EFFECTS OF AMMONIUM THIOSULFATE AND AMMONIUM SULFATE ON SOIL NITROGEN AND SULFUR DYNAMICS IN CORN

K. Campbell, K. A. Nelson, G. Singh, and G. Kaur
University of Missouri, Columbia, MO
kec2ct@missouri.edu 660-739-4410

ABSTRACT

Sulfur (S) has become an increasingly relevant nutrient for high yielding corn due to decreased atmospheric deposition and increased crop removal. Ammonium thiosulfate (ATS) and ammonium sulfate (AMS) are two common sulfur fertilizers used in corn production. Research has shown that ATS has nitrification inhibitor properties. However, its efficacy under field conditions is variable and generally less pronounced compared to other established nitrification inhibitors. The objective of this research was to evaluate the effects of ATS and AMS on soil inorganic nitrogen and sulfur and corn grain yield. Field research was conducted at the University of Missouri Lee Greenley Jr. Memorial Research Farm near Novelty, MO in 2026 and will continue in 2027. Nitrogen was applied at 0, 61, 123, 184, 246, and 300 lb N $acre^{-1}$. Additionally, ATS and AMS were applied with nitrogen at 123 and 184 lb N $acre^{-1}$ at three different rates. Treatments with nitrapyrin or dicyandiamide (DCD) plus N-(n-butyl) thiophosphoric triamide (NBPT) were included. Fertilizer was incorporated into the soil prior to planting. Soil samples were collected periodically throughout the corn growing season and analyzed for water-extractable nitrate (NO_3^-), nitrite (NO_2^-), ammonium (NH_4^+), and sulfate (SO_4^{2-}). Preliminary results from the first year of the study will be presented.