

Soil Chemistry and Fertility

Optimized Soil Management for Resilient Agriculture Production

TEXAS A&M
AGRI LIFE

RESEARCH AND EXTENSION
CENTER AT LUBBOCK



Science-driven solutions for sustainable soils & resilient agriculture

Dr. Katie Lewis is an agricultural and environmental soil scientist whose research advances sustainable soil management in semi-arid agricultural systems. Her work spans soil health, nutrient efficiency, and water conservation—critical areas for the future of cotton production and land stewardship.

She investigates how conservation practices influence greenhouse gas emissions and carbon sequestration. In 2022 and 2023, she led one of the largest carbon assessments in Texas, sampling soils across 85 fields representing 11 million hectares. This effort supports a \$10 million project with global relevance for semi-arid regions.

Her research also focuses on optimizing nitrogen use for modern cotton cultivars. These newer varieties are more resilient and efficient, requiring less nitrogen to meet yield goals. In the Texas High Plains, her findings suggest that reducing nitrogen application from 50 to 35–40 pounds per bale could save producers between \$47.7 million and \$71.6 million annually.

As water resources decline and extreme weather becomes more frequent, Dr. Lewis's work on soil and water conservation helps producers adapt and thrive. Her program combines rigorous science with practical solutions, contributing to the long-term sustainability of agriculture in Texas and beyond.

KATIE LEWIS PH.D.

Professor

AgriLife Research - Lubbock Center

katie.lewis@ag.tamu.edu

BIO

Dr. Katie Lewis is an agricultural and environmental soil scientist specializing in sustainable soil management. She earned her B.S. in Chemistry (2008) and M.S./Ph.D. in Soil Science (2010/2014) from Texas A&M University. Since joining Texas A&M AgriLife and Texas Tech University in 2014, her research has focused on soil health, nutrient management, and conservation practices. Dr. Lewis has published 55 peer-reviewed papers, secured \$7.7 million in program funding, and mentored numerous Ph.D. students—25% of whom now hold academic positions.