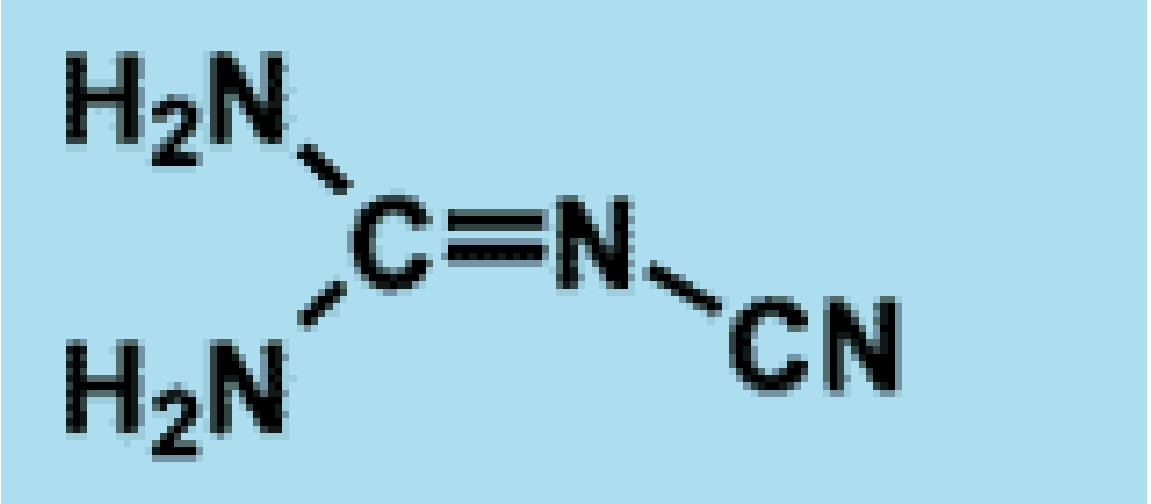
- **Guardian® and Guardian®-DF contain 66% nitrogen as dicyandiamide (DCD®)**

- **Guardian®-DL contains 31% nitrogen as dicyandiamide (DCD®) and 10% sulfur as ammonium thiosulfate (ATS)**

Guardian® (dicyandiamide)

- Approved source of slowly-available nitrogen (AAPCO)
- Imparts slow-release characteristics to ammonium-forming nitrogen fertilizers
- Is an effective enzyme-blocker in slowing the conversion of ammonium (NH_4^+) to nitrate ($N0_3^-$)

Dicyandiamide

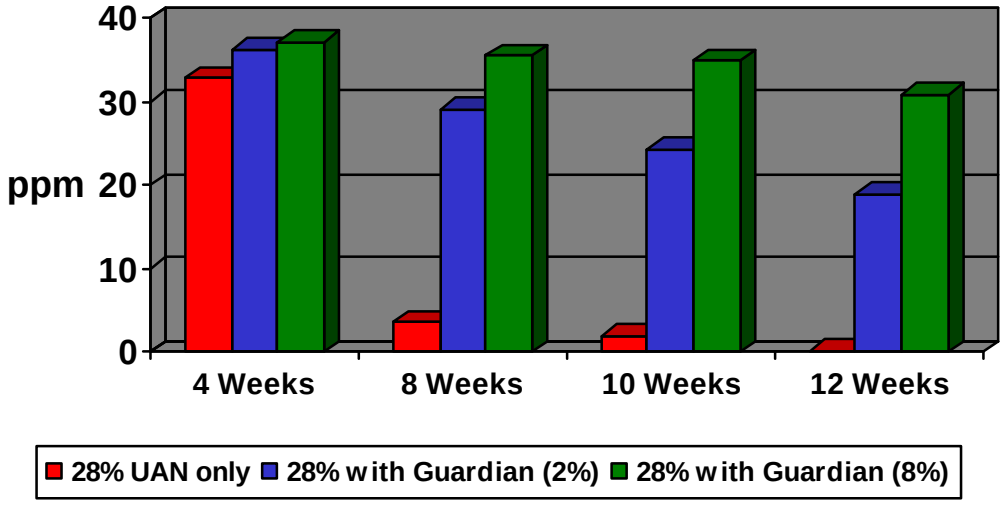


- **Relatively non-toxic (Oral LD_{50} = 10,000 mg/kg)**
- **Non-volatile, non-flammable, and chemically stable**
- **Very safe to handle and use**
- **Leaves no harmful residues, breaks down into plant usable nitrogen, water and carbon dioxide**

Effects of Guardian® (dicyandiamide) on Nitrogen Retention

A sandy soil mixture was treated with 100 ppm 28-0-0 UAN solution and placed in open pots in an 80° F. chamber.
The soil mixture was kept moist and sampled at indicated times to determine presence of non-leaching (plant available) nitrogen.

