

MANAGEMENT ALTERNATIVES FOR UREA USE IN WHEAT PRODUCTION

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Abstract

Traditionally, urea has been incorporated to avoid losses of N by ammonia volatilization. However, this option is not available when topdressing wheat. The objective of this project is to evaluate several strategies designed to reduce the risk of ammonia volatilization loss from urea topdress applied on wheat. The tested strategies included treating urea with Agrotain (a urease inhibitor) or Agrotain + dicyandiamide (DCD), and use of coated urea products. Fertilizers were applied at a rate of 80 kg N ha⁻¹. In 2004, wheat yields were low and none of the strategies designed to reduce N loss resulted in higher wheat yields with 95% confidence. However, the weather was favorable for ammonia volatilization and there was evidence from both yield and reflectance that urea + Agrotain + DCD was more effective than urea in delivering N to the crop. In 2005, urea + Agrotain, urea + Agrotain + DCD, and ammonium nitrate produced higher yields when compared with broadcast urea. The addition of a timing effect for the 2005 experiment resulted in a significant and large yield response when treatments were applied in March compared to in January. Application of polymer- and gel-coated urea did not improve wheat yield relative to urea in either year. Agrotain + DCD was the most effective treatment for increasing yield and profitability from urea over the two study years.