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DISTRIBUTION OF DIFFERENT POTASSIUM FORMS IN SOIL UNDER LONG-TERM APPLICATION OF MINERAL AND ORGANIC FERTILIZERS

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ABSTRACT

This study was conducted to monitor the changes in different forms of soil K. The study concerned analysis of soil taken from an experiment having different NPK, FYM executed in a randomized complete block design. The treatments were eleven as follows: - N₃₆, N₃₆-P, N₃₆-P-K, N₇₂, N₇₂-P, N₇₂-P-K, N₁₄₄, N₁₄₄-P, N₁₄₄-P-K, organic (FYM), and control (no fertilizer or manure). The subscript values of 36, 72 and 144 are rates of applied N in kg/ha. For P and K, rates were 20 and 96 kg/ha respectively.

The distribution of different forms of the potassium in these soils for water soluble, exchangeable, available, non-exchangeable, lattice and total ranged from 12.5 to 57.5 mg/kg, 325.0 to 668.7 mg/kg, 337.5 to 726.2 mg/kg, 425.0 to 1100.0 mg/kg, 823.8 to 1327.5 mg/kg and 1887.0 to 2700.0 mg/kg, respectively. Correlation study showed that the various forms of K were positively and significantly correlated among each other except for the lattice form. The various forms of K were positively correlated with EC, organic matter, CaCO₃ and clay but negatively correlated with pH, sand and silt content except for the lattice form. Concentration of some macro and micronutrients in berseem (*Trifolium alexandrinum*) plants i.e. N, P, K, and Fe. Mn and Zn were significantly and positively correlated with the water soluble, exchangeable, available, non-exchangeable and total but negatively correlated with lattice K.

Keywords: correlation, distribution, long term fertilization,
potassium forms.