

Air Quality Enhancement Activity– AIR02 – Nitrogen Stabilizers for Air Emissions Control



Enhancement Description

The use of a nitrogen stabilizer with either urea or ammonium fertilizers to control the rate of ammonia and ammonium conversion. For this enhancement “nitrogen stabilizers” includes nitrification inhibitors and urease inhibitors.

Land Use Applicability

This enhancement is applicable on cropland and pasture land.

Benefits

Including a nitrification inhibitor with ammonia-based nitrogen applications will help to control conversion of ammonia to nitrate and ultimately to nitrogen gas through nitric oxide (an ozone precursor) and nitrous oxide (a greenhouse gas). These conversion processes can produce nitrous oxide as a byproduct due to inefficiencies in the conversion processes. Nitrous oxide is a potent greenhouse gas which has 310 times the global warming potential of carbon dioxide on a molecular basis. Using a nitrification inhibitor with applied ammonia-N will help to reduce an enterprise’s nitrous oxide emissions, and improve its overall greenhouse gas footprint. Additionally, it can help to keep more nitrogen in a plant-available form in the soil for a longer period of time.

Including a urease inhibitor will help reduce the volatilization and release of ammonia into the atmosphere that occurs as the urea hydrolyzes. Urease, which is the enzyme from yeast and bacteria in the soil, catalyzes the hydrolysis of urea into carbon dioxide and ammonia. Ammonia emissions are particularly important to air quality because ammonia is a pre-cursor for PM2.5.

Criteria for Including Nitrification Inhibitor with Nitrogen Application

1. Producer must have a current soil test (no more than 5 years old).
2. Nutrient application rates are within the Land Grant University recommendations based on soil tests and established yield goals considering all nutrient sources. The nutrient application rate must take into account the additional nitrogen that will remain available to the plant due to the inhibition of the nitrification processes.
3. The use of the respective nitrification or urease inhibitor must be in accordance with the manufacturer-recommended rates.
4. Use of the nitrification or urease inhibitor must not increase soil surface disturbance.

Documentation Requirements for applying nitrification inhibitors to cropland

- A map showing where the enhancement was applied.



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- Dates of application of ammonia-N fertilizer.
- Dates of application of nitrification or urease inhibitor.
- Acres of land treated.
- Soil test results.
 - Manure analysis results.
 - Crops grown and yields (both yield goals and measured yield).
 - Calibration of application equipment.



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State Criteria

- Apply the nitrification or urease inhibitor according to manufacture recommended rates.
- The nutrient application rate must take in account the additional nitrogen that will remain available to the plant due to inhibition of nitrification processes.
- Nutrient application rates are within University of Nebraska recommendations based on soil tests and established yield goals considering all nutrient sources (refer to Practice Standard 590 and Practice Specification (S-590) for Nutrient Management).
- Soils shall be sampled and analyzed in accordance with Practice Specification for Nutrient Management (S-590) or NebGuide “Guidelines for Soil Sampling” (G1740).
- All soil samples must be taken prior to applying fertilizer or manure.
- Manure shall be sampled and analyzed annually in accordance with Practice Standard 633 – Waste Utilization and Nebfact “Manure Testing: What to Request” (NF02-507).
- Use of nitrification inhibitor must not increase soil surface disturbance.

Documentation Requirements

1. Provide a map indicating where the activities were applied.
2. Provide copies of soil test results.
3. Provide copies of manure analysis, if applicable.
4. Complete the nutrient & fertilizer application table on the following page
5. Complete the fertilizer/application equipment type and calibration date on the following table.

1	2
Type of Equipment	Date of Calibration
Ex. Anhydrous applicator w/ low disturbance knives	3/1/09

Ex. = example. Operator completes both columns

I certify that the following information meets specifications and has been provided to NRCS:

1. Written documentation of the activity performed per required documentation.
2. Copies of dated receipts for equipment or services purchased.

I understand that it is my responsibility to obtain all necessary permits and to comply with all laws, regulations and ordinances pertaining to the application of these activities.

Certified by: _____ **Date:** _____



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Ex. = example. NRCS completes column 1 & 2 (Tract, Field and Acres Planned). Operator completes remaining columns.

Field Information			Commercial Fertilizer and Manure Information									
Tract & Field	Acres	Crop & Yield	Date Fertilizer / Manure Applied (m/d/yr)	Date N-Inhibitor Applied (m/d/yr)	Form of Commercial Fert., or Manure	Rate (lb/a)	Application Method	If Manure, Days to Incorporate	N Avail. (lb/a)	P Avail. (lb/a)	Total N Avail. (lb/a)	Total P Avail. (lb/a)
Ex. T1234 & F1	Ex. 78.9	Crop	3/30/09		. 82-0-0	200 lb	Inject		164		175	39
		Corn		3/30/09								
		Yield	5/1/09		10-34-0	10 gal.	At planting		11	39		
		212										
		Crop										
		Yield										
		Crop										
		Yield										
		Crop										
		Yield										



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		Crop										
		<i>Corn</i>										
		Yield										
		212										
		Crop										
		Yield										
		Crop										
		Yield										
		Crop										
		Yield										

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