Linking Soil Quality to Economics Using Management Practice Indicators. (S03-cambardella181137-Oral)

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Abstract:

Numerous studies have shown that particulate organic matter C (POMC) is a sensitive indicator of soil quality change in agricultural systems. The feasibility of using POM C as a surrogate for net economic return, a management practice indicator, was evaluated for cropping rotations at 3 sites in the Upper Midwest. POM C content ranged from 4.6 to 9.6 Mg/ha across all cropping systems for the 3 sites and continuous corn (CC) had the lowest POM C content at 2 of the 3 sites. Net economic return ranged from -285 to +41 US dollars (USD)/ha across all cropping systems for the 3 sites and CC had the lowest net return (-232 to -285 USD/ha) at all 3 sites. We found the highest POM C levels in the multi-year rotations containing oat/alfalfa and alfalfa. The corn-soybean rotation showed the highest net return at 2 sites but the only instance where net return was positive was for a 4-yr corn-oat/alfalfa-alfalfa-alfalfa rotation at Kanawha, IA. We conclude that POM C content is positively correlated with net economic return and can potentially be used to link soil quality to economic indicators.

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