

# Estimation of Nitrogen Mineralization Potential under Organic Production System

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**Abstract**—With a view to understand organic nitrogen mineralization under organic farming systems, soils were sampled from well-recognized organic farms of New Alluvial Zone. Soils from conventional farms of those regions were also collected and treated as check for the purpose. A set of extractants comprising graded strength of NaOH [0.125 to 1.0 (M)], with 0.05 (M) EDTA were used to extract different organic nitrogen fractions. With the use of first-order kinetics model, organic N mineralization rate, half-life of residual organic N and their mean residence time (MRT) of different organic N fraction extracted by different extractants were estimated under both organic and conventional farms. Net organic N mineralized from different fractions was also worked out. The first order model well narrated the mineralization of different fractions of organic nitrogen extracted by basic EDTA extractant. Organically managed farms manifested faster mineralization with shorter half-life and mean residence time. Overall results showed that in most cases 0.5 (M) NaOH + 0.05 (M) EDTA extractable organic N was identified as the most potential as measured by predicted mineralized N. The outcome of the present exercise will help to develop novel soil tests method for routine nitrogen estimation to serve the need of organic farmers.

**Keywords:** Basic EDTA, First-order kinetics, Half-life, Mean residence time, Organic Nitrogen, Organic Nitrogen mineralization.