But Why Would One Use Ammonium Sulphate?

Dr. Tarlok Singh Sahota

I was discussing about Sulphur, the protein forming essential nutrient, and possibility of meeting its requirement through the use of ammonium sulphate with a group of growers this winter. An intelligent grower asked, "But why would one use ammonium sulphate?" The grower was hinting at the high cost of ammonium sulphate as a source of N, because it is considered primarily as an N fertilizer. Quite often we forget that it also contains 24% S for which we need to assign a monetary value as well. Considering both N and S in ammonium sulphate it costs $1.05/kg nutrients (N + S), which compares favourably well with urea at $1.03/kg nutrient (N in this case). Besides, soil applied N from ammonium sulphate is not as quickly lost as that from urea and S being in the sulphate form, in ammonium sulphate, is readily available to the crop plants. While discussing the advantages of S application to crop plants, in one of my earlier articles, I wrote:

"Since S plays an important role in protein synthesis, protein yield/acre could be significant with S application even if the forage yields were non-significant. Recent research at Michigan State University indicated that an investment of $6.25 (25lb S/acre @ $0.25/lb S) in fertilizer S returned an average of 0.40 tons of alfalfa (over 4 years), which based on $100/ton is worth $40. A 6 to 1 is a very nice return! In corn silage, even though application of S @ 46 lb/acre resulted only in insignificant increase in yield or tissue concentration of S, it improved the NDF-d by 6.7 % and consequently increased the milk yield (lb/ton) by 5.9 % and milk/acre by 1833 lbs (Everett 2004). *Thus the milk yield improvement from a 50 acre corn silage field supplied with S could be 91650 lbs or 41.5 tons. Another advantage would be that the soils will not be left poorer of S. After all each crop, with or without S application, will continue to mine S from the soil.* "

In an article in the Ontario Farmer, January 31, 2006, Glenn Powell stated that there was some test work indicating that corn growers may need to pay attention to Sulphur in their fertility program. Applied as a starter fertilizer, additional sulphur produced an 11 bushel (average) per acre increase in yield on several sites in Michigan. At Thunder Bay, we found urea to be as good a source of N for corn as ammonium nitrate. Let us see what it costs if some one has to apply 100 kg N/ha to corn from urea, ammonium nitrate and ammonium sulphate. At the current fertilizer prices (early 2006) at Thunder Bay Coop (urea: $472/MT, ammonium nitrate: $449/MT and ammonium sulphate: $474/MT), it will cost a grower $102.60 from urea, $132.06 from ammonium nitrate (often the preferred N fertilizer), $128.46 with 79% N from urea and 21% N from ammonium sulphate and $ 133.38 with 75% N from urea and 25% N from ammonium sulphate. The latter two options aren't costlier, as compared to ammonium nitrate, and have an advantage of supplying 24-29 kg S/ha as a bonus. My question, considering aforesaid advantages, is why wouldn't an enlightened grower use ammonium sulphate, at least partly, if not totally?

Published in Ontario Farmer March 7, 2006, 40 (1), Page C12 and Northwest Link, October, 2006, Pages 12-13.