Soil Structure,C and N Changes Under Different Management Systems in Northern Alberta, Canada. (S06-arshad163947-Poster)

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Abstract:

Crop management systems can alter soil quality, which is important for sustainable crop production. In 1992, we established a study on Albright silt loam (Mollic Cryoboralf) to evaluate the impact of crop rotations on soil structure, and the amount and quality of organic C and N in northwestern Canada. The crop rotations were: wheat-wheat-fallow (WWF); wheat-wheat-wheat (WWW); continuous fescue and continuous bromegrass. At the end of 10 years, there were significant improvements in the surface (0-10 cm) soil structure under WWW and forage grasses as compared to WWF. No significant differences occurred in total C and N. However, soil microbial biomass C (SMBC), potential N mineralization (NMIN), and organic light fraction (LF) were affected by management. Under forages, SMBC was 20 to 39% greater than under WWW and WWF. SMBC and LF followed the order: bromegrass > fescue > WWW > WWF, while NMIN followed the order: bromegrass > WWF > fescue > WWW. Overall, soil quality under forage grasses was better than under either continuous wheat or wheat-fallow system.

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