STRIP TILLAGE REDUCES RUNOFF AND SEDIMENT EROSION AND INCREASES SOIL CARBON STORAGE IN A SANDY GEORGIA SOIL

Conservation tillage, in the form of strip tillage, decreased runoff by 2.5-fold, sediment by 3.5-fold, and sediment carbon losses by 7-fold while increasing soil organic carbon by 20% within 6 years of implementation in a cotton-peanut rotation. On average, 82% of total rainfall infiltrated into the strip till soil, compared to 58% for conventional till treatments. Assuming all infiltration is available for crop use and evapotranspiration is equal to 6 mm per day, the strip till treatment would have 42% more days of water for crop use compared to the conventional till treatment. Carbon enrichment ratios (ER) of sediment lost during rainfall erosion events were consistently at or below 1.0 from strip till plots and at or above 1.0 from conventional till plots. The estimated potentials for total carbon export for strip versus conventional till fields were 549 and 3220 kg ha^{-1}, respectively.