030-AGR

Title: Can perennial forage systems be more sustainable and resilient compared to conventional annual cropping systems?

Abstract

Annual row crops require frequent tillage operations that may negatively a) ect soil organic matter and other soil health indicators whereas perennial forages promote plant-nutrient availability through decomposition of aging grass biomass, and reduce nutrient loss. The goal of this study was to assess soil health in between dominant annual system and perennial systems in Central Tennessee. We compared soil chemical, physical, and microbial properties of soil for annual crop Jelds, perennial grass monoculture Jelds, grass-alfalfa mixture Jelds, and alfalfa monoculture Jelds at 0M5 cm depth in fall of 2024. The elevated soil health indicators in perennial forage systems compared to annual row crop production systems indicated that perennial forage system is more sustainable system for soil health. The second sampling in the spring of 2025 from the same Jelds will give more power to detect the small di) erences in soil health between four cropping systems.