**Fertilization in a drought**

Fertilization needs to happen whether we are in a drought or not. In our region, early spring drought does not necessarily translate into a growing season drought, so planning for a normal crop would be prudent. In addition, crop insurance rules dictate that normal cropping practices need to be maintained.

Although recommendations regarding fertilizer applied with the seed for some crops are similar, pushing rates towards the upper limit when the soil is dry would not be wise, as fertilizer tends to concentrate around the seed when soil dries, whereas if the soil moist the fertilizer tends to be more disperse.

**Ammonia application in a drought-**

 A common question that farmers have in seasons of dry soil conditions is whether ammonia will be lost if the soil is too dry. A dry soil in our environment still has about 10% water in it; it is just held more tightly onto clay and organic matter due to a thinner film and prevents crops from taking it up. However, ammonia can certainly be held by it. The problem of ammonia in dry soils in not the water in the soil restricting rate, but the tilth of the soil. If the soil flows around the ammonia application band and the band is placed at least 4 inches deep in the soil then the ammonia should be safe from loss. In the fall, dry soil often translates into cloddier soil because there has not been enough freeze-thaw to break up the soil into fine particles. Therefore, dry soils are much more a problem in the fall because if the soil is cloddy, there are gaps between the clods that would allow ammonia to escape not only the day of application, but in the days following. In spring, and this spring is no exception, all the soils I have investigated so far are very fine at and near the soil surface, and would provide good coverage of the ammonia band.

If ammonia is to be applied at planting there needs to be at least 3 inches distance from the intended seed row. In moist springs, farmers have skated by with less distance because there is more water to trap the ammonia before it reaches the seed, but not this year. If the ammonia will be applied in a separate preplant trip before planting, it should be applied at an angle to the intended planting row. Some seeds will be damaged and stand reduced, but it will not leave large gaps within a row, just a plant missing once in a while, which increasing seeding rate about 10% will take care of.

**Urea application in a drought**

There is a lot more interest this spring in applying urea with a drill before planting, rather than broadcast application followed by a field cultivator to work it in. The drill will likely result in less soil disturbance and greater moisture conservation compared with a field cultivator. Urea application should be made deeper than 2 inches to avoid using a urease inhibitor (anything with a proper rate of NBPT). A separate drill application of urea should be made at an angle to the intended row, because when urea is broken apart into ammonia and carbon dioxide by the soil urease enzyme, the ammonia will hurt seed germination and reduce stand. By applying urea at an angle to the planting direction, a seed will be killed once in a while, but will not result in large gaps within a row. Any P applied in this manner will not behave as a ‘starter’, but will be available later in the season beyond which a starter might help early growth. If P is applied in this manner, some seed-placed/near-seed-placed P should be applied to corn, small grains, canola, sugar beet and potato.

**Reducing fertilizer rates in a drought**

 With the old ‘yield-goal’ mentality still alive and well unfortunately with many growers, there will be a tendency to greatly reduce fertilizer rates this spring. This is a mistake. In dry conditions, crop nutrients are used much less efficiently than in a more ‘normal’ year. In 2012, efficiency of N applied to a dry soil was at least 1/3 less efficient than similar rates in a ‘normal’ year for corn in one of my experiments. It takes far more nutrient per bushel/pound/ton in a drought year compared to that in a normal year. That stated, being conservative on rates is not a bad strategy, within limits. In spring wheat for example if the rate from the NDSU N calculator is 150 pounds of N per acre, reducing it to 120 pounds N per acre would not be too extreme. If the weather turned around, the variety tended to be lower protein naturally, then supplementing the N early post-anthesis to regain some protein is a plan that conserves N early. If the weather remains dry, achieving high protein would happen without any extra N.

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