Soil aggregation dynamics under riparian pastures, forests and croplands in NE Missouri. (S11-schultz161608-Poster)

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Abstract:

Soil quality studies have been conducted under riparian pastures, forests and crop fields in Crooked, Otter and Long Branch Creek watersheds in NE Missouri. Crooked has >50% and Otter <30% sand in the upper 30 cm. Clay is >35% in Otter and less <13% in Crooked. Long Branch Creek soils are more similar to Otter Creek soils. Soil texture, organic matter and land use are important in soil aggregate development. In general, we find slightly more stable large macroaggregates in pasture than forest soils (14.5 g/100g soil vs 9.3 g/100g soil) with little variation over the seasons. Stable large macroaggregates in crop soils are 2 g/100g soil. For both the forest and pasture Crooked Creek, with its sandy texture, has an average of 6g /100g of soil vs 19g/100g of soil for the other two creeks. There are no differences between creeks for the large stable macroaggregates under crops probably because of annual cultivation and lower organic matter. Large stable macroaggregates are the most important for creating high soil quality. There are 2-10 times more unstable than stable large macroaggregates between land use practices with the highest differences in the crop soils.

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