

Fall Anhydrous

By Andy Luke, MU Extension Agronomy Specialist

As harvest winds down, many farmers in the area will begin applications of anhydrous ammonia before the frozen ground forces them to park their tractors for the winter. While this is a wide spread practice, fall nitrogen applications carry risks of being lost before being used by next year's corn crop.

What makes fall applications of anhydrous ammonia risky are unknown weather conditions that may lead to nitrogen loss before spring. Nitrification is a process driven by microbes in the soil. Therefore, when little microbial activity is occurring, such as when the ground is frozen, nitrogen in the ammonium form is safe from losses. However, warm temperatures and moist soils increase nitrification and make it more likely that some applied nitrogen is lost before the corn crop has a chance to use it. Once soil temperatures drop below 40 F, microbial activity nearly stops and nitrification no longer occurs. Nitrogen is also prone to losses from leaching, which is when nitrate moves through the soil profile and out of the root zone with soil water. Heavy rainfall or wet periods can lead to losses from leaching.

If applying anhydrous ammonia in the fall, there are a few steps you can take to lower the risk for next year's corn crop. First, only apply ammonia after soil temperatures have reached 50 F and are falling. As of November 15th, 6-inch soil temperatures in soybean stubble were 37 degrees at the Hundley-Whaley research center in Albany, making soil temperatures well within the safe application range. Be sure to use a nitrification inhibitor as well. While nitrification inhibitors cannot eliminate nitrification, they can help keep it in the immobile ammonium form until it is ready to be used by the crop. Always make sure soil conditions are right and that nitrogen is not being lost to volatilization at application. This includes checking that the knife tracks are sealing and that the equipment is not compacting the soil. Lastly, do not apply all of the nitrogen that you are planning to use for next year's crop in the fall. Think of a fall application as insurance that nitrogen will be available early for 2019's corn, but plan to supplement additional nitrogen to meet your growing crops requirement.