

Influence of a drying phase on K-transformation in a continuously flooded limed and the corresponding unlimed soil

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Abstract

A laboratory experiment was conducted to study the effect of a drying phase on transformation of different fractions of K in a continuously flooded limed and the corresponding unlimed soil in presence and absence of N and K fertilizers. Results of the investigation revealed that irrespective of treatments, water soluble K decreased significantly with increase in the period of incubation. **Liming and maintenance of a drying phase intensified the decrease of water soluble K in waterlogged acid soil.** Addition of N along with K disturbs the K-equilibrium in soil **as** both K^+ and NH_4^+ compete for the same exchange sites. The increase in exchangeable K and concomitant decrease in non-exchangeable K in limed soil suggests a dynamic equilibrium between these two forms of K in soils. Maintenance of a drying phase in presence of N and K fertilizers released non-exchangeable K in limed soil. However, treatment of limed soil with 1N boiling HNO_3 released more K in presence of only K than N plus K. Changes in lattice K followed exactly an opposite trend of results with respect to non-exchangeable and 1N boiling HNO_3 extractable K; **which** again **suggests** a dynamic equilibrium between **them**. Total K is not significantly influenced due to liming and maintenance of a drying phase in waterlogged acid soil over 90-day period of incubation.

Keywords: Potassium fractions, Wetting and drying cycles, liming, flooded soil

