SOIL EXCHANGEABLE NITROGEN RETENTION AT VARIOUS SOIL DEPTHS IN IRRIGATED COTTON PRODUCTION

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Abstract

Nitrogen management in row crop production systems is better understood with more data on various forms and amounts of soil exchangeable nitrogen throughout the soil profile. A field research was conducted in cotton (*Gossypium hirsutum* L.) under two furrow tillage treatments (conventional and conservation plow) and two fertilizer treatments (broadcast urea and side dressed UAN) each applied at a rate of 101 kg N ha^{-1} arranged in a random complete block design with three replicates. Soil samples were then collected at four depth ranges (0-15 cm, 15-30 cm, 30-60 cm, 60-90 cm) and analyzed for concentrations of NH_4-N, NO_3-N, and NO2-N. Early season results show that higher concentrations of NH_4-N and NO_3-N (NO3-N being the highest amount and dominant form of N among all forms), were typically found in the shallower depths for both tillage treatments, while NO_2-N was more concentrated at the lower depths, regardless of tillage and fertilization combination. The type and form of N fertilizer applied influenced the concentrations and type of N found in surface layer of soil. Beyond 30 cm soil depth concentrations of all N forms were small. More measurements are being conducted throughout growing season to determine the movement of different forms of exchangeable N in the soil profile as affected by tillage and N fertilizer application.