How Can We Reduce Volatilization Losses? (A09-bundy174416-Oral)

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Abstract:

More than 50% of the N fertilizer used in the USA contains urea. To optimize the agronomic performance of these fertilizers, N losses through ammonia volatilization must be controlled. Ammonia losses from urea-containing fertilizers are influenced by urea reactions in the soil and by soil, climate, and management factors. Surface applications, no rainfall after application, high crop residue cover, warm temperatures, and initially moist soils favor volatilization losses. Even when conditions are ideal for ammonia loss, the actual losses seldom exceed 20% of the applied N. Nitrogen source comparisons with surface-applied materials often show better performance with non-urea fertilizers due to N losses from urea. Urease inhibitors can reduce ammonia loss, but economic benefits of these inhibitors are not consistent. Winter applications of urea on frozen soils and spring preplant applications on sandy soils may be subject to losses. Control measures for ammonia loss include incorporating or injecting urea-containing fertilizers, using non-urea N sources for surface applications, and using a urease inhibitor where the risk of volatile losses is high.

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