2009-10 Slow Release and N Stabilizer Trial

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Dept Plant and Soil Sciences
Multi State Project Supported by the Southern Regional Water Resource Board.
• Two Trials located on LCB research farm near Stillwater.
• One under Cultivation
• One under No-till

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Source</th>
<th>Pre-plant N kg/ha</th>
<th>Top N kg/ha</th>
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<tr>
<td>2</td>
<td>Urea</td>
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<tr>
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<td>Urea</td>
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<tr>
<td>5</td>
<td>ESN</td>
<td>56</td>
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</tr>
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<td>Urea/Urea+Agrotain</td>
<td>28</td>
<td>56</td>
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<tr>
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<td>28</td>
<td>84</td>
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<tr>
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<tr>
<td>14</td>
<td>Urea/Urea</td>
<td>28</td>
<td>84</td>
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</table>

Kg N ha = Lbs N ac

<table>
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<tr>
<th>Kg N ha</th>
<th>Lbs N ac</th>
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<td>75</td>
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Kg N ha = Lbs N ac x 2.2046
The tables of each location show the same data just organized differently. The top table by source and bottom table by N rate.
Protein

Conventional

No-Till
Preplant

• All 50 lb pre trts yielded lowest
• On Conventional no separation of treatments receive 75lb or more.
• No Till Most rates numerically separated out.
  – 50 lbs < 75 lbs < 100lbs
• When N treatments analyzed by total N no differences across sources in both systems.
Top-Dress (Agrotaim)

- Received rain within 5 days of application.
- In this case no differences expected. Agrotaim is a Urease inhibitor which will protect the Urea from volatilizing if the Urea is not worked or watered in within a period of time. Normally considered 7 days.
- No significant yield differences were seen on either system.
Protein

• Preplant N source did not impact Protein at the same rate of N.
• Preplant N rate did not impact Protein by a given source.
• Top-dress Source and rate did effect Protein in both systems. In both cases the 75 lb rate was numerically higher than 50lb. In Conv. Urea was highest and in No-till Urea+Agrotain was highest.
ESN
Polymer-Coated Urea
44-0-0

GUARANTEED ANALYSIS
Total Nitrogen (N)*........................................44%
  44.0% Urea Nitrogen

Derived from: polymer coated urea
*44.0% slowly available Nitrogen from polymer coated urea.

Information regarding the contents and levels of metals in this product is available on the Internet at
http://www.aspfc.org/metalsh.html

Net weight: ___________ (pounds) _________ (kilograms)
NUTRISPHERE-N® for GRANULAR NITROGEN FERTILIZERS
Manages Nitrogen Volatilization and Nitrification

NUTRISPHERE-N® (N-N) for GRANULAR NITROGEN FERTILIZERS is a polymer that manages and protects granular nitrogen fertilizers by reducing volatilization and nitrification when applied with granular nitrogen fertilizer to the soil. Active ingredient - Minimum 43% butenolide-methyleneuccin acid copolymer, partial Ca salt.

NUTRISPHERE-N® for GRANULAR NITROGEN FERTILIZERS IS A NON-PLANT FOOD INGREDIENT, AND NOT RECOMMENDED FOR USE AS A FERTILIZER SUBSTITUTE.

NOTICE:
NUTRISPHERE-N® for GRANULAR NITROGEN FERTILIZERS works best when pre-coated onto urea that is to be applied to the soil. When undisturbed NUTRISPHERE-N® prevents or reduces volatilization and nitrification of urea. Do not use with liquid nitrogen fertilizers or as a seed coating. Read MSDS, and label before use, including but not limited to “Precautions” and “Warranty/Limitations of Liability”. Always wear proper personal protection and follow instructions for treatment and application. Use according to label directions.

SOIL TYPES AND CROPS:
NUTRISPHERE-N® is designed to reduce and insure against the possibility of nitrogen losses from volatilization and nitrification. NUTRISPHERE-N® may be used with any crop and in any soil type where best management practices recommends the use of nitrogen fertilizers.

MIXING INSTRUCTIONS:
NUTRISPHERE-N® should be evenly sprayed (impregnated), not poured onto granular nitrogen fertilizers. Standard coating equipment works well for coating granular nitrogen fertilizers. Do Not Apply NUTRISPHERE-N® to granular nitrogen fertilizer that is wet prior to treatment. If after treating with NUTRISPHERE-N®, the granular nitrogen fertilizer is wet, allow to dry before use. To prevent streaking a field, do not apply wet fertilizer. Up to 50 pounds of powdered clay per ton may be used to enhance drying. Increasing air flow and ventilation will reduce drying time.

NUTRISPHERE-N® for GRANULAR NITROGEN FERTILIZERS can be used with multiple types of granular nitrogen fertilizers. However, the quality and composition of nitrogen fertilizers varies greatly. Before coating NUTRISPHERE-N® for GRANULAR NITROGEN FERTILIZERS on nitrogen fertilizers, those fertilizers should be “batch tested” to determine compatibility with NUTRISPHERE-N®. If wetness occurs, pre-treat to allow time for drying. Do not blend urea or other nitrogen fertilizers that are wet. Do not attempt to spread wet fertilizer as streaking may occur. Ammonium Sulfate is often blended with urea treated with NUTRISPHERE-N®. Before blending Ammonium Sulfate with coated urea, do a “batch test” using the same ratio of Ammonium Sulfate to coated urea intended to be used on a field. If wetness occurs, reduce the amount of Ammonium Sulfate until wetness is no longer an issue. For optimum results pretreat all nitrogen fertilizer and allow drying before blending with other products.

