Effect of *in-situ* green manuring and integrated nutrient management on growth and yield of transplanted rice

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ABSTRACT

A field experiment was conducted on clay soils during the *kharif* season of 2024-2025 at the Agricultural Research Station, Ghantasala, Andhra Pradesh, to assess the effects of *in-situ* green manuring and integrated nutrient management (INM) on growth and yield of transplanted rice (*Oryza sativa* L.). The study utilized a split-plot design with four main green manure treatments, M_1: Control (Fallow), M_2: Dhaincha (*Sesbania bispinosa* L.), M_3: Sunnhemp (*Crotalaria juncea* L.), M_4: Greengram (*Vigna radiata* L.) and four subplot INM treatments, S_1: 100% Recommended Dose of Nitrogen [RDN], S_2: 75% RDN, S_3: 75% RDN + Biofertilizer (*Azospirillum*), S_4: 50% RDN + Biofertilizer (*Azospirillum*). In-situ incorporation of Dhaincha (M_2) significantly enhanced plant height at maturity (59.3 cm), drymatter accumulation (700 kg ha^{-1}), productive tillers (319 m^{-2}) and grain yield (6166 kg ha^{-1}) compared to the control (M1: 47.2 cm, 404 kg ha^{-1}, 261 m^{-2}, 4695 kg ha^{-1}) and it was on par with in-situ incorporation of sunnhemp. Among INM treatments, 100% RDN (S_1) recorded the highest values (59.4 cm, 689 kg ha^{-1}, 316 m^{-2}, 6033 kg ha^{-1}), closely followed by 75% RDN + Biofertilizer (*Azospirillum*) (S_3). These findings suggest that integrating Dhaincha green manuring with 75% RDN + Biofertilizer (*Azospirillum*) optimizes rice growth and yield.

Keywords: *Growth,, In-situ green manuring, INM, Productive tillersm and Rice yield*