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Effect of gibberellic acid, urea and neem cake on growth of Rangpur lime (*Citrus limonia*, Osbeck) seedlings

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ABSTRACT : The Rangpur lime (*Citrus limonia*, Osbeck) seedlings were selected to study the effect of gibberellic acid, urea and neem cake for enhancing the seedling growth. This investigation was undertaken in the College of Horticulture, Marathwada Agricultural University, Parbhani during 2006-07 and 2007-08. The experiment consisted of eleven treatments comprising of foliar application of gibberellic acid (100 and 200 ppm), 1.0 % urea spray, soil application of neem cake 20 g per seedling and its combinations at monthly interval for a period of four months after 45 days of transplanting of Rangpur lime seedlings in the field. The experiment was replicated thrice and was laid out in randomized block design. The observations were recorded on seedling vigour. The results revealed that there was an increase in percentage of bud take by all the treatments, but the maximum bud take percentage was recorded by the seedlings treated with GA 100 ppm plus urea 1 % spray plus neemcake 20 g per seedling (90.86 %) which was closely followed by GA 200 ppm plus urea 1 % spray plus neemcake 20 g per seedling (87.93 %) which generated an increase of (44.15 %) in bud take as compared to control. The maximum seedling height (58.60 cm), number of leaves (73.50), leaf area (29.10 cm2), diameter of seedling (7.07 mm), growth rate (9.0) and root length (42.08 cm) were obtained with GA 200 ppm plus urea 1 % spray plus neemcake 20 g per seedling.

KEY WORDS : Gibberellic acid, Urea, Neem cake, Growth, Rangpur lime

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In recent, the role of rootstock has assumed greater importance to have profound effect on the vigour, longevity, precocity, productivity, resistant or tolerance to diseases and pests and the quality of citrus fruits (Singh and Nagpal, 1947; Webber, 1948; Rao *et al.*, 1971). Rootstocks play an important role exclusion of toxic ions, which are important for deciding the life of orchard (Kadam and Patil, 1985). Therefore, the successful and rapid means of raising good rootstock seedlings of citrus has been a primary concern of nurserymen and research workers. The research findings in Maharashtra in respect of mandarin and sweet orange have indicated that Rangpur lime is reasonably satisfactory both in regard to yield and quality. It is healthy, semi-vigorous, productive, tolerance to salt, ESP in soil greening disease and resistance to tristeza virus (Benett and Costa, 1949; Chaudhari *et al.*, 1974; Kadam and Patil, 1985) and fairly resistant to *Phytophthora* fungus (Moreira, 1964) and have excellent drought tolerance because of a deep, vigorous root system. Rangpur lime, therefore, holds good promise at present for its commercial utilization for future mandarin and sweet orange plantation in Maharashtra. The experimental evidences under Citrus Fruit Research Scheme, Nagpur (1944-48) indicates that seedling growth of Rangpur lime in the nursery stage is very slow, and hence, it takes longer time near about 18-24 months to attained buddable size. In order to make the nursery practices efficient, the rootstock seedlings must attained good health, vigour and size for budding.

It is, therefore, highly essential to accelerate the growth rate of Rangpur lime seedlings to attain the buddable size earlier. Such a forcing of growth may ultimately reduce the cost and time of raising buddable citrus grafts.

RESEARCH METHODS

The experiment consisted of eleven treatments