

Title: The Manure Connection: Enhancing crop yield and soil wellbeing

Presenting Author Details:

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Abstract:

Nutrient recycling through manuring in sequential cropping is a sustainable and efficient way to enhance crop productivity, improve soil health, and encourage carbon sequestration, in organic farming system. The residual effects of different organic manures applied to finger millet on groundnut performance were assessed in a five-year study, with a focus on crop yield, soil health, biological activity, and carbon sequestration. During the kharif season, finger millet was grown with the application of well-decomposed farmyard manure, vermicompost, residue-free urban compost, antibiotics-free poultry manure, neem seed kernel cake, and biodigester liquid organic manure—all applied on a nitrogen-equivalent basis. The summer groundnut crop was cultivated without any additional inputs, relying solely on residual nutrients. Among all treatments, Poultry manure free from antibiotics recorded the highest performance, with finger millet yield at 3184 kg/ha and groundnut kernel yield at 1338 kg/ha (5325 kg/ha finger millet equivalent yield). Soil organic carbon improved from 0.54% to 0.61%, and carbon sequestration reached 58.69 t/ha over five years. Soil biological indicators significantly improved: bacterial, fungal, and actinomycete populations reached 39.63×10^6 , 24.24×10^4 , and 26.87×10^3 CFU g⁻¹, respectively. Enzymatic activities—dehydrogenase (60.47 µg TPF g⁻¹ day⁻¹), phosphatase (34.30 µg PNP g⁻¹ hr⁻¹), and urease (10.52 µg NH₄-N g⁻¹ hr⁻¹) also increased. Earthworm population rose from 60,000/ha to 350,000/ha, indicating enhanced soil structure and health. This study demonstrates that nutrient-rich organic inputs applied in the first crop can sustain the succeeding crop's

productivity without additional fertilizers. Residue-based nutrient cycling offers a viable path toward climate-smart and input-efficient organic farming, particularly for rainfed and semi-arid regions.

Biography:

Dr. Boraiah, B. is Professor and Coordinator at the Research Institute on Organic Farming, University of Agricultural Sciences, Bangalore, Karnataka, India. He holds a Ph.D. in Agronomy from UAS, Bangalore, with over 20 years of experience in research, teaching, and administration. His expertise includes organic and natural farming, soil and water conservation, cropping systems, and soil health management. He has authored over 54 scientific publications, including in reputed international journals. He has presented at national and international forums, including the Organic World Congress in Taiwan, and delivered several radio talks, TV programs, and training sessions for farmers, FPOs, students, and the public. He has received over 20 awards for his contributions. His work includes organizing national and international events and developing organic technologies for groundnut, niger, and sunflower, adopted in the UAS Package of Practices.

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Notes or Comments:

No additional comments at this stage.