

CORN NITROGEN RATE CALCULATOR UPDATED

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What is the Corn Nitrogen Rate Calculator?

The [Corn Nitrogen Rate Calculator](#) Web tool is a resource that aids nitrogen (N) rate decisions for corn production and is helpful in determining the effect of fertilizer and corn price on application rates. The method for calculating suggested N rates is based on a regional (Corn Belt) approach to N rate guidelines. Details on the approach are provided in the regional publication [Concepts and Rationale for Regional Nitrogen Rate Guidelines for Corn](#). This approach has been implemented by several states across the Midwest.

Nitrogen Response Trials Added to Iowa Database

The Iowa N response trial database was updated this month with additional response trials from 2007 research. There are now 182 response trials for corn following soybean and 85 trials for corn following corn. Being able to easily update the database with recent data is one of the many advantages to this dynamic database approach for corn N rate guidelines. Having new response trial data allows rapid updating with changing hybrid genetics, rotations, and climatic conditions.

With the updated database, calculated N rates have increased slightly from the previous database. The table below gives the N rate at the maximum return to N (MRTN) and the profitable N rate range from the updated calculator for several N:corn grain price ratios. You can work with any price of N and corn you wish when running the calculator. Output information includes the most profitable N rate, the profitable N rate range, the net return to N application, the percent of maximum yield, and the selected N fertilizer product rate and cost per acre. An example of the output for corn following soybean in Iowa is given on the next page.

As you work with the calculator, you will find that the profitable N rate range narrows at today's corn and N prices. This reflects a greater return to N at high corn prices and a more rapid change in return to N at rates near (above and below) the MRTN rate. This also results in the N rate at the MRTN to be less centered within the profitable range.

New State Added

Indiana has been added to the [Corn Nitrogen Rate Calculator](#). At this time only data is available for corn following soybean.

Other State N Response Trial Databases

New trial data has been added to the Illinois database. It is anticipated that the database will be updated for Minnesota later this summer. No changes are anticipated for the Wisconsin database.

Nitrogen rate guidelines in Iowa for different N and corn grain prices.				
Price Ratio ¹	Corn Following Soybean		Corn Following Corn	
	Rate ²	Range ³	Rate ²	Range ³
\$/lb:\$/bu	----- lb N/acre -----			
0.05	150	138 - 164	209	196 - 234
0.10	128	117 - 140	183	173 - 197
0.15	113	104 - 123	163	152 - 176
0.20	100	92 - 110	147	138 - 157

¹ Price per lb N divided by the expected corn price. For this table, corn was held at \$6.00/bu and N varied from \$0.30, \$0.60, \$0.90 to \$1.20/lb N (for example, anhydrous ammonia at \$492, \$984, \$1476, to \$1968/ton).

² Rate is the lb N/acre that provides the Maximum Return To N (MRTN). All rates are based on results from the Corn N Rate Calculator as of July 1, 2008 (<http://extension.agron.iastate.edu/soilfertility/nrate.aspx>).

³ Range is the range of profitable N rates that provides a similar economic return to N (within \$1.00/acre of the MRTN).

Corn Nitrogen Rate Calculator

Finding the Maximum Return To N and Most Profitable N Rate
A Regional (Corn Belt) Approach to Nitrogen Rate Guidelines

State: Iowa
 Number of sites: 165
 Rotation: Corn Following Soybean
 Non-Responsive Sites Not Included

N Price (\$/lb N):	\$0.30	\$0.60	\$0.90	\$1.20
Corn Price (\$/bu):	\$6.00	\$6.00	\$6.00	\$6.00
Price Ratio:	0.05	0.10	0.15	0.20
MRTN Rate (lb N/acre):	150	128	113	100
Profitable N Rate Range (lb N/acre):	138 - 164	117 - 140	104 - 123	92 - 110
Net Return to N at MRTN Rate (\$/acre):	\$287.17	\$245.51	\$209.50	\$177.45
Percent of Maximum Yield at MRTN Rate:	99%	98%	97%	96%
Anhydrous Ammonia (82% N) at MRTN Rate (lb product/acre):	183	156	138	122
Anhydrous Ammonia (82% N) Cost at MRTN Rate (\$/acre):	\$45.00	\$76.80	\$101.70	\$120.00

