

EFFECT OF WOOL WASTE AND INORGANIC FERTILIZERS ON PRODUCTIVITY OF BOTTLE GOURD (*LAGENARIA SICERARIA*) AND SOIL PROPERTIES OF LOAMY SAND SOIL

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Abstract: A field experiment was conducted on effect of wool waste and fertilizers on productivity of bottle gourd (*Lagenaria siceraria*) and soil properties of loamy sand soil at research farm of Agriculture Research Station, SKRAU, Bikaner during Kharif, 2018. The experiment consisted ten treatments viz., T₁- Control, T₂- Recommended dose of fertilizer, T₃- wool waste @ 20 t ha⁻¹, T₄- RDF + wool waste @ 20 t ha⁻¹, T₅- RDF + wool waste @ 20 t ha⁻¹ + 1 per cent FeSO₄, T₆- RDF + wool waste @ 20 t ha⁻¹ + 1 per cent FeSO₄ + 0.5 per cent ZnSO₄, T₇- STCR recommendation fertilizer dose, T₈- STCR recommendation + wool waste @ 20 t ha⁻¹ + 1 per cent FeSO₄, T₉-STCR recommendation + wool waste @ 20 t ha⁻¹ + 1 per cent FeSO₄ and T₁₀-STCR recommendation + wool waste @ 20 t ha⁻¹ + 1 per cent FeSO₄ + 0.5 per cent ZnSO₄. The experiment was laid out in randomized block design with three replications. Wool waste is a biodegradable, rich in nutrients and can be recycled in soil as a fertilizer for maximum benefits. Application of waste wool in soil significantly improved the fertility status of soil, and considerable improvement was also observed in organic carbon, macro and micronutrients. The activities of soil enzymes higher in waste wool treatment as compared to control. Application of waste wool not only improved soil health but produced 50% higher grain and dry fodder yield of barley over control. The improvement in physical properties of soil with waste wool resulted in higher water use efficiency of the system. The results revealed that application of wool waste significantly improved physical properties of soil such as bulk density, hydraulic conductivity and moisture retention etc. in treatments having wool waste @ 20 t ha⁻¹ than treatments without wool waste. Addition of wool waste significantly enhanced the availability of nitrogen, phosphorus, potassium, sulphur, zinc and iron in soil as compared to control, RDF without wool waste and STCR recommendation without wool waste. Biological properties of soil such as dehydrogenase and microbial population also significantly improved in treatments having wool waste application. Significantly higher dry weight of straw, average fruit weight, vine length, number of inter nodes and yield were found in RDF + wool waste @ 20 t ha⁻¹ + 1 per cent FeSO₄ + 0.5 per cent ZnSO₄.

Keywords: Bottle gourd, Fertilizer, Loamy sand soil

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