Effect of *kharif* Legume Crop Residue Incorporation in Combination with Nitrogen Levels on Growth and Yield of Succeeding Maize During R*abi.*

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ABSTRACT

A field experiment was conducted on sandy clay soils of Agricultural College Farm, Aswaraopet, Khammam (dt.) to study the yield of maize as affected by crop residue incorporation in legume maize sequence. The experiment was laid out in split- split plot design and the treatments were replicated thrice with three legumes, viz., cowpea, (M_1) fieldbean (M_2) and greengram (M_3) as main plot treatments taken up during the *kharif* season and two residue management practices viz., residue removal (R_0) and residue incorporation (R_1) as sub plot treatments. Four nitrogen levels 75 (N_1), 150 (N_2), 225 (N_3) and 300 kg ha^{-1}(N_4) as sub- sub plot treatments to maize. Among the legumes evaluated, greengram recorded highest gross returns, net returns and benefit cost ratio during both the years. While the highest pod yield, fresh and drymatter yields and greengram equivalent yields were obtained with cowpea followed by fieldbean and greengram. The growth parameters of maize like, plant height and drymatter accumulation and yield attributes like number of cobs per plant, number of kernel rows per cob, number of kernels per cob, test weight were significantly high when cowpea was taken as a preceding crop to maize. Residue incorporation has resulted in significant improvement in yield attributing characters compared to residue removal in all the three *kharif* legumes. Application of nitrogen @ 300 kg ha^{-1} was found to be significantly superior to 75 and 150 kg N ha^{-1} and comparable with 225 kg ha^{-1}. Higher kernel and stover yields were also obtained when cowpea was grown as a preceding crop to maize. Residue incorporation found significantly superior in enhancing the kernel and stover yield of maize. Increase in the dose of nitrogen has increased the grain and stover yields of maize. Application of nitrogen @ 300 kg ha^{-1} was found to be significantly superior to 75 and 150 kg N ha^{-1} and comparable with 225 kg ha^{-1}. Application of Nitrogen @ 225 kg ha^{-1} in combination with incorporation of legume crop residues was found to be beneficial in augmenting the nutrient needs of the maize besides improving the soil fertility.

Key words: *Crop resides, Legumes, Maize, Nitrogen levels.*