Effects of Subsoil Compaction and Subsoiling on N Availability from Poultry Manure. (S04-motavalli185342-Poster)

Authors:

- G.Hartwig* - *University of Missouri*
- P.P.Motavalli - *University of Missouri*
- W.E.Stevens - *University of Missouri*
- D.Dunn - *University of Missouri*

Abstract:

Subsoil compaction may lower crop yields by reducing the availability of nutrients and water in soil. The objectives of this study were to determine the effects of subsoil compaction on N availability and to evaluate the use of deep tillage and application of poultry manure to remediate subsoil compaction. A field experiment planted with corn (Zea mays L.) was conducted from 2000 to 2001 in Southeast Missouri. Treatments were subsoiling , 4 levels of subsoil compaction, and 4 rates of poultry manure arranged in a randomized complete block design with 4 replicates. Subsoil tillage to a depth of 30 cm had multiple effects, including overcoming a natural or tillage-induced dense layer and increasing volumetric soil moisture and crop N uptake during 2001. Nitrogen recovery efficiency was higher in the subsoil treatment. Subsoil tillage increased grain yields 2002 kg ha-1 in 2000 and 3504 kg ha-1 in 2001. Applications of poultry manure increased both grain yield and N uptake. Subsoil tillage and applications of organic amendments may reduce losses in crop yield due to subsoil compaction in sandy-textured soils.

Corresponding Author Information:

Peter Motavalli
University of Missouri
302 ABNR Building
Columbia, MO 65211

phone: (573)884-3212
fax: (573)884-5070
e-mail: motavallip@missouri.edu

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