

Residue-based nitrogen regimes and decomposer applications as determinants of growth and yield performance in *rabi* rice

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ABSTRACT

The present investigation was conducted on clay soils during *rabi* 2024–2025 at the Regional Agricultural Research Station, Maruteru, to evaluate the effect of different rice residue management practices on the growth, yield attributes and yield of rice. The experiment was laid out in a randomized block design with nine treatments replicated three times. The results indicated that among the residue management practices, 100% RDN recorded the highest number of productive tillers (323), plant height (107.3 cm), dry matter accumulation (13,584 kg ha⁻¹), straw yield (7,470 kg ha⁻¹) and grain yield (6,137 kg ha⁻¹). However, it was statistically comparable to 75% RDN + 25% N through residue + PUSA decomposer, which produced 309 productive tillers, plant height of 105.5 cm, dry matter accumulation of 12,353 kg ha⁻¹, straw yield of 7,373 kg ha⁻¹ and grain yield of 6,057 kg ha⁻¹. Similarly, 75% RDN + 25% N through residue + ANGRAU decomposer recorded 304 productive tillers, plant height of 102.4 cm, dry matter accumulation of 12,279 kg ha⁻¹, straw yield of 7,177 kg ha⁻¹ and grain yield of 5,833 kg ha⁻¹. Overall, the study concludes that residue management practices involving 75% RDN + 25% N through residue along with PUSA or ANGRAU decomposers provide a promising strategy to reduce chemical fertilizer use and enhance the sustainability of *rabi* rice cultivation.

Keywords: *Chemical fertilizer, N management, Residue management and Sustainability*