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Nutrient uptake and post harvest available soil nutrients under organic farming system 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 farming on nutrient uptake and post harvest available soil nutrients under cotton + blackgram intercropping system. The experiment consisted of seven treatments with two inorganic and five organic manure treatments. Fity per cent of (40 kg N ha^{-1}) recommended dose of N was substituted with green manure (sunhemp) and the remaining 50 per cent with the organic sources *viz.*, farm yard manure, vermicompost, poultry manure, goat manure, and pressmud for the organic manuring treatments. With respect to the uptake of nutrients (NPK), the 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) were found to be superior to other treatments. Whereas, the post harvest soil available N, P, K and soil organic carbon content were found to be higher in organic manures applied plots.

Key words: Organic farming, Vermicompost, Inter crop, Cotton.

In India, the green revolution has led to indiscriminate use of fertilizers to obtain yields from two to three crops per annum in lands with good irrigation. In the course of time, the tropical soils which are prone to depletion in carbon level and other nutrients are turning unproductive due to lack of proper organic amendments. Recent developments in intensive agriculture though contributed immensely towards surplus food, caused degradation in fertile land and left residues in food products. Application of selective nutrient alone in order to increase the production in the long run leads to many problems in soil health and environment. Since most of the fertilizer programmes fail to consider the soil nutrient loss, the soil fertility is often seriously affected.

At this juncture, organic techniques help to regenerate the degraded soils and ensure sustainability in crop production. Moreover, the wide gap between the nutrient demand and supply can be minimised. So, organic farming is needed in the present day.

MATERIALS AND METHODS

A field experiment was conducted from July, 2001 to March, 2002 at the Eastern block of the Tamil Nadu Agricultural University, Coimbatore to study the effect of organic farming on nutrient uptake and post harvest available soil nutrients under cotton + blackgram intercropping system. The field experiment was laid out in randomised block design, replicated thrice. The physical and chemical properties of the experimental field soil are furnished in Table 1.

Table 1 : Soil properties of the experimental site

Constituents	Content (per cent)
Mechanical analysis	
Clay	31.7
Silt	18.6
Coarse Sand	29.9
Fine Sand	19.8
Texture	Sandy clay loam
Chemical analysis	
Available nitrogen (kg ha^{-1})	215.6
Available phosphorus (kg ha^{-1})	10.84
Available potassium (kg ha^{-1})	430.2
Organic carbon (%)	0.23
Electrical conductivity (dSm^{-1})	0.3
pH	8.0

The randomly allotted treatment plots were raised with sunhemp (T_3 to T_7). After 40 DAS, the sunhemp samples were analysed for N. Then, sunhemp was cut close to the ground level and based on the N content, biomass quantity was estimated and incorporated by N equivalent basis. Then the field was irrigated and left for necessary decomposition. After 20 days, the sunhemp applied plots were dugged and bunds and channels were rectified and organic manures were applied as per the

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