Effect of growth regulators on growth and yield performance of medicinal solanum

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ABSTRACT

The present investigation was conducted to study the effect of plant growth regulators on the growth and yield of medicinal solanum. Growth regulators such as GA_3 (250, 500 and 1000 ppm), NAA (50,100 and 200 ppm), and Cycocel (250, 500 and 1000 ppm), were applied as foliar spray at 30, 45 and 60 DAP. Among the growth regulators tried, GA_3 500 ppm improved both the vegetative characters like plant height, number of branches, number of leaves and leaf area and yield characters like number of fruits, fruit set percentage, fruit diameter and fruit weight when compared to NAA and Cycocel.

Key words : Medicinal Solanum, GA_3, NAA, Cycocel.

The use of plants as a source of drugs is well recognized in modern medicine. Among the plant based drugs, steroids rank foremost in the world. Steroids are extensively used in the manufacture of contraceptive pills, corticosteroids and sex hormones and thereby, have achieved importance in the field of medicine, being next only to the antibiotics as life saving drugs. Among the natural sources, *Dioscorea* and *Costus sp.* contain diosgenin, while *Solanum sp.* contain solasodine which are used commercially in the preparation of steroids and sex hormones. Diosgenin obtained from the underground tubers of *Dioscorea species* is the main plant source of steroids. The rapid depletion of natural stands of these *Dioscorea species* due to excessive collection has led to search for an alternative plant source to meet the expanding global requirement of steroids. In meeting these demands *Solanum viarum* has the potential to play a greater role than steroid bearing *Dioscorea* species.

Synthetic growth regulatory chemicals are being extremely important and valuable for manipulating the growth and yield of medicinal plants. Their effect varies with plant species, variety, concentration used, frequency of application and various other factors which influence the uptake and translocation of the chemicals (Singh *et al.,* 1990; Phookan *et al.,* 1991; Singh and Singh, 1996). The present study was conducted with an objective of finding out the effect of growth regulators on the growth and yield of medicinal solanum.

MATERIALS AND METHODS

The investigation was conducted in the Medicinal Plant Unit, Department of Horticulture, Annamalai University during 2006. The experiment was set up in a Completely Randomized Design with ten treatments in three replications. Plant growth regulators like GA_3 (250, 500 and 1000 ppm), NAA (50,100 and 200 ppm) and Cycocel (250, 500 and 1000 ppm) were used along with a control (water spray). The growth regulators were sprayed thrice (30, 45 and 60 DAP). The observations were recorded at 150 DAP and the results were analyzed statistically (Panse and Sukhatme, 1985).

RESULTS AND DISCUSSION

The data presented in the Table 1 revealed that the vegetative characters were significantly influenced by the growth regulator treatments. The plant height was maximum (92.66 cm) in GA_3 500 ppm followed by GA_3 1000 ppm (88.64 cm). The plant height was least (55.37cm) with the application of Cycocel 1000 ppm. These results are in agreement with the findings of Bhosle *et al.,* (2002) in tomato cv. RAJASHREE.

The internodal length was maximum (5.83 cm) in GA_3 500 ppm followed by GA_3 1000 ppm (5.58 cm). The least internodal length of 3.26 cm was recorded with the application of Cycocel 1000 ppm. The production of branches was also influenced by the application of growth regulators. GA_3 500 ppm recorded the maximum number of branches (18.16) followed by Cycocel 1000 ppm (16.44), while the control recorded the least value of 7.35. The leaf production also showed a similar trend with GA_3