

## Effect of organic manures on growth and yield attributes in cotton + blackgram intercropping system

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### SUMMARY

A field experiment was carried out at the Tamil Nadu Agricultural University, Coimbatore from July 2001 to March 2002, to study the effect of organic manures on growth and yield attributes in cotton intercropped with blackgram. The growth parameters like plant height, LAI, DMP, CGR and RGR of cotton were significantly influenced by the application of recommended dose of NPK through inorganic source ( $T_1$ ) and 50 per cent of N through sunhemp + 50 per cent of N through vermicompost ( $T_6$ ). The yield and yield components of cotton were influenced significantly by these treatments with a seed cotton yield of 1902 and 1852 kg ha<sup>-1</sup>, respectively. The growth parameters like plant height, LAI, DMP, CGR and RGR of black gram were significantly influenced by the application of 50 per cent of N through sunhemp + 50 per cent of N through vermicompost ( $T_6$ ) and by the recommended NPK through inorganic source ( $T_1$ ). The yield and yield components of blackgram were influenced significantly by these treatments with a seed yield of 502 and 484 kg ha<sup>-1</sup>, respectively.

Key words : Plant height, Dry matter production, Crop growth rate, Cotton, Black gram.

The crop, cotton is known as “king of fibres” continues to be the predominant fibre in the Indian textile scene, despite stiff competition by the man-made synthetic fibres. It assumes a place of pride in Indian economy, as cotton production, processing and trade in cotton goods provide employment to millions of people in our country. Further, the export of raw cotton, yarn, textile, garments, cotton seed cake, oil and other by products earn valuable foreign exchange. Organic farming is a production system which avoids or largely excludes the use of synthetically compounded fertilizers, pesticides, growth regulators and livestock feed additives. To the maximum extent possible organic farming system rely upon crop rotations, crop residues, animal manure, legumes, green manure, off farm organic wastes, mechanical cultivators, mineral bearing rocks and biofertilizers to maintain soil productivity, tilth and to supply plant nutrients; and biological means to control insects, weeds and other pests. Organic farming is not mere non-chemicalism in agriculture, but it is a system of farming based on integral relationship with nature (Lampkin, 1990). Green manuring is a cheap alternative to the use of fertilizer nitrogen. The process also makes a positive contribution to the maintenance of soil organic matter content at a satisfactory level. Green manuring is a low cost but effective technology in minimizing investment cost on fertilizers and in safeguarding the production capacity of the soil without any impoverishment. When different leguminous crops were

intercropped with cotton and incorporated after 45 days, the rate of decomposition was more in sunhemp, which ultimately increased the cotton yield (ACRBCS, 1990). Leguminous green manures have the ability to utilize insoluble phosphates through the well developed root system, and upon mineralization, release the P in the available forms. Green manuring is a practice of turning green biomass in the soil to improve physical, physico-chemical as well as biological properties suitable for plant growth. It is a convenient mean to furnish higher amount of nitrogen to the beneficiary crops. Legumes have been found to substitute nearly 50 to 56 kg ha<sup>-1</sup> of nitrogen (Bauer *et al.*, 1993).

### MATERIALS AND METHODS

A field experiment was conducted from July, 2001 to March, 2002 at the Eastern block of Tamil Nadu Agricultural University, Coimbatore to study the effect of organic manures on growth and yield attributes under cotton + blackgram intercropping system. The experiment consisted of seven treatments with two inorganic and five organic manure treatments. The experiment was laid out in randomized block design with three replications. The randomly allotted treatment plots were raised with sunhemp except  $T_1$  and  $T_2$ . After 40 DAS, the sunhemp samples were analysed for N. Then, the sunhemp crop was cut close to the ground level and based on the N content, the biomass quantity was estimated and incorporated on N equivalent basis in treatments  $T_3$  to

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