2015

High nitrogen fertilizer prices -- again

John Sawyer

Follow this and additional works at: http://lib.dr.iastate.edu/agdm

Part of the Agribusiness Commons

Recommended Citation
Available at: http://lib.dr.iastate.edu/agdm/vol10/iss4/1

This Article is brought to you for free and open access by the Ag Decision Maker at Iowa State University Digital Repository. It has been accepted for inclusion in Ag Decision Maker Newsletter by an authorized editor of Iowa State University Digital Repository. For more information, please contact digirep@iastate.edu.
High nitrogen fertilizer prices -- again

by John Sawyer, Associate Professor of Agronomy, (515) 294-7078, jsawyer@iastate.edu

Corn N fertilization

I am often asked what nitrogen (N) rate should be applied for corn production. I hesitate to give too simple of an answer, but actually a straightforward rate of 125 lb N/acre for corn following soybean (SC) and 175 lb N/acre for corn fol-

Handbook updates

For those of you subscribing to the handbook, the following updates are included.

2006 Iowa Crop Production Cost Budgets – A1-20 (13 pages)

Cash Corn and Soybean Prices – A2-11 (2 pages)

Please add these files to your handbook and remove the out-of-date material.

continued on page 6

continued on page 2

Inside . . .

“Cashing out” with related party exchanges......................... Page 4

Iowa Market Maker - linking agricultural markets.............. Page 6
a small amount of N, around 30 lb N/acre. Second-year corn after alfalfa is more responsive to applied N, with response up to 60--90 lb N/acre. Second-year corn following soybean is gaining acreage in Iowa. Nitrogen rate trial data is limited from across Iowa; however, based on a long-term and on-going N rate-crop rotation study conducted at the Iowa State University Northeast Research Farm located at Nashua, second-year corn appears to have N fertilization requirements similar to continuous corn (see above discussion).

**How much should rates be adjusted when N prices are high?**

As the lines in Figure 1 indicate, the net return is pretty flat around the maximum return. This is due to the small yield change at N rates near optimum N. The open symbols on each line indicate net return that is within $1.00/acre of the maximum, and can be considered a range of N rates that provides similar profitability. The width of...
each range varies somewhat depending upon the price ratio, but generally is within about 20 lb N/acre of the rate at the maximum return. This range of similar net return points out the flexibility available when choosing application rates. These net return curves, point of maximum net return, and profitable N rate ranges can be used as a guide for N rate adjustment based on corn and N prices. Or, as a general rule, start with the 125 or 175 lb N/acre rate for the SC and CC rotations, and then for each one cent ($0.01) change in N price from $0.22/lb N, change the N rate by 1.5 lb N/acre for SC and 1.7 lb N/acre for CC. For example, if you have to purchase N at $0.40/lb N, then the N rate to apply to corn following soybean would be 27 lb N/acre less than 125 lb N/acre, which is 98 lb N/acre. If the N price you pay is $0.15/lb N, then the N rate to apply to corn following soybean would be 11 lb N/acre more than 125 lb N/acre, which is 136 lb N/acre.

**Additional considerations**

As you think about changing N application rates, you also should take into account your risk tolerance or aversion. As application rates are lowered in response to higher N prices, the chance of having deficient N does increase. You may well be comfortable with a greater chance of either some N shortage or greater occurrence of deficit N. Or, if capital for purchasing production inputs is limited, then increased risk from lowered N application may be unavoidable. Or, you may wish to apply N at rates that provide good yield but are more environmentally benign. In these cases you would choose rates at the lower end of the profitable ranges. With limited capital or shortage of N fertilizer materials, it would be better to apply lower N rates to all production fields than not applying any to some.

**Corn Nitrogen Rate Calculator**

ISU Extension offers a web site that provides a process to calculate economic return to N application with different nitrogen and corn prices and to find profitable N rates directly from recent N rate research data. The method used follows a newly developed regional approach for determining corn N rate guidelines that is being implemented in several Corn Belt states. To use the calculator, visit: [http://extension.agron.iastate.edu/soilfertility/nrate.aspx](http://extension.agron.iastate.edu/soilfertility/nrate.aspx).

**In summary**

Nitrogen application to corn should reflect rates determined to be economically profitable from research trials. Rates also can be adjusted for changing economic conditions. However, decisions also should consider effects on production and environmental risk.

*This article originally appeared on pages 200-201 of the Integrated Crop Management Newsletter IC-494 (24) -- October 10, 2005 issue.*