

## UNDERSTANDING NITROGEN DYNAMICS AND ITS FATE IN INORGANIC FORMS IN SANDY SOILS UNDER A COVER CROP SYSTEM IN FLORIDA

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Florida continues to experience water quality impairments from excess nutrient pollution, especially from nitrogen (N) and phosphorus. Causes include loss of nutrients due to leaching, soil erosion and stormwater runoff from agricultural and urban areas. The incorporation of cover crops in agricultural cropping systems may be considered as a solution to reduce this problem. The overall objective of this study is to increase the understanding of soil inorganic N cycling in sandy soils with cover crops and to examine how cover crops influence soil N fertility and crop yields. The two-year experiment is being carried out in a vegetable system with four cover crop treatments: sunn hemp (SH), sorghum sudangrass (SS), a 50/50 mixture of sunn hemp and sorghum sudangrass (MX), and a weed fallow that serves as a control (CT). Soil samples are collected at depths of 0-15cm, 15-30cm and 30-60cm and analyzed for KCl extractable  $\text{NO}_3^-$  and  $\text{NH}_4^+$  as well as for net-mineralization and nitrification following cover crop incorporation into the soil. Plant tissue samples are being analyzed for total N and C. Average total N in the plant tissue for SH, SS, MX, and CT was 31, 10, 31 and 18 mg/g respectively. C:N ratio was highest in SS biomass (42) and lowest in SH (13). Preliminary results also indicate that inorganic N (especially  $\text{NO}_3^-$ ) generally decreased with soil depth across treatments and continuing work is focused on quantifying net mineralization and nitrification after cover crop incorporation, with the goal of assessing N availability and potential leaching among the treatments.

**PRESENTER BIO:** Mr. Juma Bukomba is a third-semester M. S. student at University of Florida. He has been passionate about reducing nutrient losses from agricultural fields into water bodies for instance his bachelor's project focused on using biocarbon from pineapple residues to reduce nutrient leaching from the soil.