

## Effect of different organic and inorganic sources of nutrients on nutrient content and nutrient uptake in palak (*Beta vulgaris* var. *bengalensis* Hort.)

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### ABSTRACT

Palak or spinach beet (*Beta vulgaris* var. *bengalensis* Hort.) is one of the most popular leafy vegetables of tropical and subtropical region and is grown widely in India. Its tender soft succulent leaves are used as vegetable. It is commonly cultivated as cold season vegetable. Palak is highly nutritious contains higher fibrous matter which provides necessary roughage in the diet that stimulate intestinal action and prevents constipation it also rich in vit. A. It is grown in energy starving areas with minimum external sources of nutrients exploiting much lower than its potential yield. The sustainable yield of palak can be achieved through integrated nutrient management practices. The present investigation focused on improving the productivity of Palak through organic and inorganic nutrient sources.

**Key words :** Fulvic acid, Agrimagic, Nutrient content, Nutrient uptake

Palak or spinach beet (*Beta vulgaris* var. *bengalensis* Hort.) is one of the most popular leafy vegetables of tropical and subtropical region and is grown widely in India. Its tender soft succulent leaves are used as vegetable. It is commonly cultivated as cold season vegetable. Palak is highly nutritious contains higher fibrous matter which provides necessary roughage in the diet that stimulate intestinal action and prevents constipation it also rich in Vit. A. It is grown in energy starving areas with minimum external sources of nutrients exploiting much lower than its potential yield. The sustainable yield of palak can be achieved through integrated nutrient management practices. The present investigation focused on improving the productivity of palak through organic and inorganic nutrient sources.

### MATERIALS AND METHODS

A field experiment was conducted at the Horticultural research farm, University of Agricultural Sciences, GKVK, Bangalore during *rabi* season under irrigated condition to study the "Nutrition of palak (*Beta vulgaris* var. *bengalensis* Hort.) through organic and inorganic nutrient sources". The study area is situated at 12° 58' North latitude and 77° 35' east longitudes with an altitude of 930 m above mean sea level. The Palak variety All green released by IARI, New Delhi. It is suitable for multi cutting (6-7) with a genetic potential of 125 q ha<sup>-1</sup>.

The experiment was laid out in randomized complete block design with sixteen treatments having three replications. Three treatment consists of T<sub>1</sub>-Control, T<sub>2</sub>-N<sub>150</sub>P<sub>100</sub>K<sub>100</sub>+ FYM<sub>20</sub>, T<sub>3</sub>-N<sub>75</sub>P<sub>50</sub>K<sub>50</sub>+ FYM<sub>10</sub>, T<sub>4</sub>-N<sub>112.5</sub>P<sub>75</sub>K<sub>75</sub>+ FYM<sub>15</sub>, T<sub>5</sub>-N<sub>150</sub>P<sub>100</sub>K<sub>100</sub>+Agrimagic 280

kg/ha, T<sub>6</sub>-N<sub>112.5</sub>P<sub>75</sub>K<sub>75</sub>+ FYM<sub>15</sub>+ Agrimagic 280 kg/ha, T<sub>7</sub>-N<sub>112.5</sub>P<sub>75</sub>K<sub>75</sub>+ FYM<sub>15</sub>+ Agrimagic 560 kg/ha, T<sub>8</sub>-N<sub>75</sub>P<sub>50</sub>K<sub>50</sub>+ FYM<sub>10</sub>+ Agrimagic 280 kg/ha, T<sub>9</sub>-N<sub>75</sub>P<sub>50</sub>K<sub>50</sub>+ FYM<sub>10</sub>+ Agrimagic 560 kg/ha, T<sub>10</sub>-Agrimagic 560 kg/ha, T<sub>11</sub>-N<sub>150</sub>P<sub>100</sub>K<sub>100</sub>, T<sub>12</sub>-N<sub>150</sub>P<sub>100</sub>K<sub>100</sub>+Agrimagic equivalent to FYM on N basis, T<sub>13</sub>-N<sub>150</sub>P<sub>100</sub>K<sub>100</sub>+ 27 kg of fulvic liquid + seed line granular + two post plant spray, T<sub>14</sub>-N<sub>112.5</sub>P<sub>75</sub>K<sub>75</sub>+27 kg of fulvic liquid + seed line granular + two post plant spray, T<sub>15</sub>-N<sub>112.5</sub>P<sub>75</sub>K<sub>75</sub>+ 36 kg of fulvic liquid + seed line granular + two post plant spray and T<sub>16</sub>-N<sub>75</sub>P<sub>50</sub>K<sub>50</sub>+ 36 kg of fulvic liquid + seed line granular + two post plant spray.

The soils were sandy loam with low in available soil nitrogen (156 kg ha<sup>-1</sup>), phosphorus (16.54 kg ha<sup>-1</sup>) and potassium (136.62 kg ha<sup>-1</sup>) with normal pH (6.7). the nitrogen was applied in three equal splits while P<sub>2</sub>O<sub>5</sub> and K<sub>2</sub>O were applied as basal at the time of sowing. Composites of surface soil samples to a depth of 315 cm were collected before sowing and after harvest of the crop. Plant samples were collected for estimation of dry matter production per plant and powdered dry samples used for estimating N, P and K contents using the methods indicated by Jackson (1973) The nutrient uptake per hectare was computed using the following given below:

Nutrient uptake= Nutrient content (%) x Dry matter per hectare (kg/plant)

The nutrient composition of Agri magic was 1.119 % N, 0.007 % P and 0.152 % K and applied as per the treatment combination. Fulvic liquid and seed line granular (110 kg ha<sup>-1</sup>) was applied according to treatment