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Influence of Organic, Chemical, and Integrated Management Practices on Soil Organic Carbon and Soil Nutrient Status under Semi-arid Tropical Conditions in Central India

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Abstract

Soil organic carbon (SOC), macro- and micronutrient status, and nitrogen (N) mineralization were studied in a soil profile managed with organic (OMP), chemical (CMP), and integrated (IMP) management practices. The results showed that SOC and N status were significantly higher in the OMP and IMP treatments compared to the CMP treatment. The SOC content was 7.3% more in the OMP treatment, and the N content was 1.5% more in the IMP treatment. The mineralization of N was significantly higher in the OMP and IMP treatments compared to the CMP treatment. The ammonium N content was significantly higher in the OMP and IMP treatments compared to the CMP treatment. The surface layer of the soil was less affected by the management practices.

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in the OMP and IMP plots. The OMP and IMP had a significantly greater mineralization rate of N than did CMP, and it was greatest in the top 0- to 15-cm soil layer.

Keywords: Durum wheat macronutrients micronutrients nitrogen mineralization soybean Vertisol

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