

Research Paper :

Effect of NPK levels on the growth and yield of *Catharanthus roseus* in coastal sandy soil

G. VEMBU, R. SINGARAVEL AND S. KAMARAJ

Accepted : March, 2010

See end of the article for authors' affiliations

Correspondence to :

R.SINGARAVEL
Department of Soil
Science and Agricultural
Chemistry, Faculty of
Agriculture, Annamalai
University,
ANNAMALAINAGAR
(T.N.) INDIA

ABSTRACT

A pot experiment was conducted at the Department of Soil Science and Agriculture Chemistry, Annamalai University, Tamilnadu during 2008-2009 to study the fertilizer requirement of *Catharanthus roseus* in coastal sandy soil. The soil was classified as *typic Udipsaments* and had deficient level of N, P and K. The growth parameters of *Catharanthus rose us viz.*, plant height, number of branches per plant, number of leaves per plant were influenced favorably with increasing level of NPK application. A reduction in NPK application reduced the yield parameters and leaf yield significantly. The result revealed that the application of NPK @ 30: 40: 40 kg ha⁻¹ proved to be optimum as it recorded the maximum growth characters like plant height (97.50 cm), number of branches per plant (10.75) and dry weight of leaves (24.54 g /plant) and dry weight of root (8.46 g /plant).

Key words : *Catharanthus roseus*, Nitrogen, Phosphorus, Potash, Productivity

C*atharanthus roseus* (L) G. Don, the Madagascar Periwinkle is an erect handsome herbaceous perennial plant which is a chief source of patented cancer and hypotensive drugs. It is one of the very few medicinal plants which has a long history of uses as diuretic, antidysentric, haemorrhagic and antiseptic. Its leaves are used for curing diabetes, menorrhagia and wasp stings. The flowering stems are used medicinally, containing several alkaloids, tannins, saponins, pectin and organic pigments (Stodola and Volak, 1992). The productivity of *Catharanthus* largely depends on its nutrient requirement and management particularly that of nitrogen, phosphorus and potassium. Information on fertilizer requirement for *Catharanthus rose us* in coastal sandy soil is scanty. Hence, there is need to study the effect of nutrient levels on the growth and yield of *Catharanthus rose us* in coastal sandy soil.

MATERIALS AND METHODS

A pot experiment was conducted at the Department of Soil Science and Agricultural Chemistry, Annamalai University, Tamilnadu during 2008-09. The experiment was laid out in Completely Randomized Design with four replications consisting of varying level of NPK on the growth and yield of *Catharanthus roseus*. The experimental soil was sandy with pH (7.93) and EC (1.14 dS m⁻¹). The nutrient status represented poor status of available N (150 kg ha⁻¹), P (8 kg ha⁻¹) and K (111 kg ha⁻¹). The treatments include : T₁ - Absolute control, T₂ - 10:

20 : 20 NPK kg ha⁻¹, T₃ - 20 : 30 : 30 NPK kg ha⁻¹, T₄ - 30: 40: 40 NPK kg ha⁻¹ and T₅ - 40: 50: 50 NPK kg ha⁻¹. Half the dose of N and full dose of P₂O₅ and K₂O were applied as basal dose and the crop was top dressed with the remaining half dose of N, 30 days after sowing. Biometric observations were taken at critical stages *viz.*, vegetative, flowering and at harvest on growth and yield parameters. At harvest the leaf and root yield were recorded.

RESULTS AND DISCUSSION

The results obtained from the present investigation are summarized below :

Growth characters:

The study revealed that the application of NPK increased the growth characters of *Catharanthus roseus* at all the stages *viz.*, vegetative, flowering and at harvest (Table 1). Among various levels of NPK, the highest growth characters were recorded by the treatment T₅, 40:50:50 kg NPK ha⁻¹, however, it was at par with treatment T₄, application of 30: 40: 40 kg NPK ha⁻¹ which recorded a significantly higher plant height (57.90 cm, 70.06 cm and 97.50 cm), number of branches per plant (5.50, 9.25 and 10.75) and number of leaves per plant (72.75, 86.75 and 128.25) during vegetative, flowering and harvest stage, respectively. The other NPK levels also increased the growth character as compared to control. The control recorded the lowest growth character at all the growth stages. The enhancement of growth-