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Evaluation of rangpur lime strains as a rootstock for Nagpur mandarin

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ABSTRACT : Eleven strains of rangpur lime used as rootstocks collected from different sources like Katol, Texas, Pune, Kirumakki, Brazil, Shrirampur, Knors, Shrirampur Pune, Australia, Sournath and Limokryo were assessed for better growth and quality production of Nagpur mandarin at Regional Fruit Research Station, Katol from 2000-01 to 2008-09 and it was quadruplet replicated in Randomized Block Design on Vertisol. Conclusively it emerged that Rangpur Katol strain imparted maximum vigour to the scion of Nagpur mandarin trees in respect of height (5.87 m) and volume (55.14 cu.m.) than rest of the strains. The highest yield of fruit (525.08 in number and 71.75 kg in weight) was obtained on Rangpur Katol strain. All the quality parameters of fruits of Nagpur mandarin were significantly influenced by different Rangpur lime strains except acidity. However, average weight of fruit (166.00 g), diameter of fruit (6.66 cm), juice per cent (49.86 %), TSS (10.40) and TSS-acidity ratio (12.83) were produced by fruits of Nagpur mandarin budded on Rangpur Katol than rest of the Rangpur lime strains. The infestation of leaf miner, citrus psylla, mites and citrus black fly was more or less similar on all the strains of Rangpur lime.

KEY WORDS : Rangpur strains, Yield, Fruit characters, Pest incidence

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It is well known that rootstock imparts influence on scion vigour, precocity of bearing, production and quality of fruits, nutrient uptake, resistance to diseases, longevity, adaptability to environment and soil factors. Nagpur mandarin produced more yield on rangpur lime than Jamberi in heavy soil. rangpur lime also develops the tendencies like early bearing and retention of fruits for a long time on the tree and it is resistant to Tristeza virus. (Anonymous, 1993). An exhaustive study on the suitability of rootstock for mandarin had been undertaken in various states of India and the results had indicated that rootstock found suitable in one locality might not be equally effective for another locality (Aiyappa *et al.*, 1972).

Therefore, eleven strains of rangpur lime rootstock collected from different sources were evaluated for vegetative growth, yield and quality of Nagpur mandarin scion at Regional Fruit Research Station, Katol with the object to find out better performing strain of rangpur lime as a rootstock for heavy black cotton soil of Vidarbha region.

RESEARCH METHODS

A trial was conducted at Regional Fruit Research Station, Katol from 2001 to 2010 on six year old trees of Nagpur mandarin scion as a scion budded on eleven strains of rangpur lime used as rootstocks collected from different sources like Katol, Texas, Pune, Kirumakki, Brazil, Shrirampur, Knors, Shrirampur Pune, Australia, Sournath and Limokryo. A single tree was taken for each treatment and it was quadruplet replicated in Randomized Block Design and thus this trial comprised of forty-four mandarin trees. The soil type of the experimental area was heavy black cotton with chemical and nutrient contents *viz.*, pH – 8.3, bulk density – 1.54 to 1.80 gm^3, organic matter – 1.48 % $CaCO_3$ – 2.8 %, E.S.P. – 1.43, C.E.C. – 51.86 meq/100g, organic carbon –0. 85 %, total nitrogen – 0.083 %, C: N ratio – 10.24, available nitrogen – 306.8 kg/ha. P_2O_5 – 35.90 kg/ha, K_2O – 684.32 kg/ha, Zn – 0.71 ppm, Fe – 6.6 ppm, Mn – 27.4 ppm, Cu – 3.7 ppm, fine sand – 20.9 %, silt – 26.35 %, clay – 43.76 %. The growth observations *viz.*, Plant height, spread at EW and NS directions and stock – scion ratio at