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SO GRAIN PRICES DROPPED, HOW DO YOU ADJUST FERTILIZER RATES?

Supplemental nutrients applied as fertilizer are important to yearly crop yields and the long-term production capability of soils. They are also one of the largest input costs farmers have. It is estimated that fertilizer can be as high as 55% of total crop input costs on many farms in the Northern Great Plains. For this reason farmers want to invest wisely in their fertilizer spending. The key economic strategy is to apply sufficient fertilizer to increase crop yields to the point where net returns are maximized.

Farmers are always subject to fluctuating crop prices, and changing fertilizer costs. The crop year of 2014 is no exception. Above average crop yields in 2013 have caused crop prices to drop in early 2014. It is common for farmers to consider reducing their fertilizer rates when crop prices decrease. They will sometimes cut back too much and reduce their net incomes.

Fertilizer rate decision support programs are designed with economic consideration. These can help farmers determine an economically effective fertilizer rate. One example is the Manitoba Nitrogen Rate of Return Calculator for Wheat, Barley and Canola (<http://www.gov.mb.ca/>) which can be used to help make N fertilizer rate decisions. The yield responses and projected net returns are based on over 67 site years of research conducted in Manitoba and northeast Saskatchewan by the Westco Agronomy Research unit during the years 1989 to 2004. A wheat grower in Manitoba is able to input agro-climatic region, soil test information, N fertilizer cost, and expected grain prices to calculate an economic rate of N fertilizer.

The Manitoba N rate calculator is useful to observe how the calculated N rate is influenced by changes in grain prices. For example if granular urea costs \$700 per metric tonne and remains at this price, and spring wheat grain prices decrease in 25% increments from \$10.00/bu, to \$7.50, \$5.00, and lastly to \$2.50/bu, the calculated optimum N fertilizer rates are respectively 100, 90, 80 and 30 lb N/A. This shows that economically optimum N fertilizer rates decrease slower as a percentage compared to grain prices, as shown in the Table below.

The effect of decreasing spring wheat prices on optimum N rate calculations and projected net returns.					
Urea cost/tonne* (short ton)	Spring wheat grain price/bu	% Decrease in grain price	Optimum N rate, lb N/A	% Decrease in optimum N rate	Net return, \$/A
\$700 (\$635)	10.00	-	100	-	139
	7.50	25	90	10	87
	5.00	50	80	20	38
	2.50	75	30	70	2

*tonne = 1,000 kg or 2,205 lb, short ton = 2,000 lb.

How do optimum N rates compare in January 2014 to a year earlier in January 2013? Using the same Manitoba N rate calculator it is possible to calculate the optimum N rates and net returns for these two periods in time. In January 2013 the spring wheat price was \$7.80/bu, with granular urea cost at \$570/tonne, and the potential net return was \$106/A. The calculated optimum N rate was 100 lb N/A. As of January 2014 the spring wheat price has decreased to \$5.62/bu, a 28% decrease, but the optimum N rate only lowered to 90 lb N/A, a 10% decrease—admittedly net returns decreased to \$66/A. Even though farmer projected net returns decreased 38% with the drop in grain prices it still pays to not lower fertilizer N rates in direct proportion to decreases in grain prices.

Use of a fertilizer rate decision support tool, such as the Manitoba N Rate Calculator, can help a farmer obtain a positive net return from spending on fertilizer. It pays to use fertilizer even when grain prices decrease.

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Abbreviations: N = nitrogen.

Note: *Plant Nutrition TODAY* articles are available online at the IPNI website: www.ipni.net/pnt