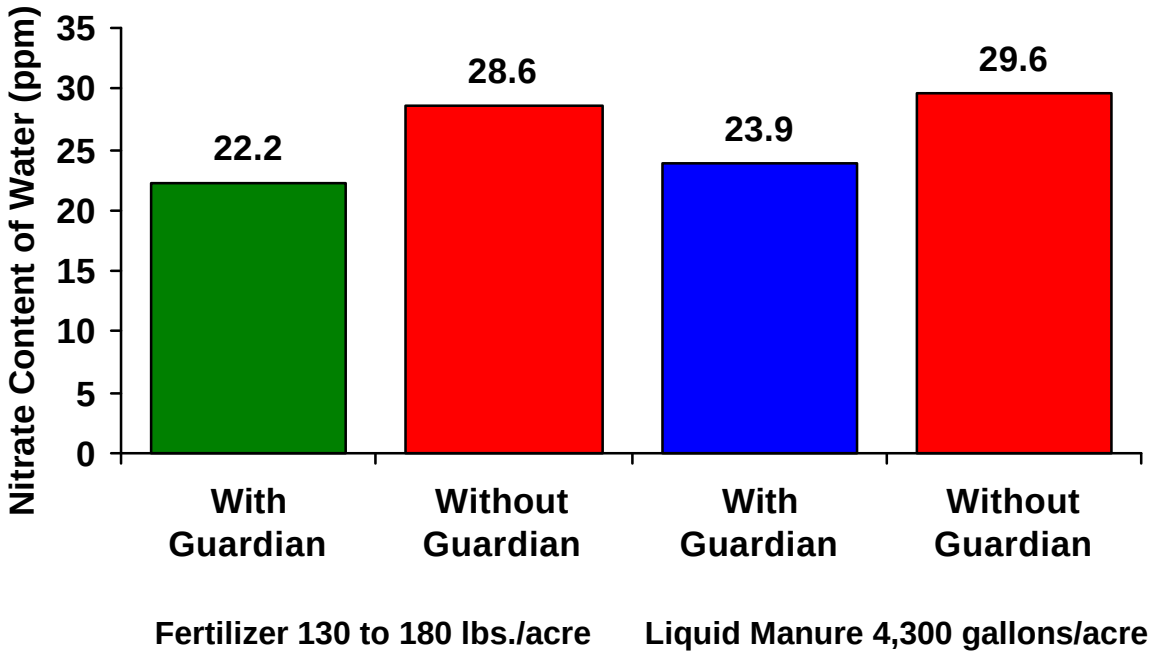
Concentration (ppm) of retained (plant available) nitrogen



Guardian® Impact on Nitrogen Content of the Water

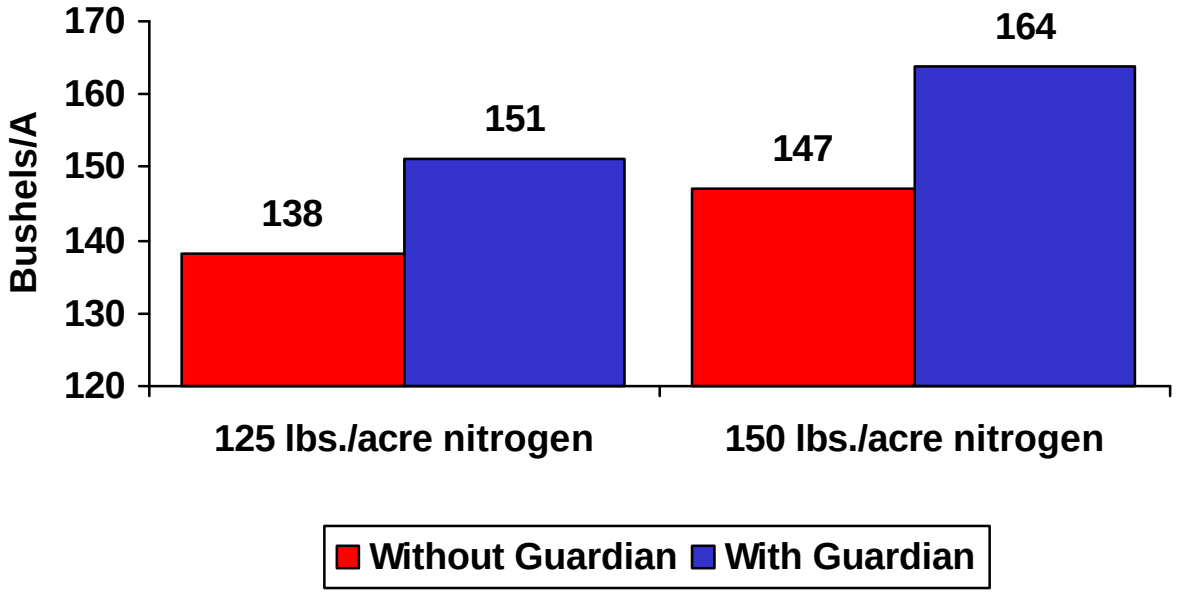
Nitrate contents of tile drainage water was measured during the growing season following applications of 4,300 gallons of liquid manure or nitrogen solutions at 130 to 180 lbs. actual N per acre. Applications were made with and without Guardian.

Source: SKW Trostberg AG



Corn Yield Response to UAN 28-0-0 with and without Guardian®

Below are the averages of 5 experiments in 4 years at a location in Minnesota. Guardian (dicyandiamide) was used in a solution with UAN 28-0-0 at rates of 125 lbs. and 150 lbs. actual N per acre respectively.



Source: University of Minnesota

Corn Yield Response to UAN 28-0-0 with and without Guardian®

A field study conducted on medium textured soil, randomized complete block design, 5 replications. Northrup King PX9283 hybrid. Total nitrogen was split applied PPPE (post plant preemerge surface broadcast) and as a late sidedress (11-12 leaf stage), or all nitrogen was applied as an early sidedress (5-6 leaf stage). Nitrogen was applied at 100 lbs. per acre, except for the untreated control where no nitrogen was applied.