

EFFECT OF ORGANIC MANURES AND BIOFERTILIZERS ON NUTRIENT CONTENT AND NUTRIENT UPTAKE IN TURMERIC cv. BSR 2

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ABSTRACT

The investigations on turmeric (*Curcuma longa* L.) were carried out at the College Orchard, Department of Spices and Plantation Crops, Horticultural College and Research Institute, Tamil Nadu Agricultural University, Coimbatore, to find out the effect of different organic manures and biofertilizers on turmeric with reference to nutrient content and nutrient uptake. The experiment was laid out in split plot design consisting four organic manures viz., farmyard manure, vermicompost, digested coirpith compost and 50 per cent of recommended dose of fertilizers in the main plot. The sub plot treatment consists of biofertilizers like *azospirillum*, phosphobacteria and VAM with 32 different combinations. The experimental analysis revealed that application of farmyard manure + *azospirillum* + phosphobacteria + VAM (M_1S_7) recorded the higher nitrogen content (0.87 per cent), phosphorus content (0.21 per cent), nitrogen uptake (291.74 kg ha⁻¹) and phosphorus uptake (70.42 kg ha⁻¹). While the application of digested coirpith compost + *azospirillum* + phosphobacteria + VAM exhibited (M_3S_7) expressed greater potassium content (0.90 per cent) and potassium uptake (285.05 kg ha⁻¹).

Key words : Nitrogen, Phosphorous, Potassium, Turmeric

India is the largest, monopoly producer and traditional exporter of turmeric in the world. Area and production of turmeric in the country showed increasing trends during the last five years. In India, turmeric is cultivated mainly in Tamilnadu, Andhra Pradesh, Kerala, Karnataka, Orissa etc. Owing to its long duration and high productivity, it requires heavy input of fertilizers (Balashanmugam and Chezhiyan, 1986; Balashanmugam and Subramanian, 1991). Recently, organic farming is practiced for sustainable agriculture production systems. Organic farming keeps away synthetic chemical fertilizers, pesticides and fungicides and concentrates only on naturally occurring agricultural inputs. The plant nutrients are supplied through organic manures like farm yard manure, vermicompost, coirpith compost, press mud, oil cake and poultry manure, etc., The essential elements are locked up in the organic manures are slowly mineralized and made available to the crops, which also increases yield and quality of crops. One of the essential components of organic farming is biofertilizers, the bio manure capable of supplying nutrients from soil to plant system by their biological activity and maintenance of long term soil fertility and fostering soil biological activity (Potty and Krishnakumar, 1999).

MATERIALS AND METHODS

Experiment was conducted at college orchard, Department of Spices and Plantation Crops, Coimbatore. Experiment was laid in split plot design with three replications.

Main plot treatments :

- M_1 - Farmyard manure (30 t ha⁻¹)
- M_2 - Vermicompost (10 t ha⁻¹)
- M_3 - Digested coirpith compost (10 t ha⁻¹)
- M_4 - 50 per cent of recommended dose of fertilizer (62.5:30:45 kg N, P₂O₅, K₂O ha⁻¹)

Sub plot treatments :

- S_1 - *Azospirillum* (10 kg ha⁻¹)
- S_2 - Phosphobacteria (10 kg ha⁻¹)
- S_3 - VAM (500 kg ha⁻¹)
- S_4 - *Azospirillum* (10 kg ha⁻¹) + Phosphobacteria (10 kg ha⁻¹)
- S_5 - *Azospirillum* (10 kg ha⁻¹) + VAM (500 kg ha⁻¹)
- S_6 - Phosphobacteria (10 kg ha⁻¹) + VAM (500 kg ha⁻¹)
- S_7 - *Azospirillum* (10 kg ha⁻¹) + Phosphobacteria (10 kg ha⁻¹) + VAM (500 kg ha⁻¹)
- S_8 - Control (without any inoculation of biofertilizers)