

Response of medicinal solanum to graded levels of nitrogen and phosphorus

S. VENKATESAN AND ARUMUGAM SHAKILA

Accepted : September, 2008

See end of the article for authors' affiliations

Correspondence to:

S. VENKATESAN

Department of
Horticulture, Faculty of
Agriculture, Annamalai
University, ANNAMALAI
NAGAR (T.N.) INDIA

ABSTRACT

An investigation was conducted with the objective of finding out the nutrient requirement for *Solanum viarum*. The trial was conducted in Randomized Block Design with three replications. Nitrogen and Phosphorus were applied at three levels (50,100, 150 kg/ha and 40, 60, 80 kg/ha, respectively) along with 40 kg of potassium which was kept constant. The results revealed that application of 100 kg N,60 kg P and 40 kg K per hectare increased the vegetative parameters like plant height, internodal length, number of branches, number of leaves and leaf area and yield attributes viz., flower production, fruit set percentage, fruit production, fruit size and fruit yield per plant when compared to the control.

Key words : *Solanum viarum*, Nitrogen, Phosphorus, Potassium.

Solanum viarum Dunal (Syn. *Solanum khasianum* var. *chatterjeanum* Sengupta) is an important medicinal plant belonging to the Solanaceae family and is used as a supplementary source of raw material for the synthesis of steroids, which ranks next in importance to life saving drugs. Steroids are extensively used in modern medicine as ingredients of contraceptive pills, corticosteroids and sex hormones. Solasodine obtained from berries are converted to 16-dehydroprogesterone, which is an important intermediate in the synthesis of steroid drugs.

The world demand of plant based raw material for drugs is increasing by an average of 7 per cent annually; hence medicinal plants occupy a unique position in the pharmaceutical industry. Steroidal and corticosteroidal drugs alone constitute about 6 per cent of the total production of pharmaceuticals. This demand is particularly met by solasodine. To meet the increasing demand of solasodine, it is required to cultivate *Solanum viarum* more scientifically. Nutrition of *Solanum viarum* has a direct bearing on the amount of solasodine harvested. Therefore, a systematic approach to study the requirement of three major nutrient elements (N, P and K) in the cultivation of *Solanum viarum* has to be followed. Keeping these points in view, the present investigation was conducted in order to improve the yield of *Solanum viarum* by the application of inorganic nutrients.

MATERIALS AND METHODS

The investigation was conducted in the Department of Horticulture, Annamalai University during 2007. The experiment was set up in a Completely Randomized

Design, with ten treatments in three replications. The treatments consisted of application of major nutrients like nitrogen (50,100,150 kg/ha), phosphorus (40, 60, 80 kg/ha) along with a constant dose of potassium (40 kg/ha). Half the dose of nitrogen, full dose of phosphorus and potassium was applied as basal, while the remaining 50% of nitrogen was applied in two splits at 30 DAT and at the time of flower bud initiation. The observations on vegetative characters like plant height, number of branches, internodal length, number of leaves and leaf area, yield characters like days taken for first flowering, number of flowers per plant, number of fruits per plant, fruit set percentage, single fruit weight and fruit yield per plant were recorded at 150 DAT and were analysed statistically (Panse and Sukhatme, 1978).

RESULTS AND DISCUSSION

The data presented in Table 1 revealed significant effects of the major nutrients on the growth characters like plant height, number of branches, internodal length, number of leaves and leaf area.

The plant height was maximum (89.15 cm) with the application of N and P @ 100:60 kg ha⁻¹ (T₆) followed by T₅ (N and P @ 100:40 kg ha⁻¹) which recorded 83.82 cm. The least values of 57.25 cm and 52.09 cm were recorded with the highest dose of N and P application (T₁₀) and in the control (T₁), respectively. Similar findings on the increase in plant height due to application of N and P were reported by Saraf and Tiwari (2004) in ambrette. The internodal length was maximum (4.17 cm) in T₆ (N and P @ 100:60 kg ha⁻¹) followed by T₅ (N and P @ 100:40 kg ha⁻¹) which recorded 3.95 cm. The least internodal length