

Nutrient Loss Pathways and Stabilizer Options

With input costs on the rise, producers are looking for the best options to improve return on investment. Nutrients tend to be one of the higher inputs on most crops, so what can we do to protect that investment? Let's first explore some of the nutrient loss pathways, then look at options for stabilizing the nutrients to help avoid losses.

Nitrogen, one of the most commonly applied macronutrients on crops, can be lost to the environment in three ways: Leaching, Volatilization, and Denitrification.

Leaching typically occurs in sandy or more coarse textured soil. This process occurs when nitrogen is converted into the Nitrate form, crop available form, and the soil holding capacity is maxed out and a moisture even occurs. The moisture helps wash the Nitrate-N down through the soil and out of the crop root zone. This can lead to crop nutrient deficiency, wasted money, and environmental impacts such as nitrates filtering into drinking water.

Volatilization is the loss of surface applied N when products like Urea (46-0-0) are converted to ammonia (NH_3) gas. Volatilization typically occurs when soils are damp and temperatures are high. With movement toward no-till, volatilization has become more of a concern. Once again, when this N is lost, return on investment is immediately adversely affected. Volatilization can also occur with manure-based fertilizer applications.

Denitrification typically occurs when soils are saturated with water for 2 to 3 days. Nitrate- N is converted to Nitrogen Gas by anaerobic bacteria and released into the air and atmosphere. Again, nitrogen loss can be costly and affect the producer's bottom line.

Losses from these processes can be minimized by treating the Nitrogen fertilizer source with a nutrient stabilizer. These stabilizers can be applied to liquid, dry, and NH_3 forms of Nitrogen. The Great Bend Co-op offers options from both Koch Agronomic Services© and Verdesian Life Sciences©.

We also offer a polymer coated Urea (44-0-0) source called ESN© Smart Nitrogen.

Phosphate, another macronutrient, can also be lost to the soil through fixation. The soil particles can hold on the phosphate so tightly that the phosphate becomes completely unavailable to the crop. Avail© from Verdesian Life Sciences© can be applied to both liquid and dry forms of phosphate to protect the nutrient from fixation in the soil, thus increasing potential uptake by the crop in the field.

Nutrient stabilizers do not decrease the amount of nutrients necessary to grow your specific crop, but they do allow you to get the most of out of the nutrients that are applied. This helps increase ROI by not allowing lack of nutrient availability to be a limited factor to crop growth and development.

Talk to your Great Bend Co-op Agronomy Production Specialist or one of our Seed Experts to learn more about which nutrient stabilizers are the best fit for your production acres.

