

## EFFECT OF DIFFERENT ROOT STOCKS ON QUANTITATIVE AND QUALITATIVE ATTRIBUTES OF CITRUS FRUIT VAR, COORG MANDARIN ORANGE (*CITRUS RETICULATA* BLANCO)

An investigation was conducted at the Horticultural Research Station, Ambalavayal, Kerala during 1980-'81 cropping season to study the effect of six promising root stocks on the quantitative and qualitative indices of Coorg mandarin orange (*Citrus reticulata* blanco) fruits. The trial was laid out in randomised block design with four replications and six treatments in 1974 under Citrus Die-back Scheme. The root stocks used were rangpur lime (*Citrus limonia* Osbeck.), rough lemon (*Citrus jambhiri* Lush), trifoliolate orange (*Poncirus trifoliata* L.), Cleopatra mandarin (*Citrus reshni* Tanaka), troyer citrange and carrizo citrange. Each treatment consisted of 15 trees planted at a spacing of 5 m x 5 m. The recommended package of practices (Anon., 1974) were adopted for maintaining the plants.

Four fully tree ripe fruits were harvested at random from each tree. The fruits harvested were pooled together replication-wise and ten fruits were drawn from pooled lot for studying the qualitative and quantitative attributes of fruits. The T. S. S., acidity, reducing sugars, non-reducing sugars, and ascorbic acid content were estimated as per the methods of A. O. A. C. (1968).

The results of the study indicated significant variation among the different root stocks with regard to the fruit weight, fruit volume, fruit diameter, pulp/rind ratio, rind thickness, number of seeds/fruit, T. S. S., acidity, T. S. S./acid ratio, reducing sugars, non-reducing sugars, total sugars, sugar/acid ratio and ascorbic acid content of fruits (Tables 1 and 2).

Among the six root stocks used rough lemon produced comparatively larger sized fruits with higher weight, volume, diameter and girth at centre. Fruit having comparatively higher T. S. S./acid ratio, sugar/acid ratio and ascorbic acid content and minimum number of seeds were also recorded in the case of rough lemon root stock. However, the fruits were found to have maximum rind thickness and lowest pulp/rind ratio.

The trifoliolate orange root stock produced fruits having maximum juice content (49.75%) and sugar content (5.86%) and comparatively higher T. S. S./acid ratio. The number of seeds in fruit and rind thickness were also comparatively lower in the case of this root stock. However, the fruits were found to be comparatively smaller sized with low pulp/rind ratio.

The quality of fruits, in general, was found to be comparatively poor in the case of troyer citrange and carrizo citrange root stocks which recorded comparatively lower ascorbic acid content, sugar/acid ratio, total sugars and T. S. S./acid ratio.

Among the six root stocks used the overall performance of Coorg mandarin orange on rough lemon root stock was found to be most promising with regard to

Table 1

Effect of different root stocks on the quantitative attributes of Coorg mandarin orange

Sl. No.	Fruit characters	Root stocks						CD (0.05)
		Rangpur lime	Rough lemon	Trifoliate orange	Cleopatra mandarin	Troyer citrange	Carrizo citrange	
1	Fruit weight (g)	129.00	135.25	93.15	126.00	101.75	130.38	9.38**
2	Fruit volume (cc)	140.50	155.80	114.80	136.50	114.00	146.00	12.00**
3	Diameter of fruit at centre (cm)	5.91	6.43	5.88	6.08	5.90	6.22	0.22**
4	Girth of fruit at centre (cm)	20.29	20.53	19.45	19.68	18.89	21.01	NS
5	Length of fruit (cm)	10.10	9.55	9.87	10.05	9.52	9.77	NS
6	Pulp/rind ratio	2.89	2.45	2.47	2.93	2.67	2.67	0.29**
7	Rind thickness (mm)	2.80	3.33	1.91	2.89	3.41	3.18	0.39**
8	No. of seeds/fruit	17.07	16.38	16.78	21.98	18.39	21.49	2.11**
9	Juice percent by weight	41.68	41.80	49.75	42.79	41.86	49.99	4.11**

NS Not Significant

\* Significant at 5 percent level

\*\* Significant at 1 percent level

Table 2

Effect of different root stocks on the qualitative attributes of Coorg mandarin orange

Sl. No.	Rootstocks	T, S. S. (° brix)	Acidity (%)	T.S.S./acid ratio (%)	Reducing sugars (%)	Non-reducing sugars (%)	Total sugars (%)	Sugar/acid ratio	Ascorbic acid (mg/100ml) of fruit juice
1	Rangpur lime	8.28	0.728	11.36	2.20	3.14	5.41	7.44	27.04
2	Rough lemon	7.08	0.745	9.50	2.17	2.19	4.34	5.83	28.77
3	Trifoliolate orange	8.25	1.045	7.90	2.53	3.29	5.86	5.61	27.64
4	Cleopatra mandarin	9.48	1.018	9.31	2.53	2.70	5.30	5.21	29.32
5	Troyer citrange	8.88	1.077	8.24	2.31	1.60	4.20	3.90	24.10
6	Carrizo citrange	8.03	1.024	7.84	2.10	2.73	4.93	4.82	27.34
	CD (0.05)	0.38**	0.006**	0.38**	0.10**	0.07**	0.35**	0.34**	0.31**

\*\* Significant at 1 per cent level

the quantitative and qualitative attributes of fruits under the unique agroclimatic conditions of Wynad in Kerala.

The authors are grateful to Dr. P. C. S. Nair, Associate Dean, College of Horticulture, Vellanikkara, Trichur for providing necessary facilities for the chemical analysis of fruits and to Sri. G. Indrasenan, Assistant Professor, H. R. S., Ambalavayal for his assistance. Thanks are also due to the Indian Council of Agricultural Research, New Delhi for having provided necessary funds and other facilities for conducting this trial under Citrus Die-back Scheme.

### സംഗ്രഹം

കൂർഗ് മൻഡാരിൻ ഓറഞ്ചിന്റെ വിളവിലും, ഗുണനിലവാരത്തിലും റൂട്ടു സ്റ്റോക്കുകൾ ഗണ്യമായ സ്വാധീനം ചെലുത്തുന്നതായി ഈ ഗവേഷണ ഫലങ്ങൾ സൂചിപ്പിക്കുന്നു. ഫലങ്ങളുടെ ഭൗതിക-രാസഗുണങ്ങൾ വിലയിരുത്തി നോക്കിയതിൽനിന്നും റഫ് ലമൺ റൂട്ടു സ്റ്റോക്കായി ഉപയോഗിച്ച ചെടികൾ കരിസോ സിട്രേഞ്ച്, ട്രോയൽ സിട്രേഞ്ച്, ക്ലിയോ പാട്ര മാൻഡാരിൻ, ട്രൈ ഫോളിയോറ്റ് ഓറഞ്ച്, റാങ്ങ്പൂർ ലൈം എന്നീ റൂട്ടു സ്റ്റോക്കുകളിലുള്ള ചെടികളേക്കാൾ മെച്ചമുള്ളതാണെന്ന് കാണുകയുണ്ടായി. റഫ് ലമൺ റൂട്ടു സ്റ്റോക്കായി ഉപയോഗിച്ചപ്പോൾ ഫലത്തിലെ വിത്തുകൾ താരതമ്യേന കുറവായിരുന്നു എന്നത് എടുത്തുപറയത്തക്ക മറ്റൊരു സവിശേഷതയായിരുന്നു.

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