Mineralization of Nitrogen in a Clay Loam Soil Amended with Composts, Red Clover and Liquid Pig Manure. (S04-yang133231-Poster)

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Abstract:

The availability of nitrogen (N) is one of key factors governing the amounts of organic amendments that can be applied to soil. We evaluated the N availability of yard waste compost (YW), liquid pig manure (LPM), LPM + wheat straw compost (PMS) and red clover (RC) by adding them to a clay loam soil and then growing ryegrass in a greenhouse potting experiment. All amendments supplied a considerable amount of N to the ryegrass crop and plant biomass was proportionally increased by 64.3%, 163.9%, 39.6% and 46.7%, respectively, relative to the control. Total plant N uptake over 20 weeks followed the pattern ($P<0.05$): LPM (124.5 mg N kg-1 soil) > YW (56.7 mg N kg-1 soil) = RC (49.3 mg N kg-1 soil) = PMS (46.3 mg N kg-1 soil) > control (33.6 mg N kg-1 soil). The N recovery in the ryegrass biomass and soil residual mineral N was -39.9%, 18.6, 45.6 and -9.3% for LPM, YW, RC, and PMS, respectively, as compared to the initial mineral N in soil and amendments. Hence net N mineralization occurred with YW or RC addition whereas immobilization and/or denitrification occurred when LPM or PMS was added to the soil.

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