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Natural Resources Research Update

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Title: Reduced tillage intensity and incidence of fallow combined with crop rotation improves soil quality in the Great Plains.

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Text: Soils perform essential functions related to storing and filtering water, cycling nutrients, and serving as a substrate for crop growth. Management practices are known to effect soil function. A multi-location study was conducted to compare traditional cropping systems to alternative cropping systems (Wienhold et al., 2006). The traditional systems were characterized by conventional tillage, monoculture cropping, and use of fallow. The alternative systems utilized reduced or no-tillage, crop rotation, and reduced incidence of fallow. A standardized protocol was used to measure soil indicators associated with various soil functions. Percentage water-filled pore space, aggregate stability, particulate organic matter, and microbial biomass were indicators for soil functions related to water storage and nutrient cycling and responded to management. Soil quality improved with a reduction in tillage intensity and incidence of fallow, and use of crop rotation. Producers should incorporate practices that improve soil quality into their production systems to insure that essential soil functions are maintained.

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Wienhold, B.J., J.L. Pikul, Jr., M.A. Liebig, M.M. Mikha, G.E. Varvel, J.W. Doran, and S.S. Andrews. 2006. Cropping system effects on soil quality in the Great Plains: Synthesis from a regional project. *Renewable Agriculture and Food Systems* 21:49-59.

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