

Wheat profitability: Top-dress nitrogen sources

It of course it is time to start getting that top-dress nitrogen (N) out on the wheat. I am going to start out by saying that for the most cases when are things are “perfect” N is N no matter what source. When applied in the right way in the right environment there are no big differences in how the N source will perform whether it is urea, anhydrous ammonia, or UAN (28, 32-0-0). But we are trying to grow winter wheat in Oklahoma; perfect conditions are not necessarily the norm. So let’s go through the worst case and best case scenarios for the primary sources. Urea’s enemy is ammonia volatilization which occurs at the greatest rate in high pH soils, warm, dry, windy conditions. When it rains ½ inch or more within three days of urea application very little N will be lost regardless of the other factors. Volatilization can be reduced when urease inhibitors are used but they just extend the rain free window from 3 to 4 days without loss too 10 or so. In situations where good rains are very likely soon after application these inhibitors are rarely beneficial. Urea is a great low cost source of N that is easily applied and woks best when a rain event, or irrigation, of > 0.5 inches happens soon after application. At 50° F and below the risk of losing N starts to reduce. So if urea is applied and the temperatures stay below 40° F until the first rain event then it is very likely little N will be lost due to volatilization. But it only takes one warm day to get the process going. Anhydrous ammonia can be easily lost if soil conditions at application are not conducive to a good seal behind the knife. Also applicators used for top-dress anhydrous application are not widely available at this time and are fairly expensive. With good soil moisture and good equipment very little N will be lost. With UAN, which is 50% urea, half of the N could be lost to volatilization if conditions are right. An additional issue with UAN is crop burn which can occur when temperatures get much above 60 doing the day. The risk of burn is also increased when wind speeds are high. The use of “streamer” nozzles instead of flat fans broadcast both reduces the risk of burn and ammonia volatilization. But in conditions where rain is not a guarantee less N will be lost from UAN than urea. UAN is a great source of N because it has both nitrate and urea. It provides a very even distribution and allows for variable rate application. In the end watch the weather and buy nitrogenous fertilizers for the N you get from it, no matter the form. In many cases can be worth the extra money to buy a source that is better fit for your equipment and conditions.