

Laboratory evaluation on ammonia volatilization from coated urea fertilizers

ABSTRACT

Coated urea fertilizers are assumed to enhance crop yield and reducing the environmental pollution. Nevertheless, many of the coated urea fertilizers are expensive, thus not readily available for most farmers. In addition, many of these fertilizers release N not in tandem with the plant's need, thus retard growth. Therefore, a laboratory study was conducted to evaluate effects of coated urea fertilizers on N losses via volatilization. Measurement of ammonia volatilization was carried out using the closed-dynamic air flow system. The study for ammonia volatilization was conducted using different rates of fertilizer (50, 100, and 200 kg N ha⁻¹) with different types of fertilizer (Urea, Sulfur-coated urea; SCU and Gypsum sulfur coated urea using rotating drum; GSCUD) in 37 days of incubation. The results indicate that SCU represents the best fertilizer which decreases the amount of ammonia volatilization at each rate of fertilizer. Besides, the rate of 50 kg N ha⁻¹ has the lowest percentage of ammonia volatilization. Moreover, the result proved the effectiveness of coating urea fertilizer may reduce the ammonia loss to the environment and new product which GSCUD can be comparable to the commercial product

Keyword: Ammonia volatilization; Coated urea fertilizer; Flooded soil; Incubation study