Dynamics of C, N, P in N-15 Labeled Soil from the Breton Classical Plots under Laboratory Conditions. (S03-juma163236-Poster)

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Abstract:

The Breton Classical Plots were established on Typic Haplocryalfs in 1929. The objective of this study was to assess the impact of P on soil organic matter dynamics in 15N-labeled soils from four, limed treatments (Manure, NPKS, NKS(-P) and Check) of the 5-yr forage-cereal and 2-yr wheat-fallow crop rotations at Breton, Alberta under laboratory conditions. Field moist 15N-labeled soils from the 0-12.5 cm depth were incubated over 16 weeks to quantify soil C and N mineralization, extractable P, and dynamics of microbial biomass C, N, and P under standard laboratory conditions. The average total P and extractable P contents in the NKS(-P) and Check treatments were significantly lower than in the Manure and NPKS treatments. The amounts of net N and 15N mineralized were significantly lower in the treatments without P compared to those with P. The ratios of mineralized 15N to total 15N were significantly lower in the NKS(-P) and Check treatments compared to those in the Manure and NPKS treatments in both rotations. The turnover rates of 15N were controlled by the availability of P under laboratory conditions. The impact of available P on soil C sequestration needs further study.

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