



Tillage and cropping intensity impact on soil carbon: a soil health perspective. Jason Morrow, WSU, and David Huggins, USDA-ARS

Soil health is defined as “The capacity of a soil to function within ecosystem boundaries to sustain biological productivity, maintain environmental quality, and promote plant and animal health.” Ultimately, any procedure for assessing soil health must be sensitive to variation in climate and management practices such as tillage and cropping intensity. Carbon and nitrogen cycling within soils are critical to many important soil processes such as nutrient mineralization, nitrification and denitrification. We present several methods of measuring active and stable pools of soil organic matter and the sensitivity of these methods to tillage and cropping intensity across sites in different agroecosystem classes.

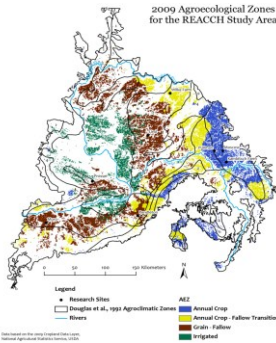


Fig. 1. Location of study sites within REACCH study area including agro-ecological classes (AEC).

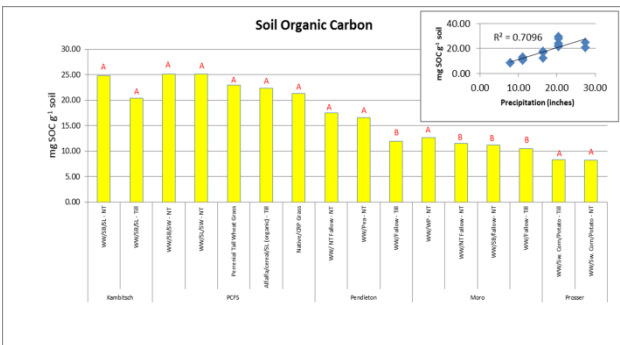


Fig.2. Soil organic carbon for 5 sites across a precipitation gradient. Letters show significant differences within sites across treatments (significant at $p < 0.05$).

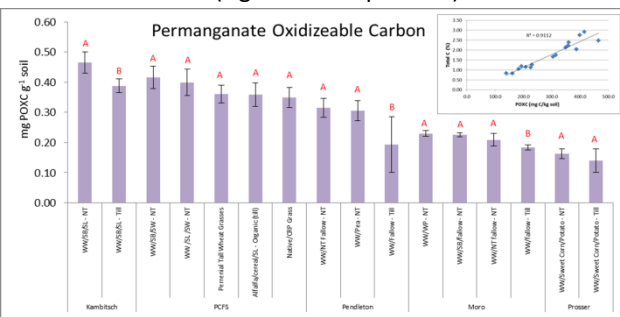


Fig. 3. POXC for 5 sites. Inset graph shows relationship of POXC with Total C.

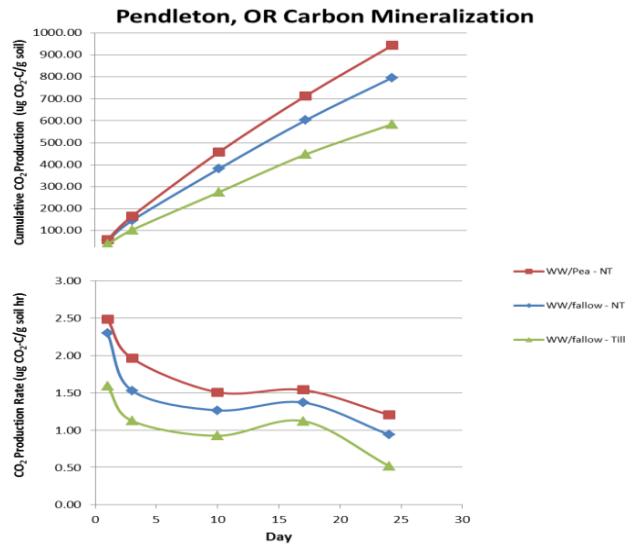


Fig. 4. Carbon mineralization rates and cumulative amounts for Pendleton plots at 1, 3, 10, 17, and 24 days.

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