

Optimum N rate varies by where you live

By TOM J. BECHMAN

AFTER five years of testing on Purdue University farms and private farms, two Purdue Extension agronomists believe they can help you nail down a profitable nitrogen rate. Bob Nielsen and Jim Camberato undertook this project because they felt data on response of modern corn hybrids to N rates on Indiana soils was lacking.

Their results helped them develop a table with plenty of data behind it that lets you put in your input cost and expected price of corn, and find the economic optimum recommendation for commercial nitrogen. This would include N from starter fertilizer, broadcast and sidedress applications.

One thing the pair learned over time was that the nitrogen response of corn varies considerably across and up and down the state, based primarily on soil type. In northwest and west-central Indiana, you can apply less nitrogen and expect to harvest higher yields compared to farmers in east-central Indiana, who would need to apply considerably more nitrogen and still get less yield.

"Those soils in east-central Indiana

Key Points

- How much N you would apply depends upon soil types.
- Tight, wet soils in eastern Indiana require higher rates.
- The higher the corn price, the more N you can apply.

are tight, and tend to be poorly drained," Nielsen says. They first noticed the trend in an unusual weather year, but it has tended to repeat itself year after year.

That's why the agronomists actually developed three tables, one for northwest and west-central Indiana; one for north-central, southwest, south-central and southeast Indiana; and one for east-central, northeast and central Indiana.

Try examples

The chart shown here is for north-central, southwest, south-central and southeast Indiana. To access the other charts, visit www.kingcorn.org/cafe. Look for the article entitled "Nitrogen management guidelines for Indiana."

Here's how the chart works. If you farm in the area indicated in the chart and pay 50

Economic optimum nitrogen recommendations North-central, southwest, south-central and southeast Indiana

N cost (per lb.)	Grain price (per bushel)						
	\$3	\$4	\$5	\$6	\$7	\$8	\$9
\$0.20	175	177	179	180	181	182	182
\$0.30	169	173	176	177	179	179	180
\$0.40	163	169	172	175	176	177	178
\$0.50	158	165	169	172	174	175	176
\$0.60	152	160	165	169	171	173	175
\$0.70	146	156	162	166	169	171	173
\$0.80	140	152	159	163	166	169	171
\$0.90	135	148	155	160	164	167	169
\$1.00	129	143	152	158	162	165	167

SOURCE: BOB NIELSEN AND JIM CAMBERATO, PURDUE UNIVERSITY

cents per pound for nitrogen, or just over \$800 per ton of anhydrous, find the line for \$0.50 on the left column. Now assume you've sold some corn for \$7 per bushel. Find the column on top of the table. The two intersect at 174, meaning the optimum economic return could be expected at 174 pounds of N per acre in soybeans after corn.

The more expensive the N, the lower the optimum rate you can apply at a fixed corn price. Likewise, the higher the price you expect for corn, the more N you can apply at a set N price.

Ironically, Nielsen had to expand the chart to account for \$7 corn, and even potentially higher values.