

Nitrogen Use Efficiency, Crop Productivity and Environmental Impacts of Urea Deep Placement in Lowland Rice Fields

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Urea Deep Placement (UDP) in Lowland Rice Fields

Broadcast method

- Nitrogen recovery (RE_N): 30 – 50%
- Losses to the environment— Leaching, Surface runoff, ammonia volatilization, N_2O and NO emissions

Deep placement

- Increase RE from 30-50 % to 70-75%
- Increase in grain yield up to 20% while saving 30% urea fertilizer

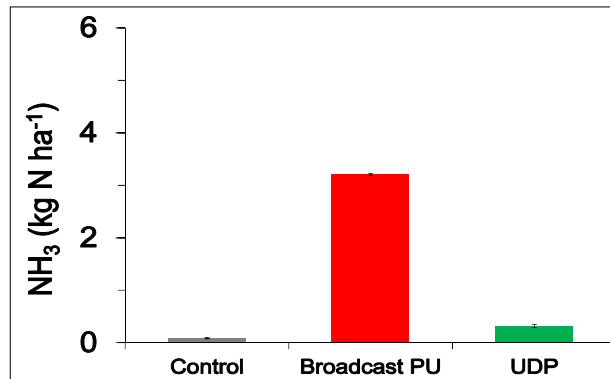
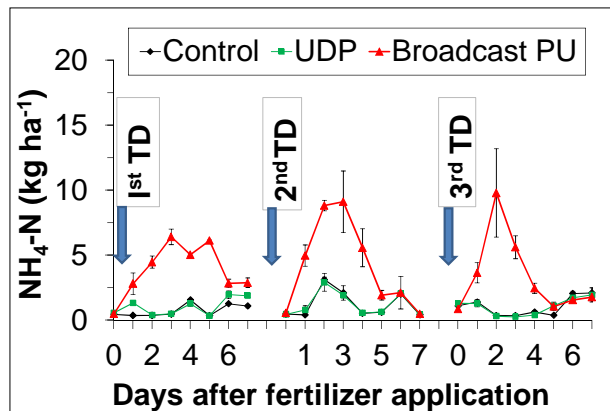
Urea Briquette

NPK Briquette



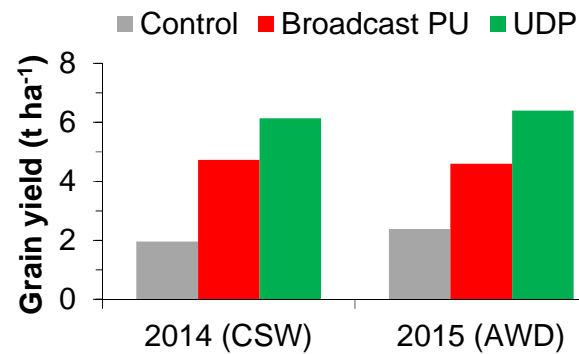
UDP: More Grains with Less Urea

Reduces NH_4 in Floodwater and NH_3 Volatilization



Increases Yields and NUE

- UDP increased grain yields by 21% compared to broadcast PU.
- Doubled the NUE over broadcast PU (35 %vs 70%)



UDP Reduces GHG N₂O and NO emissions

- Reduced emissions by up to 80% as compared to broadcast PU under continuous standing water (CSW) management regime.
- The effects of UDP under the AWD water management regime were site specific depending on the duration and intensity of soil drying.



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