

# Nitrogen Management Tips for Spring

After five years of strip trials comparing nitrogen rates, forms and timing, there can be no doubt that growers following yield goal recommendations could get by with less nitrogen.

“We’ve learned, though, in talking with growers over the past few years, that many have decided that the yield-goal concept was recommending more nitrogen than they needed,” says Dr. Tracy Blackmer, Iowa Soybean Association Director of Research. “And they’ve already made adjustments.”

In nearly 150 spring-applied nitrogen strip trials over the past five years that compared normal rates and normal rates minus 50 lbs., the ‘normal’ rate growers started with was already only about 81% of the rate that would have been used had they been following yield goal recommendations of 1.2 lbs. of nitrogen per bushel of expected yield.

“The mean most profitable rate of fertilization in these studies was only 63% of the rate normally called for by the recommendations based on yield goals and credits,” Blackmer tells.

Blackmer says that even if you’ve already trimmed back your nitrogen rates for corn, you might be able to cut out a little more. And with costs up this year again, applying at the right rate to produce optimal economic yields is more important than ever.

Included on these pages are some brief summaries of On-Farm Network nitrogen management studies conducted over the past five years. If you have not yet put down all of your nitrogen for the 2006 crop, we’d invite you to join us in our nitrogen management program.

## Impacts of reducing rates of spring applied nitrogen by 50 lbs. per acre

Corn growers need reliable estimates of the economic and environmental impact of cutting nitrogen use rates in order to remain profitable and avoid losses that could impact environmental quality. Use of strip trial testing allows them to discover optimal rates for their farms and manage-

ment factors, rather than the one-size-fits-all approach commonly used with the yield goal recommendation system.

In looking at 143 of these trials using the grower’s choice of either anhydrous or liquid nitrogen fertilizer, each on at least 20 acres with replicated strips, it was apparent that producers who normally attain yields of less than 200 bu. per acre could cut nitrogen rates by 50 lbs. per acre without losing profit. This was particularly true for those using anhydrous. The average difference in yields across all trials was about equal to the cost of the extra fertilizer nitrogen applied.

On the average, reducing rates did cut yields slightly. But reducing rates by 50 lbs. per acre reduced the amount of nitrogen contained in the grain by only 3 lbs. per acre, which meant there were 47 lbs. less nitrogen that could be lost to the environment.

Conversely, the higher nitrogen application rate (the normal rate) was generally more profitable when yields exceeded 200 bu. per acre. The higher rate was often the more profitable rate with liquid nitrogen fertilizer, as well.

Conclusion: Most producers who participated in this study could have reduced nitrogen rates by 50 lbs. an acre with no loss in profits. From this we can also say that using strip trials to learn where nitrogen rates can be reduced and where higher rates are more profitable should improve profits and reduce concentrations of nitrate in Iowa rivers and surface water.

## 100 lbs. of nitrogen may be enough

If you’re sidedressing all or most of your nitrogen for corn in late May or early June, on fields where corn follows soybeans, it appears from recent studies that 100 lbs. of nitrogen may be sufficient. That may seem like too little, but remember that when we combine 100 lbs. of fertilizer nitrogen with a 40 lb. soybean credit, there’s more than enough nitrogen for a 200 bu. corn crop.

This conclusion was reached after analyzing 59 two-treatment replicated strip trials comparing 75 lbs. and 125 lbs. of nitrogen applied as sidedressing over the past six years. Crop



Table 1

Mean yield responses for corn at 2 yield levels.		
Yield level*	Yield	
	Mean*	Response
----- bu/acre -----		
> 200	211	12
< 200	171	6
* Yields at high N rate.		

Table 2

Summary of trials by year					
Year	March - May Rainfall ---- in ----	Fertilizer N		Yield	
		Low Rate	High Rate	Low Rate	Response
		---- lb N acre <sup>-1</sup> ----		---- bu acre <sup>-1</sup> ----	
2000	8.1	80	123	182	5
2001	11.9	78	123	165	5
2002	8.2	79	128	159	4
2003	9.9	79	131	173	2
2004	14.7	75	125	181	14
2005	9.9	80	130	180	11