



Fertilizer Pricing and Decisions

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Maximum Economic Yields (MEY) and Fertilizer Recommendations

- Fertilizer recommendations are based on the response curve where profits are maximized. This usually occurs slightly below maximum yield, where the last unit of input is just covered by the increase in yield. As fertilizer prices increase the MEY fertility level may be lower, but not very much, table 1.



Table 1. Effect of changing nitrogen price on rate of N needed to attain economic optimum yield and the effect on yield of changing the N rate.¹ University of Illinois

Ammonia price, \$/ton	Nitrogen cost, \$/lb	Corn-Corn		Soy-Corn	
		<u>Optimum N</u>	<u>Yield@opt N</u>	<u>Optimum N</u>	<u>Yield@opt N</u>
\$230	0.14	161	150	146	170
\$312	0.19	155	150	139	169
\$394	0.24	149	149	131	168
\$476	0.29	143	148	124	167
\$558	0.34	136	147	117	166
\$640	0.39	130	146	110	164
\$722	0.44	124	145	102	163

¹ Since the locations used in the continuous corn studies were not all the same as those used for the corn-soybean studies, one cannot use the data in this table to determine the N reduction appropriate for corn after soybeans.

Note that the optimum N rate and yield goals really don't change much as N prices increase.



Profitability

- Farmers run the risk of losing profit if they reduce fertilizer inputs. They need to be careful when “saving” dollars on fertilizer.
- Profit not only comes from crop sales but government programs.
- Government programs are based on bushels or tons of crops grown, so the incentive is to produce maximum economic yields, regardless of market prices.



What are my risks if I cut back on K?

- Depends on soil test level. The lower the soil test level the higher the chances of losing significant \$\$, for example:

Table 2.

Illinois Corn Calibration Study*

K soil test level	% relative yield loss	Bu/A yield loss
Low	47	85
Medium	13	23
High	2	4
Very High	0	0

*Assuming 180 bu/A yield potential



▪ ***Although this example is for corn, responses for many other crops are similar.***

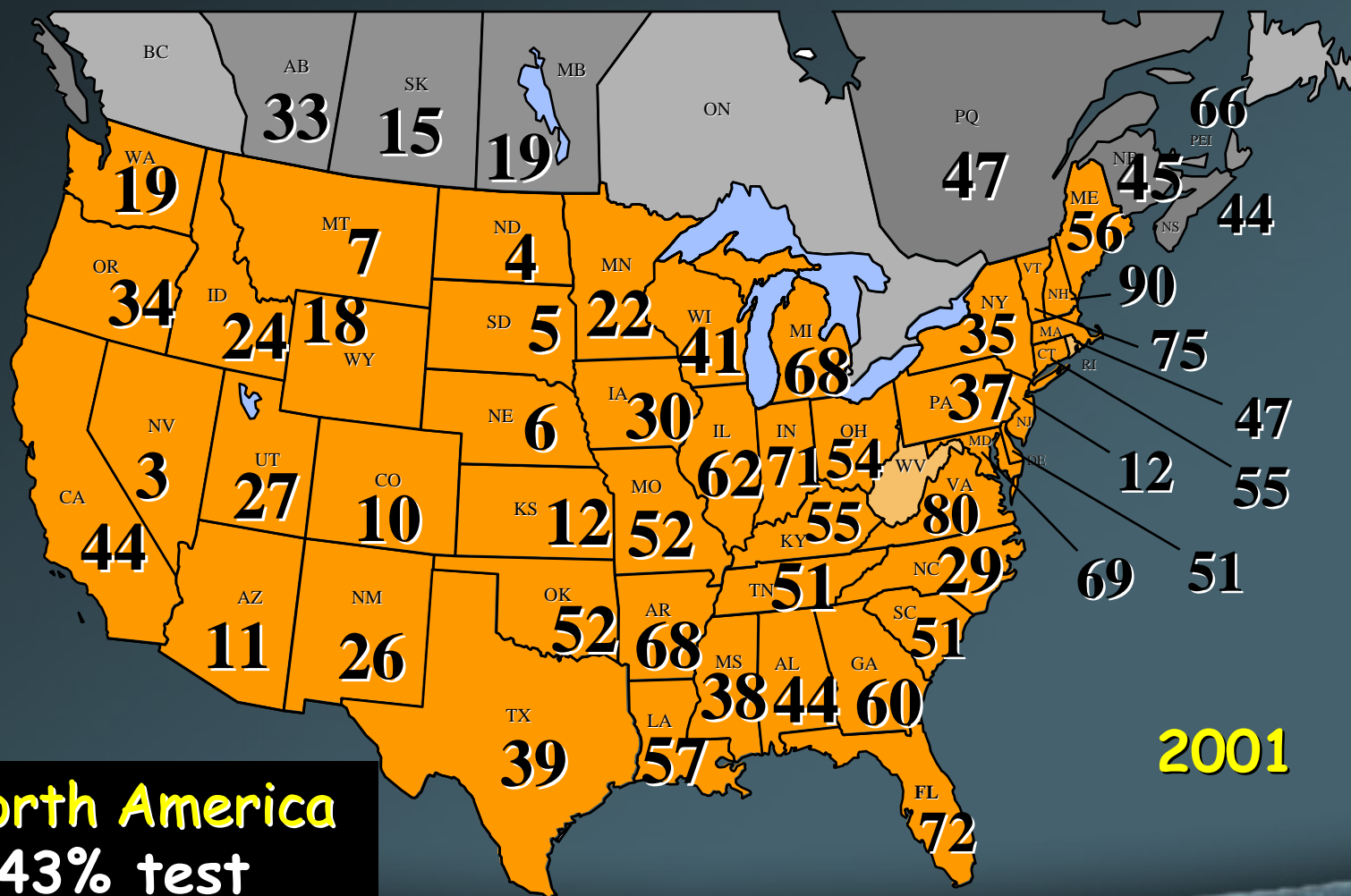
The take home message is that farmers can't "afford" to cut back on nutrients too much, especially on lower testing soils.



Many areas of the country are already losing yield because of soil tests too low in P and K. Look at the following PPI maps to see where you stand.



Percent of Soils Testing Medium or Lower in K



What else can we do?

- Be sure to balance fertility. When N, P, and K are balanced, you get maximum benefit to the crop.
- Band or strip application of P and K increases the efficiency of uptake by the crop. If soil test levels are medium or lower soil test levels and/or application rates are low, banding or stripping is most beneficial.



Balanced Fertility pays off

Crete Silt Loam, Scandia, KS 2003-04

Treatment	Yield Increase Bu/Acre	Fertilizer Cost \$/A	Net Income Benefit \$/A
Check	-----		
N	50	84.26	34.74
N + P	55	110.70	102.81
N + P + K	14	121.00	22.60
N + P + K + S	2	132.65	-6.95



Key Message

“The consequences of cutting fertilizer rates vary depending on several factors including soil test levels, cropping system, weather, and the current rate. Often, what may look like a good savings can result in more severe losses in yields and net returns this year or in the future. For most farmers who have a good production system in place, the best plan is to basically stay the course,” says Dr. Paul Fixen, PPI Senior Vice President, North American Program Coordinator, and Director of Research.

