

SAMPLE ABSTRACT

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ABSORPTION OF MOLECULAR UREA BY RICE UNDER FLOODED AND NON-FLOODED CONDITIONS

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A pot culture experiment was conducted with rice to study the relative absorption of urea in molecular form compared to the other forms of N produced in soil from the applied urea. A method involving application of ¹⁴C-labelled urea and ¹⁵N-labelled urea alternately in two splits was used to quantify the absorption of molecular urea and other forms of N formed from it. Biomass production and N uptake were greater in plants growing under flooded soil conditions than in plants growing under non-flooded (upland) conditions. Absorption of N by rice increased with increasing rate of urea application up to 250 mg pot⁻¹ and declined thereafter. The absorption of urea from the flooded soil constituted 9.4% of total N uptake from applied N compared to only 0.2% from the non-flooded. Under submerged conditions, absorption of urea from topdressing was about twice that from basal application at planting. High water solubility of the fertilizer and better developed rice root system might have enhanced the absorption of molecular urea by flooded rice, especially from topdressing. Thus, in the flooded rice system, the direct absorption of molecular urea from topdressing accounted for 6.3% of the total N uptake from added urea. Under upland condition, it was 0.12%.

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