



This is the premiere issue of Agrico Crop Talk. This newsletter features current hot topics making headlines in the agricultural industry today. The material presented in this newsletter include viewpoints from industry specialists, Agrico agronomists and Crop Care affiliated members. The theme of this issue is Nitrogen Management.

Fertilizer Efficiency

Soil pH	% Fertilizer Efficiency			% Fertilizer Wasted
	N	P	K	
5.0	53	34	52	54
5.5	77	48	77	33
6.0	89	52	100	20
7.0	100	100	100	0

Soil and Buffer pH

Dr. Cliff Snyder

pH range is the most important factor to consider when developing a cropping program. pH has a direct effect on soil chemistry and plant interactions. Microbial activity in soils that are involved with the mineralization of organic matter and the release of nutrients are greatly influenced by pH. Nitrification is greatly reduced at pH values less than 6 and greater than 8.

Balance Nitrogen with adequate Phosphorous and Potassium

A 2001 report from PPI/PPIC/FAR Special Publication indicated a serious depletion of phosphorous and potassium levels. These two other primary nutrients must be at optimum levels to maximize efficiency in Nitrogen utilization by the crop. It is poor management to lose Nitrogen because phosphorous or potassium levels are not adequate. Nitrogen and phosphorous boost each other's uptake, particularly in starter fertilizer programs. High phosphorous levels in the plant help the transfer of energy necessary to assimilate the Nitrogen into organic compounds like amino acids, proteins and enzymes that are critical for plant growth. Phosphorus is essential to all energy conversion processes in plants.

Adequate potassium supports efficient Nitrogen utilization because potassium helps regulate the enzymes that assimilate Nitrogen into an efficient usable form. Potassium is also critical to maintaining the water relations in crops and adequate potassium helps reduce negative impacts of drought and other stresses. The impact potassium levels can have on corn yield response to Nitrogen is proven. Increasing the soil test K+ level reduces the amount of Nitrogen required to reach optimum yield and studies show **that optimum yield was higher with less Nitrogen when potassium was adequate.**

Winter Wheat Topdress Considerations

sections included from PPI Agri-Briefs

Providing winter wheat with adequate fertility is important in producing optimum yield and maximum profit. Look beyond Nitrogen this topdress season and consider the need for nutrients such as **Chloride** in wheat production. There have been many studies across North America over the past several years

that have evaluated wheat response to Chloride. **The average yield increase due to Chloride is 5 bushels** per acre in responsive conditions, although; yield increases as high as 23 bushels have been observed. Chloride is essential for photosynthesis. It is important in controlling the opening and closing of leaf stomata (pores) as it influences the Nitrogen nutrition of plants and advances plant maturity as well as improves overall disease resistance. Wheat response to Chloride is usually expressed in improved colour, suppression of fungal diseases and increased yield. **Chloride is provided in adequate amounts using Muriate of Potash.**

Fertilizer Strategies For Expensive N

by Keith Reid, Soil Fertility Specialist, OMAF , Stratford

It appears we are headed for higher Nitrogen prices this spring but there are decisions you can make to reduce the impact of higher prices on your bottom line.

Check your crop mix

Corn and wheat need more Nitrogen than soybeans so switching to soybeans will reduce your fertilizer bill. This isn't a solution for all situations as there are many more factors that go into the choice of crop than just the price of Nitrogen, however, it doesn't hurt to review your overall rotation to look for potential savings.

Target optimum fertilizer rates

If you go for maximum yields the fertilizer to grow the last few bushels will always cost more than the value of the grain. This spread gets wider as the price of fertilizer goes up; unless the price of grain is going up at the same rate. It normally takes approximately five pounds of corn to pay for one pound of fertilizer and the general fertilizer recommendations are based on this ratio. If the ratio increases to 7:1 then the optimum fertilizer rate will drop by about twenty pounds of N per acre.

Get the most from manure

Manure and other organic sources of Nitrogen are worth more when the price of fertilizer is high. Account for them fully in your fertilizer program and manage them to give the greatest benefit. Incorporating manure as soon as it is applied will save most of the readily available Nitrogen, reducing the amount of fertilizer you have to buy.

Do everything else right

Your fertilizer program has to be tied to a complete agronomic package in order to work properly. Pick the right hybrids, plant the right population into the right conditions and control weeds and insect pests. Scrimping on other inputs to make up for increased fertilizer cost is false economy.

Add Red Clover to your Plans - Add Nitrogen to your Rotation

Rotation Effect by Soil Type Interactions Corn Yield Response

Rotation	Average Corn Grain Yield (bu / ac)	
	Loam (1990 – 1995)	Clay Loam (1990-1993)
C-C-C-C	141	105
S-C-S-C	156	118
S-W-C	151	126
S-W(RC)-C	163	135
S-W(RC)-RC-C	165	132

C – Corn S- Soybeans W- Winter Wheat RC- Red Clover

Toledo Loam near Chatham & Brookston Clay Loam near Maidstone
Study conducted by Dr.Bill Deen Univ.of Guelph Source: Doug Young(RCAT)

The value of red clover ploughed down in your rotation is depicted in the chart on the left. Clover is an efficient cover crop that improves overall soil structure as well as adding Nitrogen to the soil; saving growers money down the road. The green manure in the fall provides valuable organic matter which supplies Nitrogen and helps improve soil structure. The estimated Nitrogen credit for double cut red clover is approximately 40 units of Nitrogen.

The Bottom Line**Greg Patterson, A & L Canada Laboratories Inc.**

Potassium is absorbed by plants in larger amounts than any other mineral element except for Nitrogen. In order for a plant to use Nitrogen it must combine nitrate Nitrogen with potassium at the root surface for transport up to the Xylem of the plant. Ensure high levels of potassium in the soil for adequate levels of potassium in plant tissues and for improved utilization of Nitrogen.

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