## Soil Quality Assessment in Alternative and Conventional Cropping Systems. (S05-kuratomi071819-Poster)

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## Abstract:

Many farmers in southwestern Minnesota feel 'locked-in' to a 2-year cornsoybean rotation despite evidence that diversified rotations can have superior net economic returns. Long-term experimental plots at the Southwest Research and Outreach center comparing alternative practices (diversified crop rotations, reduced inputs, and organic management) to more conventional practices, in historically high and low fertility fields, have been ongoing since 1989. Soil quality measurements of a 4-year crop rotation (corn-soybean-oat/alfalfa-alfalfa) compared to a 2-year (corn-soybean) rotation managed under alternative and conventional management systems demonstrated that soils in the 4-year rotation were more biologically active and had better physical characteristics than the 2-year rotation. Both two and four year rotation management systems that reduced tillage had greater aggregate stability and microbial biomass. In the 4-year rotation, the adverse effect of increased tillage on soil structure in the organic management system was ameliorated. Paired field comparisons of the same parameters on-farm were also made.

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