

Effect of plant growth regulators and potassium nitrate on growth of seedling of Rangpur lime

A.B. KADAM*, D.B. SINGH AND R.A. KADE

Department of Horticulture, Allahabad Agriculture Institute Deemed University, ALLAHABAD (U.P.) INDIA

ABSTRACT

The growth and root studies like height of plant, number of leaves per plant, fresh and dry weight of shoots, length of taproot, number of secondary and fibrous roots and fresh and dry weight of roots were influenced significantly due to application of plant growth regulators and chemical. In Rangpur lime significantly more height (11.99 cm) was produced under the treatment GA₃ 150 ppm, followed by the treatment T₂ (11.42 cm) over control (7.90 cm) and remaining treatments. At 120 DAS, Rangpur lime produced more number of leaves per plant (18.91) under the treatment GA₃ 150 ppm. The less number of leaves per plant was recorded in the treatment control (11.28). The fresh and dry weight of shoot were more in GA₃ 150 ppm (13.70 g and 8.70 g, respectively) over control. The maximum length of the tap root was recorded in NAA 150 ppm (16.28 cm), followed by the treatments T₄ and T₅ over control and rest of the treatments. Significantly less length of tap root was produced in the treatment control. In case of number of secondary and fibrous roots, significantly these were superior under the treatment NAA 150 ppm (6.26 and 86.88, respectively). The minimum number of secondary and fibrous roots was produced under the treatment control (2.56 and 57.06, respectively). Similarly, NAA 150 ppm was found to produce significantly maximum fresh as well as dry weight (5.94 g and 4.28 g, respectively) and minimum (2.41 and 1.95 g, respectively) in the treatment control (T₁₀) in Rangpur lime.

Kadam, A.B., Singh, D.B. and Kade, R.A. (2011). Effect of plant growth regulators and potassium nitrate on growth of seedling of Rangpur lime. *Internat. J. agric. Sci.*, 7(1): 96-99.

Key words : Growth, GA₃, NAA, ppm

INTRODUCTION

Citrus fruits have a prominent place among the people and extensively grown in tropical and sub-tropical regions. Citrus fruit possess greater adaptability to different climatic conditions. Almost all the species and varieties of citrus are polyembryonic in nature with exception of *Citrus maxima*, *Citrus medica* and probably *Citrus latifolia*. Morerira *et al.* (1947) reported that the number of embryos present in a seed varied within a species, variety, strain and even on the same tree. In India, more than 80 per cent citrus plants are being raised on rough lemon and rest on other rootstocks like Rangpur lime, etc. Rootstocks play an important role exclusion of toxic, which are important for deciding the life of orchard. In recent times the rootstock has assumed a greater importance in view of role of dieback complex which is reduced to some extent by using rootstock like Rangpur lime. It is healthy, semi-vigorous, productive, tolerant to salt, greening diseases and resistant to tristiza (Choudhari *et al.*, 1974). Kagzi lime (*Citrus aurantifolia* Swingle) is commercially propagated through seeds in India (Naik, 1949) as it comes true to type, because of high degree (39-60 per cent) of nucellar embryony. In view of the above specific problems of Rangpur lime and Kagzi lime, two separate experiments were laid out to study the effect

of plant growth regulators and potassium nitrate on growth of seedling of Rangpur lime.

MATERIALS AND METHODS

The field experiment was carried out during the year 2008-2009 under the agro-climatic conditions of Allahabad Agriculture Institute Deemed University, Department of Horticulture, Allahabad in a Randomized Block Design. There were 10 treatments in three replications. The treatments were as follows: T₁- GA₃ 50 ppm, T₂- GA₃ 100 ppm, T₃- GA₃ 150 ppm, T₄- NAA 50 ppm, T₅- NAA 100 ppm, T₆- NAA 150 ppm, T₇- KNO₃ 50 ppm, T₈- KNO₃ 100 ppm, T₉- KNO₃ 150 ppm, T₁₀- Control (Distilled water). 1 g of GA₃ was dissolved in few ml of ethyl alcohol and volume was made to one litre by adding distilled water to obtain a concentration of 1000 ppm and 1 g of NAA was dissolved in 10 ml of ethyl alcohol with 2 g of NaHCO₃ and volume was made to one litre to get 1000 ppm concentration. Similarly, 5 g of well crushed KNO₃ powder was dissolved thoroughly in 500 ml of distilled water to obtain 1000 ppm concentration. The data recorded during the course of investigation were subjected to statistical analysis as per method of analysis of variance.