



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

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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 Kagzi lime significantly more height (18.82 cm) was produced under the treatments GA₃ 150 ppm, while less plant height (9.77 cm) was produced under the treatment control. At 120 DAS, the treatment GA₃ 150 ppm produced significantly more number of leaves per plant (26.62), which was superior over control and remaining treatments followed by the treatment GA₃ 100 ppm (20.95). The fresh and dry weight of shoots, the maximum weight was produced by the treatment GA₃ 150 ppm (25.89 g and 14.46 g, respectively), which was significantly superior over control. The maximum length of the tap root was recorded in NAA 150 ppm (17.83 cm), significantly less length of tap root was noticed under treatment control (10.12 cm). Number of secondary and fibrous roots were significantly superior under the treatment NAA 150 ppm (6.00 and 86.00, respectively). The minimum number of secondary and fibrous roots was produced under the treatment control. Similarly, NAA 150 ppm was found to produce significantly maximum fresh as well as dry weight (7.06 g and 4.97 g, respectively) and minimum (3.02 and 2.13 g, respectively) in the treatment control (T₁₀).

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Kadam, A.B., Singh, D.B. and Kade, R.A. (2010). Effect of plant growth regulators and potassium nitrate on growth of seedling of Kagzi lime, *Asian J. Hort.*, 5 (2) : 431-434.

Key words : GA₃, NAA, Seedling growth, Kagzi lime, Potassium nitrate

Citrus is often regarded as a 'queen of fruits'. It is one of the choicest fruit having high consumer's preference both as fresh fruit as well as for its refreshing processed juice. Almost all the species and varieties of citrus are polyembryonic in nature with exception of *Citrus maxima*, *Citrus medica* and probably *Citrus latifolia*. Moreira *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. 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 Kagzi lime. 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. The most serious problem in kagzi lime propagation is heavy mortality with the seedlings in

primary nursery stage (Gupta, 1989). Evenary (1949) reported that the seed coat of lime acts as a barrier because it interferes with early germination of seed due to presence of certain inhibitory substance. In view of the above specific problems of Kagzi lime, experiments was laid out to study the Effect of plant growth regulators and potassium nitrate on growth of seedling of Kagzi 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