

Nitrogen Stability Quick Facts

WHAT PORTION OF YOUR NITROGEN IS VULNERABLE TO LOSS; AND CAN IT BE PROTECTED WITH AN ADDITIVE?

RED

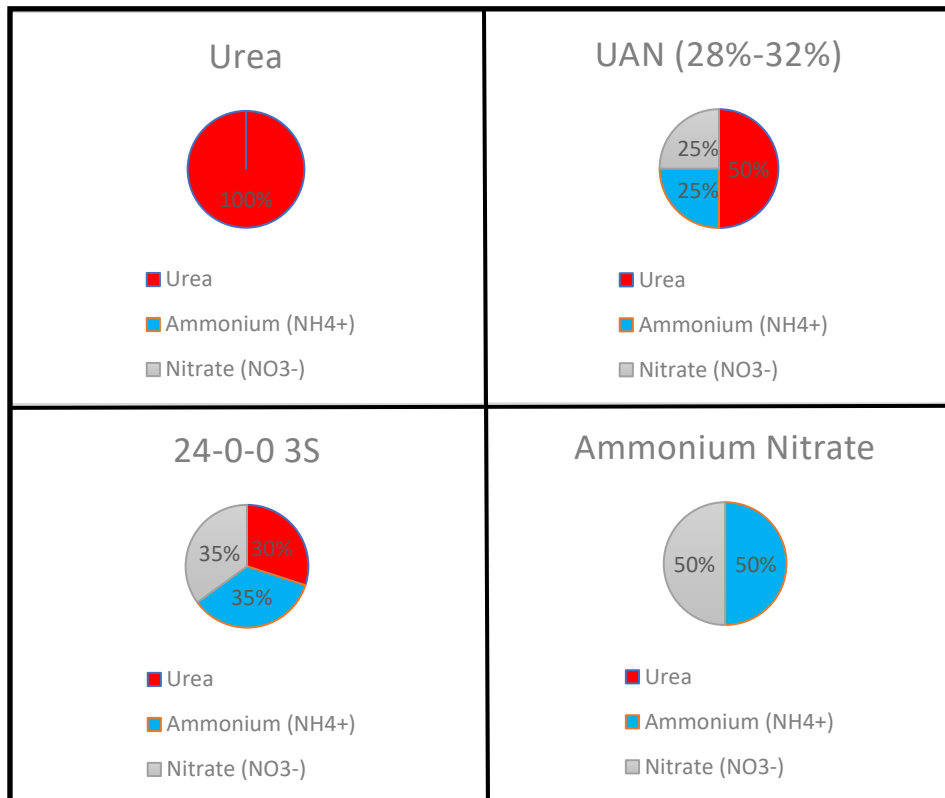
- Vulnerable to **VOLITIZING** and **LEACHING**
- Both **CAN BE PROTECTED**

BLUE

- Vulnerable to **LEACHING AND SOME VOLITIZATION**
- Leaching **CAN BE PROTECTED**

GREY

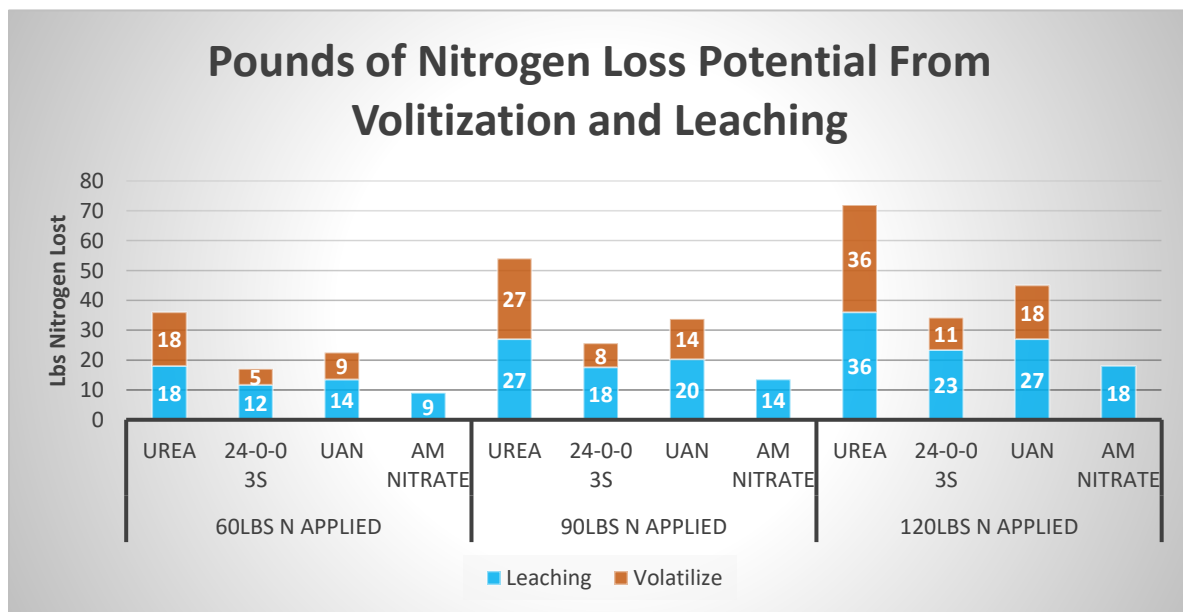
- Vulnerable to **LEACHING ONLY**
- Leaching **CANNOT BE PROTECTED**



