

Enhanced Fertilizer Efficiency

In a recent Crop Management Network article, Paul Fixen of the International Plant Nutrition Institute in Brookings, South Dakota outlined his ideas on the future potential of fertilizer efficiency.

The rising cost of energy is closely tied to the rising cost of fertilizers of all kinds. The high prices themselves have given us a bit of a boost. This follows several decades of gradual move to high fertilizer efficiencies. Corn yields have risen 60 percent since the mid-seventies. Nitrogen fertilizer use has increased only 12 percent. Our nitrogen applied per bushel of corn yield is now under 1, really about 0.9 for most good producers. There is still room for this to improve and research with combined with more efficient application techniques holds promise. On the phosphorus side, recovery in the year of application seldom exceeds 20 percent. Long term recovery ranges from 50 to 90 percent. Use of soil test data is on the increase and will help move this usage up a bit. Research into phosphorus utilization and soil microbiological systems is our hope for long term efficiency gains. In the short term make sure applications of high priced products are as efficient as possible and highly likely to give a response by correlated and calibrated soil test recommendations.

There is climate concern about the potential of global warming. Ammonia and nitrous oxides released in the production of plants and animals are necessary to feed a hungry world. They also point to a pathway of management systems to improve nitrogen efficiency and carbon dioxide sequestration. I only use the word to prove I can spell it and hopefully catch Bill O'Reilly's attention.

It is possible that designer urea which releases nitrogen just as the plant grows will be in our future. We certainly need to know a lot more about mineralization factors in our soil's natural systems. We need to know how to more precisely measure these processes. This would help use nitrogen in the soil complex and in manure resources.

At any given moment the world has a 30 to 60 day world food supply on hand. The concept of just in time delivery was in place in food production long before it came to our factories. The need continues to grow and a robust research based worldwide production system is ever more important to meet the needs. Young people interested in agriculture as a career are not going to be bored with the same old same old. This is true in the production, processing, supply, and research facets of the industry. Our future lies in change as the norm, and improved efficiency as the standard.

Paul C Hay, Extension Educator

University of Nebraska-Lincoln Extension in Gage County • 1115 West Scott Street, Beatrice NE 68310
(402) 223-1384 • FAX: (402) 223-1370 • email: phay1@unl.edu



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