

Impact of organic sources of nutrients and fertilizer management practices on secondary and micronutrients status in sunflower grown alluvial soil

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ABSTRACT

Adequate quantity of manure and fertilizers use as nutrient management are directly change in soil and plant properties. A field experiment was conducted in 2022 and 2023 at the agricultural farm of Shri Murali Manohar Town P.G. College, Ballia, by used twelve treatment combinations of organic resources viz and chemical fertilizers to assessed the effects of organic manures and inorganic fertilizers on soil fertility paradigm. Two-year pooled data revealed significant variations in nutrient availability. The highest available sulfur (12.1 mg kg^{-1}) was recorded in T_9 (GL @ 40 t ha^{-1}), exchangeable calcium ($8.75 \text{ cmol (pz) kg}^{-1}$) and calcium carbonate (2.09%) in T_3 (PM @ 10 t ha^{-1}), and magnesium ($4.9 \text{ cmol (pz) kg}^{-1}$) in T_2 (PM @ $8 \text{ t ha}^{-1} + 50\% \text{ RDF}$). Maximum available micronutrients were observed as follows, boron (0.48 mg kg^{-1}), zinc (0.63 mg kg^{-1}), and iron (8.48 mg kg^{-1}) in T_{11} (100% RDF + $40 \text{ kg S ha}^{-1} + 12 \text{ kg Zn ha}^{-1} + 3 \text{ kg B ha}^{-1}$), copper (0.85 mg kg^{-1}) in T_6 (C @ $20 \text{ t ha}^{-1} + 50\% \text{ RDF}$), and manganese (7.62 mg kg^{-1}) in T_2 (PM @ $8 \text{ t ha}^{-1} + 50\% \text{ RDF}$). These findings highlight the efficacy of integrated nutrient management in enhancing secondary nutrient and micronutrient availability, supporting sustainable soil fertility and sunflower productivity in alluvial soils.

Keywords: *Inorganic fertilizer, Micronutrients, Organic manures and Secondary Nutrients.*