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RESEARCH PAPER

Effect of growth regulators and chemicals on germination and seedling growth of Rangpur lime under laboratory conditions

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Abstract : The seeds of Rangpur lime were treated with different concentrations of GA_3 (50, 100 and 150 ppm), NAA (50, 100 and 150 ppm), Potassium nitrate (1.0, 1.5 and 2.0 %), thiourea (1.0, 1.5 and 2.0 %) and control (water soaked). The seeds were soaked for 24 hours in 100 ml of solutions of different concentrations. The experiment was carried out adopting Complete Randomized Design with thirteen treatment replicated thrice. The treated seeds of Rangpur lime were placed on rolled towel paper and the paper was rolled and made sufficient wet. The rolled papers with seeds were kept in growth chamber, at 30 $\pm$ 2 ^{o} C temperature. Light was provided for 8 hours a day by using 2 numbers of long fluorescent tube lights. Treatment $GA_3$150 ppm recorded higher germination (98.66 %) at the end of third week, ERI (67.711) and BRI (0.619), more shoot length (4.37cm) and root (2.82 cm) length, more fresh (96.25 g) and dry (14.68 g) weight of Rangpur lime seedlings, maximum SVI (705.19) and least days (3.34 days) took for germination under laboratory conditions. In general pre-soaking treatment to the seeds with different growth regulator and chemical solutions were found to be beneficial to improve the germination percentage compared to control under laboratory conditions.

Key Words : Rangpur lime, Growth regulators, Lab conditions, Germination, Seedling growth

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INTRODUCTION

Citrus fruits have a prominent place among popular and extensively grown tropical and sub-tropical fruits. India is sixth largest producer of citrus in the world contributing 4.8 per cent share in production. The research findings in Maharashtra in respect of mandarin and sweet orange have indicated that Rangpur lime rootstock 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 resistant to Tristeza virus. (Bennet and Costa, 1949 and Chaudhari *et al*., 1974) and fairly resistant to *Phytophthora* fungus (Moreira, 1964). The experimental evidences under Citrus Fruit Research Scheme, Nagpur (1944-48) indicates that the rate and extent of seed germination and seedling growth in Rangpur lime is not satisfactory. The germination of Rangpur lime seeds sown without any pre-treatment is between 27-30 per cent (Singh *et al*., 1970). The seeds take about 20-40 days to germinate and the seedling growth in the nursery stage is also very slow and hence, it takes longer time near about 18-24 months to attained budable size. In view of the above specific problems of Rangpur lime, regarding germination and poor seedling growth, it is felt necessary to undertake the following study under laboratory conditions.

MATERIALS AND METHODS

This experiment was conducted under laboratory conditions. From the single tree, uniformed sized, mature, healthy and true to type fruits of Rangpur lime were harvested. The seeds were extracted and washed in water several times

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