IMPLICATIONS FOR SOIL HEALTH: ASSESSING CROP MANAGEMENT SYSTEMS AND COVER CROPS ON MID-OHIO GLACIATED SOILS

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ABSTRACT

No-till crop systems that include diverse crop rotations and cover crops can contribute to soil organic carbon pools, provide needed food, shelter, and habitat for soil biota and play a key role in building and maintaining healthy soils. Physical, chemical and biological test indicators are important for assessing soil health. The research hypothesis was that the use of cover crops and a no-till crop management system would improve soil health compared to a conventional corn-soybean production system. Soil health indicators from surface soils were collected in Fairfield County, Ohio. The objectives of this study was to compare soil physical, chemical, and biological indicators across management systems on three landscape positions. Wet aggregate stability was significantly different in the progressive management and showed a 62% increase over the conventional management. Active carbon was significantly different in the progressive management and showed a 21% increase over the conventional management. Fungi PLFA biomarkers were significantly different in the transitional management and showed a 41% increase over the conventional and 42% increase over the progressive management. AM Fungi PLFA biomarkers were significantly different in the transitional management and showed a 29% increase over conventional, and 10% increase over the progressive management. Landscape position did not have significant effects on soil health parameters across management systems.