UREASE INHIBITORS: delay the breakdown of the urea molecule into the ammonia form by inhibiting the activity of the naturally occurring enzyme, *urease*. It is the free ammonia that is vulnerable to volatilization loss from surface applications of dry and liquid urea fertilizers. Most urease inhibitors delay urea hydrolysis for 7-14 days.

NITRIFICATION INHIBITORS: delay the conversion of ammonium (NH4+) form nitrogen to the nitrate (NO3-) form by depressing activity of *Nitrosomonas* bacteria. The ammonium (NH4+) form has a positive charge which binds to negatively charged soil colloids and prevents leaching; compared to the nitrate (NO3-) which does not bind to soil particles and is easily leached below the plant root zone. The inhibitory effect of DCD stabilizers usually last 25-55 days.

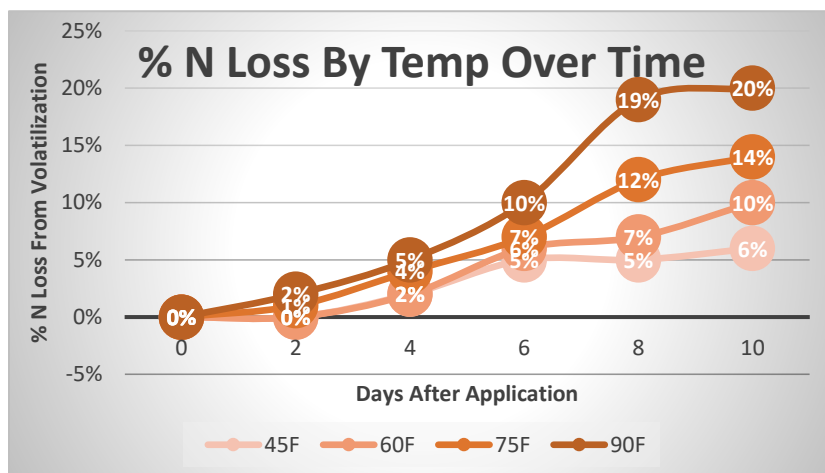
Graph to the right shows pounds of nitrogen that can be lost assuming 30% loss of only the vulnerable portion of each nitrogen source. Nitrogen loss to volatilization is shown in **ORANGE** and Nitrogen loss to leaching is shown in **BLUE**.



HIGH RISK NITROGEN VOLITILIZATION SITUATIONS

Surface applied urea (Dry Urea or UAN)

- Temps above 70F
- Initially moist soil followed by drying
- Light rain/irrigation events <0.4"
- Crop residue on soil surface
- Low CEC soils
 - As much as 50% N loss from volatilization can occur from unprotected urea



HIGH RISK NITROGEN LEACHING SITUATIONS

Crops grown in sandy soils typically have effective root zone of 24" deep. **70% of the plants' effective root system** is in the top 12" of the soil.

- Low CEC Soils
- Heavy rainfall potential events prior to establishment of extensive root system
- Shallow rooted; short season crops

******University and Independent research verifies ROI from the use of Nitrogen Stabilizer products. In addition, to positive ROI on these products; CSP/NRCS cost share money is available in some areas for application of AAPFCO defined nitrogen stabilizers!!!***