

## 'Marmalade Orange' A promising root stocks for mosambi (*Citrus sinenssi* Osbeck)

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### ABSTRACT

The studies on the effect of root stocks on growth, yield, tree survival, per cent decline and fruit quality of Mosambi sweet orange in different rootstocks were conducted at All India Co-ordinated Research Project on Citrus, Mahatma Phule Krishi Vidyapeeth, Rahuri (India) during the year 1979 to 2003 revealed that the Marmalade orange rootstock was the most suitable showed smooth scion: stock union (0.90), high yield (67.39 kg/plant), maximum per cent survival (79.16), minimum decline per cent (15.92), good quality fruits and more gross monetary returns upto the age of 24 years, under Western Maharashtra conditions.

**Key words :** Growth, Yield, Survival, Rootstock, Marmalade Orange, Mosambi.

In India, citrus fruit ranks third in area and production after banana and mango. The most important commercial citrus cultivars in India belong to mandarin (*Citrus reticulata* Blanco), followed by sweet orange (*Citrus sinensis* Osbeck) and acid lime (*Citrus aurantifolia* Swingle) sharing 41, 23 and 23 per cent of the citrus production respectively. The significance of rootstocks in citriculture needs no emphasis because rootstocks have contributed perhaps more than any other factors to the success or failure of citrus. The rootstock exercises a great influence on performance of the scion budded on it. Different rootstocks have their own merits and demerits and there is no single rootstock that can be regarded as ideal for all the sweet orange cultivars and under all types of agroclimatic conditions. Rough lemon is the most predominant rootstock for sweet orange in most of the places in India which has been reported to be problematic for sweet orange (Bakshi and Dhillon 1964, Nauriyal *et al.*, 1964 and Rao *et al.* (1971). Chohan *et al.* (1982) reported Jattikhatti Karnaknatta as the most vigorous rootstocks for Blood Red orange.

### MATERIALS AND METHODS

The studies were carried out during 1979 to 2003 at All India Co-ordinated Research Project on Citrus, Mahatma Phule Krishi Vidyapeeth, Rahuri on Mosambi trees budded on four different rootstocks viz., Cleoptra Mandarin Marraco, Rough Lemon – III-IV, Marmalade Orange and Rough Lemon Chethalli. The trial was planted in 1979 in a randomized block design with six replication

and four trees per treatment. The trees were planted at a spacing of 6 x 6 m. The experimental trees were kept under uniform cultural operations. Observations were recorded on trunk girth, Scion: stock ratio, tree volume, extent of decline of a die-back, yellowing of leaves and the survival of trees was also recorded. The data for the yield per tree (number of fruits and total weight of fruits) were recorded every year of ambia bahar. The yield data were subjected to pooled analysis. Every year, the physico-chemical characteristics for the fruits were studied.

### RESULTS AND DISCUSSION

#### *Vegetative growth:*

The pooled data (Table 1 and 2) revealed that tree volume and scion-stock ratio were influenced by different rootstocks. The highest tree volume (89.50 cu.m.) was recorded by Marmalade Orange and the minimum (85.95 cu.m.) by Cleoptra Mandarin Marraco rootstock. The scion: stock ratio (0.90) was the best with Marmalade Orange rootstock, as compared with other rootstocks, indicating smooth union of stock and scion. Tayde and Ingle (1999) have reported that the Kinnow trees on Marmalade Orange rootstock produced significantly more canopy volume while smooth union was observed with Rangpur lime and Sweet lime.

#### *Yield:*

The pooled data of yield (1995-96 to 2002-03) in respect of (Table 3 and 4) revealed that, though the results are non significant, the maximum number of fruits (427.60 fruits/plant; 69.07 kg/plant yield) was on Rough lemon 58 III-IV rootstock followed by Marmalade Orange rootstock