



## RESEARCH PAPER

# Restoration of rainwater techniques and fertilizer split application methods on yield and total nutrient uptake of rainfed sorghum under vertisols (*Typic haplusterts*)

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**Abstract :** In rainfed situation soil erosion, low plant nutrients availability and soil moisture stress during cropping season are among the major limitations to high crop production and sustainable land management in a rainfed Semi-Arid Tropics (SAT) in India. A field experiment was conducted to study the effect of land configuration practices and fertilizer split application methods under vertisols condition in *Rabi* sorghum. The results revealed that the *in-situ* soil moisture conservation practices *viz.*, broad bed furrow registered the highest yield attributes, yield, soil fertility status and plant nutrient uptake in rainfed sorghum. Under vertisols rainfed condition soil moisture conservation methods *viz.*, broad bed furrow recorded higher yield (1611 kg/ha), net income (Rs.6675/ha), BC ratio (1.37) and RWUE (4.49 kg/ha). But in case of fertilizer treatments, the treatment applied with 20 kg N as urea + 20 kg P<sub>2</sub>O<sub>5</sub> enriched with farm yard manure + 10 kg K<sub>2</sub>O/ha as basal application and top dressing as 20kg N as urea and 10kg K kg/ha registered higher yield attributes, grain yield (1734 kg/ha), stalk yield (4357 kg/ha), net income (Rs.10607), BC ratio (1.70) and RWUE (4.81 kg/ha) and plant nutrient uptake *viz.*, nitrogen uptake (67.82 kg/ha), phosphorus uptake (19.30 kg/ha), potassium uptake (108.06 kg/ha) and zinc uptake (117.1), respectively.

**Key Words :** Land configuration, Sorghum, Vertisols, Soil moisture, Rainfed

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