



Integrated Nutrient Management (INM) in long pepper (*Piper longum* L.)

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ABSTRACT

Field experiments carried out at Medicinal and Aromatic crops section, Division of Horticulture, UAS, GKVK, Bangalore on red sandy clay loam soil in integrated nutrient management (INM) in long pepper revealed that dry spike yields were significantly increased due to integrated management of FYM and fertilizers. Application of 40 t ha⁻¹ FYM and 125 : 50 : 160 kg N, P₂O₅ and K₂O ha⁻¹ gave significantly higher dry spike yield (2412 kg ha⁻¹) and in turn increased the piperine yield (32.3 kg ha⁻¹). Further, the growth, yield and quality attributes were also significantly higher with this combination.

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Key words : Dry spike, Integrated nutrient management, Organic manure, Long pepper, Piperine yield

Piper longum L. commercially called as long pepper and commonly known as pippali is an important spice cum medicinal plant belonging to the family *Piperaceae*. It is the third most important species of genus *piper* after black pepper and betel vine. It is a native of Indo-Malaya region and India. The main product of trade is the dry spikes of female types. The spikes contain alkaloids of piperine (1.25 %) (Shankaracharya *et al.*, 1998) and pipartin. This forms one of the important constituents in the treatment of various human ailments under Ayurveda, Siddha and Unani medicine systems of India. So there is a great demand in Indian market coupled with shortage in supply. In these days when there is increased awareness for the quality of the economic product especially in crops like long pepper, there is a need to give more emphasis on the integrated nutrient management. With this background, the present study was undertaken to evaluate the effect of integrated nutrient management on yield and quality of long pepper.

MATERIALS AND METHODS

Field experiment was carried out in the established long pepper garden at Aromatic Section, Division of Horticulture, GKVK, Bangalore. The experiment included three FYM levels (20, 30 and 40 t ha⁻¹) and four fertilizer levels (50 : 20 : 100 ; 75 : 30 : 120 ; 100 : 40 : 140 and 125

: 50 : 160 kg N, P₂O₅ and K₂O ha⁻¹, respectively). The treatment combinations were replicated four times and laid out in factorial RCBD design. The established garden of long pepper was of three years old and the plants were pruned to a uniform height of 15 cm. The FYM was applied in accordance with the treatments and mixed thoroughly. Fifty per cent of nitrogen and entire phosphorous and potassium were applied as per treatments after pruning the plants and remaining nitrogen was applied at grand vegetative stage and spike initiation (50 % flowering) stage. The experimental data related to yield and its parameters were analyzed statistically. Piperine content of spikes was estimated by HPLC method and piperine yield was calculated by

$$\frac{\text{Spike yield (kg ha}^{-1}) \times \text{Piperine content}}{100}$$

RESULTS AND DISCUSSION

The results obtained from the present investigation are summarized below :

Effect of FYM levels on yield and quality parameters :

The cumulative dry spike and piperine yields were