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RESEARCH PAPER

Residual effect of organic manures on growth, yield and economics of greengram in maize- sunflower-greengram system

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Abstract : Field experiments were conducted for two consecutive years (2003-04 and 2004-2005) at S.V. Agricultural college farm (ANGRAU), Tirupati , Southern plateau and Hills zone of India on red sandy soils consisting Greengram was raised as residual crop during summer in a sequence of maize sown in *Kharif* and sunflower sown in *Rabi* with the imposition of the treatments to the first two crops of the sequence. Six different sources of nitrogen *viz.*, farm yard manure, vermicompost, neem leaf, poultry manure, pig manure and fertilizer to supply recommended dose of nitrogen on equalent nitrogen basis and one absolute control were applied to first two crops in the cropping system. Various parameters of greengram were influenced differently by varied manurial practices tried. However, during both the years of investigation, all the growth and yield attributes, yield (seed as well as haulm), harvest index, gross returns, net returns and benefit-cost ratio of green gram were at their best with the residual effect of poultry manure either with or without the use of *Panchagavya*. The uptake of nitrogen, phosphorus and potassium by greengram crop and protein content of seed was significantly higher with the residual effect of various organic sources either with or without the use of *Panchagavya* than with fertilizer either with or without the use of *Panchagavya*. The highest phosphorus uptake of greengram was recorded with the residual effect of poultry manure either with or without the spray of *Panchagavya*, while the potassium uptake was the highest with vermicompost either with or without the spray of *Panchagavya*. Gross returns, net returns and benefit-cost ratio of greengram were significantly lesser with the residual effect of fertilizer than with any of the organic sources tried. All the growth and yield attributes, yield, nutrient uptake, harvest index, protein content of the seed and economic returns of greengram were at their lowest with the residual effect of non-manuring through any source to either maize or sunflower, which were statistically similar to those with foliar application of *Panchagavya* alone to the preceding two crops.

Key Words : Green gram, Organic manures, Growth, Yield, Nutrient uptake, Economics

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INTRODUCTION

Organic farming is not a new concept to Indian farmers, because they have practiced it since times immemorial. Organic farming system relies on crop rotation, crop residues, animal manures, legumes, green manures, off- farm wastes and biological pest control. Yields in organic farming are lower than chemical farming during initial years of practice and it takes a few years to stabilize the yields. However, in the long run, if properly followed ,yield with organic farming would be a greater than those obtained with chemical farming . The gravity of environmental degradation has drawn the attention of the scientists and planners towards finding out ecologically sound, viable and sustainable farm technologies, keeping in view of the needs of the future generations. Most of the Indian soils contain less than 0.5 per cent organic carbon. Unless it is raised to 0.9–1 per cent level, productivity of the soil can not be optimized (Veeresh,2002).Organic farming is known to sustain production and productivity by maintaining better soil fertility and microbial activity (Sunita *et al.*, 2004).In view

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