Dye may be added to NUTRISPHERE-N® before application to the fertilizer when treating urea. Success has been shown with Hi-Light® Blue dye from Becker Underwood at the rate of 0.35 ounces to 0.50 ounces per gallon of NUTRISPHERE-N® depending on the strength of the color desired. Dyes containing metallic properties should not be used as they will interfere with the effectiveness of the NUTRISPHERE-N®. Always jar test new dyes to determine compatibility before using.

"316" stainless steel pumps and attachments are recommended. When seals are used, seals made of "Gore-tex", "Teflon" or "Viton" are required.

TREATMENT RATE:
NUTRISPHERE-N® for GRANULAR NITROGEN FERTILIZERS is recommended to be coated at a rate of 0.25% or 1/2 gallon of NUTRISPHERE-N® per ton of urea. (2.1 liters per metric ton)

APPLICATION RATES:
NUTRISPHERE-N® coated nitrogen fertilizer should be applied to the soil in the same manner as nitrogen fertilizers without NUTRISPHERE-N®. CAUTION: When using NUTRISPHERE-N®, if different farming methods from those normally used are tried, test strips are recommended until such new methods have been proven to be effective.
AGROTAIN® urea inhibitor is a liquid additive for urea and UAN Solution fertilizers that reduces volatilization for up to 14 days by inhibiting the activity of the urease enzyme.

**ACTIVE INGREDIENT**
- Nitrilurea phosphonate (NAPT), delivered as a 20% in water solution of the active ingredient. The NAPT is a neutral water-soluble non-ionic polymer.
- Formulated for use on crops at the rate of 0.5% to 1.0% of the total fertilizer applied.

**Manufactured by:**
AGROTAIN International, LLC - One Avenue Street - St. Louis, MO 63107

AGROTAIN® is a registered trademark of Phosphorus Resource Partners Limited Partnership, a licensed subsidiary of AGROTAIN International, LLC.

Read the material safety data sheet before using this product.

**Keep Out Of Reach Of Children**

**CAUTION**
- May cause allergic skin reactions.
- May cause eye and skin irritation.
- Do not take internally.

- Avoid contact with skin and eyes. Wear protective clothing, as necessary. Wash thoroughly after handling.
- FIRST AID: In case of contact, immediately wash skin with soap and plenty of water. Remove contaminated clothing. Wash clothing before reuse. In case of contact with eyes, flush eyes with plenty of water for at least 15 minutes. Call a physician immediately after contact with skin or eyes.
- INGESTION: If swallowed, rinse 1 to 2 glasses of water. Immediately call a physician or a Poison Control Center and follow their advice. Do not induce vomiting or give anything by mouth to an unconscious person.

**PRODUCT FROM FREEZING**

**MAQUETA Y PRESENTACION DEL CONTENIDOS DE LA ETIQUETA**

**PRECAUCIONES**
- Evite contacto con piel y ojos. Use guantes adecuadamente; lave inmediatamente con basura y agua después de cada uso.

**PRIMEROS AUXILIOS**: En caso de contacto, inmediatamente lave la piel con basura y agua; guíe la ropa contaminada. Lave la ropa antes de usarla. Evite el contacto con la piel o los ojos.

**DIRECTIVE FOR USE**
- Wear safety glasses when handling this product. Read the Material Safety Data Sheet and follow the instructions closely. After handling this product, wash thoroughly with soap and water. Do not eat, drink, or smoke while handling.

**GENERAL INFORMATION**
AGROTAIN® urea inhibitor is used with urea or anhydrous fertilizer formulations to delay the hydrolysis of urea which is catalyzed by the enzyme urease. The net benefit of this application is to reduce the loss of ammonia by volatilization when used in surface applications. Applications of AGROTAIN® are typically made in conjunction with urea or urea-ammonium nitrate formulations during planting or other surface application at urea or UAN, cinema, wheat, corn, and other crops.

**FOR SITES ON UREA**
- **Equipment Required**
  - A vacuum pump to weigh urea.
  - A Static mixer or other equipment suitable for mixing the urea solids with AGROTAIN®. A dry rotary mixer can be used in the urea and AGROTAIN® tank before contact with the urea using dry mix equipment. A vacuum pump is not required. A static mixer can be used. Urea should be added to the urea and AGROTAIN® mixture in a dry and dust-free environment.
  - AGROTAIN® is provided as a 20% by weight solution of urea.

- **Procedure**
  - Use only with adequate ventilation (large volumes of air movement). If applying with spray, use unimpaired spray only. Do not allow spray to dry before mixing. If used with inadequate ventilation, use properly ventilated mixing equipment. If mixed with AGROTAIN® solution with air movement supplied or so.
  - Do not pour into the mix or other equipment with urea mixture equipment.
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