

Effect of organic manures on nutrient uptake of palak (*Beta vulgaris* L. var. Bengalensis)

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ABSTRACT

The experiment on the effect of organic manures on nutrient uptake of palak was conducted in a randomized block design with 13 treatments which were replicated thrice. The treatments comprised of two organic manures - FYM @ 20 t ha⁻¹ and vermicompost @ 5 t ha⁻¹ applied alone and in combination at two different levels viz., 100 and 50 per cent of the recommended levels combined with the foliar spray of panchagavya @ 3 per cent and humic acid @ 0.2 per cent along with a control. The results of the study revealed that the uptake of nitrogen, phosphorus and potassium were highest in the treatment in which FYM at 10 t ha⁻¹ + VC at 2.5 t ha⁻¹ + PG 3 per cent as foliar spray was applied. The treatment T₁₃ (control) recorded the lowest N, P and K uptake.

Key words : Palak, Spinach beet, Nutrient uptake, Nitrogen, Phosphorus, Potassium

Among vegetable crops, leafy vegetables are quite high in their protective food value. They are important because of their successful and relatively easy cultivation as well as their high nutritive value, at a comparatively low cost. Palak or spinach beet (*Beta vulgaris* L. var. bengalensis) is one of the most popular leafy vegetables grown widely in India. Its tender soft succulent leaves are used as vegetable. Being the cheapest source of calcium, iron and phosphorus, it is valued much for its tender leaves. The continuous use of chemical fertilizers and pesticides in the cultivation of horticulture crops have caused decreased soil fertility and environmental degradation. Organics play a vital role in restoring the soil fertility and stabilizing crop productivity. It is a proven fact that use of organic manures in orchards improve the quality of harvested produce (Kunte *et al.*, 1997). Therefore, the application of plant nutrients through organic sources like FYM and vermicompost remains the alternate choice for maintaining sustainable production. With an intention to increase the yield of greens, farmers are tempted to apply higher quantities of nitrogenous fertilizers, which may lead to accumulation of anti-nutrient factors in the greens beyond permissible limit. Hence, there is a need to substitute the inorganic nutrient requirements with organic nutrient sources to enhance the production of greens, besides improving the edible quality. With this background, the present study was undertaken in order to study the effect of organic manures on the nutrient uptake of palak.

MATERIALS AND METHODS

The experiment was conducted in the Orchard field

unit of Department of Horticulture, Faculty of Agriculture, Annamalai University, Annamalainagar in a randomized block design. There were 13 treatments in three replications. Beds were formed at 1 m length and 1 m width with an area of 1 sq.m. The soil texture of the experimental field was clay loam with a pH of 8.13 and EC of 0.35 dSm⁻¹. The fertility status of soil was found to be low in available nitrogen (100.6 Kg ha⁻¹), high in available phosphorus (11.5 kg ha⁻¹) and medium in available potassium (140 Kg ha⁻¹). The treatments were as follows T₁- FYM @ 20 t ha⁻¹, T₂- vermicompost @ 5 t ha⁻¹, T₃- T₁ + PG 3 %, T₄- T₂ + PG 3 %, T₅- T₁ + HA 0.2 %, T₆- T₂ + HA 0.2 %, T₇- T₁ + PG 3% +HA 0.2 %, T₈- T₂ + PG 3 % + HA 0.2%, T₉ - FYM @ 10 t ha⁻¹ + VC @ 2.5 t ha⁻¹, T₁₀- T₉ + PG 3%, T₁₁- T₉ + HA 0.2 %, T₁₂- T₉ + PG 3 % + HA 0.2 %, T₁₃- control. The entire dose of FYM and vermicompost was given as basal dressing. Foliar applications of panchagavya (3 %) and humic acid (0.2 %) were done at fortnightly intervals commencing from 30 days after sowing to final harvest. The standard cultural practices recommended for the crop were followed for all the experiment plots. Observations on N, P and K contents were estimated using the method suggested by Jackson (1973) and the uptake was calculated by multiplying nutrient content with dry matter production and the data were subjected to statistical analysis.

RESULTS AND DISCUSSION

The data on uptake of nutrients are presented in Table 1. Among the various treatments, T₁₀ (FYM 10 t ha⁻¹ +