from the U of M Southern Research and Outreach Center.

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