

**Entry No. IRRC-0096**

Category : International Rice Research Conference

Select Theme : Sustainable and equitable farming systems

Endorsement email :

Keyword 1 : Nutrient management

Keyword 2 : Sustainable management practices

Keyword 3 :

Title of Entry : Evaluations of ANVOL, a new Urease Inhibitor on Ammonia Volatility, NUE and Rice Yield

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Select only one type of presentation

: 15 minute oral presentation

Abstract

: Ammonia volatilization can occur when urea nitrogen (N) fertilizer is left exposed on the soil surface for an extended period of time. Fertilizer N losses can be quite large if it takes more than 5 days to flood a field. Research has shown that treating urea with a urease inhibitor that contains the active ingredient NBPT and/or NPPT can significantly reduce volatilization losses. KOCH Agronomic Services has recently received an EPA registration for a new urease inhibitor (ANVOL) which contains the active ingredient Duromide. Duromide is made by combining NBPT, urea, and formaldehyde in an undisclosed process. The objectives of the following experiments were to 1) evaluate the volatility of ANVOL treated urea, and 2) determine rice yield potential when using ANVOL treated urea as compared to untreated urea and other treated urea fertilizers. Trial 1 evaluated urea, ANVOL-urea and Agrotain Advanced-urea in a laboratory setting on a Crowley and Mowata silt loam soil over a 15-day period of time. Trial 2 consisted of a yield trial which contained 3 N sources (urea, Agrotain Advanced-urea and ANVOL-urea) and 4 application timings (15-, 10-, 5-, and 1-days pre-flood). Trial 3 was a field volatilization trial which utilized the semi-open chamber method and the same treatments included in trial 2. In trial 1, cumulative volatile N loss from urea (25.9%) was significantly greater than Agrotain Advanced-urea (7.1%) and ANVOL-urea (6.8%) on the Crowley soil. Cumulative volatile N losses from urea (32%) was significantly greater than Agrotain Advanced-urea (10.5%) and ANVOL-urea (11.3%) on the Mowata soil. In trial 2, mean rice yield was significantly greater for Agrotain Advanced-urea (6,692 kg ha<sup>-1</sup>) and ANVOL-urea (6,496 kg ha<sup>-1</sup>) as compared with urea (3,885 kg ha<sup>-1</sup>) when applied 15-days pre-flood. Mean rice yield was significantly greater for Agrotain Advanced-urea (9,022 kg ha<sup>-1</sup>) and ANVOL-urea (9,014 kg ha<sup>-1</sup>) as compared with urea (6,397 kg ha<sup>-1</sup>) when applied 10-days pre-flood. Rice yield was not significantly different between N sources when applied 5- or 1-days pre-flood. In trial 3, cumulative ammonia volatilization losses from urea (26.7%) were significantly greater than both Agrotain Advanced-urea (7.7%) and ANVOL-urea (6.8%).

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