

## Performance of mango cv. LANGRA on different rootstock

Mahabir Singh\* and R.N. Kanpure

JNKVV, College of Agriculture, REWA (M.P.) INDIA

### ABSTRACT

Eight rootstock were evaluated to know the effect of rootstock on growth and yield on twelve year old trees of langra cultivar of mango. Tree height, canopy height circumference of rootstock and scion, tree volume, number of fruits/ tree and fruit yield per tree were significantly influenced by the rootstock. The fruit weight and fruit quality were not influenced by the rootstock. Bappakai, Vellaikolamban and Chandrakaran were found good rootstock for vegetative propagation in langra variety of mango.

**Key words :** Mango, Langra, Rootstock, Growth.

### INTRODUCTION

Mango (*Mangifera indica* L.), the king of tropical fruit is in cultivation since pre historic era in the country. Indo-Burma region is described as its origin. In India, mango is distributed throughout the country except northern hill region. But Madhya Pradesh is one of the leading mango growing state of the country. Vegetative propagation is the prime method for its cultivation. However, the use of non descriptive stones have been found to led enormous variation in the performance of the clone, propagation of root stock by the method of cutting, air-layering and stelling has advocated to eliminate these variation. But these methods are not commonly used because of standard rootstock. In the present study an attempt was therefore made to determine the effect of rootstock on growth and yield of fruit in langra cultivar of mango.

### MATERIALS AND METHODS

Eight root stocks viz. Bappakai, Chandrakaran, Kurukkan, Muvandan, Vellaikolamban, Olour, Kalepad, and random stock were evaluated for the propagation of langra cultivar of mango. The experiment was laid in randomized complete block design with four replications on twelve-year- old trees, maintained under AICRP on Mango, Rewa, Fertilizer dose was applied @ 100 : 100 : 50gNPK/tree/year. Fortnightly irrigation was given in summer. Three plants were randomly selected namely, treeheight (m), canopy height (m), circumference of rootstock (cm), and circumference of scion (cm), spread/tree E-W (m), spread/tree N-S (m), volume/tree (m<sup>2</sup>), malformation (%), number of fruit/tree, fruit yield/tree (kg), length of fruit (cm), width of fruit (cm), specific gravity, peel (%), Pulp (%), stone (%), peel stone ratio and total sugar in mango. The recorded data were subjected to statistical analysis using standard procedures.

### RESULTS AND DISCUSSION

The growth characters such as tree height, canopy height, circumference of rootstock and scion along with volume/tree were significantly influenced by the rootstocks. Whereas, malformation and fruit drops were not affected by the treatments (Table 1). Bappakai gave the maximum tree height, canopy height, volume/tree, circumference of rootstock and scion. In general, Vellaikolamban ranked second for growth characters. The lowest estimate of growth attributes was noted in random rootstock. Reddy and Singh (1991) have recorded plant height on Muvadan followed by Bappakai rootstock in scion of Alphanso variety of mango. The slight variation in the findings may be due to variation in genetic constitution of the variety and ambient climatic conditions.

The number of fruits/tree, fruit yield/tree and peel stone ratio were significantly influence by the roodstock (Table 2). The number of fruit/tree was in between 36.42 to 75.92 with highest in Bappakai followed by Vellaikolamban and Chandrakaran. It was found lowest in Olour. Similarly, fruit yield/tree varied from 9.06 to 19.09 kg/tree. It was also highest in Bappakai followed by Vellaikolamban and Chandrakaran. The lowest fruit yield was also recorded in Olour rootstock followed by random rootstock. Kohi and Reddy (1989) and Ranjan and Singh (1991) have also than reported more or less similar results in mango. The fruit weight and fruit quality were not influence by the rootstock as also reported by Kohi and Singh (1989), Ranjan and Singh (1991) and Reddy and Kurain (2000) in mango. It can be concluded from present study that tree height, canopy height, circumference of root stock and scion, tree volume, number of fruits/tree and fruit yield per tree were significantly influenced by the rootstock. The fruit weight and quality were not influenced by the rootstock. Bappakai followed by Vellaikolamban and Chandrakaran was found best rootstock for

Table 1 : Growth characters of mango (Langara) as influenced by the rootstocks.

Rootstocks	Height/tree (m)	Canopy height/tree (m)	Circumference of root stock (cm)	Circumference of scion (cm)	Spread/tree N-S	Spread/tree E-W	Volume/tree (m <sup>2</sup> )	Malformation (%)	Fruit drop (%)
Bappakai	4.46	4.04	68.04	60.33	5.85	5.80	109.58	20.83	67.32
Chandrakaran	3.89	3.66	67.75	58.41	5.56	5.46	91.53	22.80	61.25
Kurukkan	4.15	3.690	61.50	52.92	5.11	5.10	74.79	23.96	66.25
Muvandan	4.26	3.81	63.25	56.33	5.40	5.41	88.54	22.75	60.83
Vellaikolamban	4.38	3.90	68.83	59.67	5.65	5.61	100.17	21.96	68.50
Olour	3.80	3.36	52.00	50.17	4.60	4.60	54.92	24.89	69.00
Kalepad	3.89	3.41	55.63	47.92	4.78	4.76	62.74	32.97	66.75
Random stock	3.83	3.32	56.17	49.08	4.890	4.81	61.38	29.29	67.50
Mean	4.08	3.64	61.67	54.35	5.22	5.19	80.33	24.93	65.93
SEm+	0.15	0.17	2.76	2.81	0.32	0.30	12.41	4.34	6.08
CD 5%	0.46	0.50	8.12	8.26	NS	NS	36.50	NS	NS

\*Author for correspondence

Table 2 : Growth characters of mango (Langara) as influenced by the rootstocks.

Rootstock	Number of fruit per tree	Yield per tree	Length per fruit (cm)	Width per Fruit (cm)	Specific gravity	Peel (%)	Pulp (%)	Stone (%)	Peel/Stone ratio	Total Sugar (%)
Bappakai	75.92	19.09	9.80	7.25	1.02	13.18	75.10	11.72	4.48	19.09
Chandrakaran	65.92	16.56	9.68	7.44	1.03	13.51	74.63	11.87	4.54	19.29
Kurukkan	46.83	11.80	9.43	7.44	1.02	13.38	74.68	11.94	4.46	19.25
Muvandan	42.92	10.85	9.56	7.38	1.03	13.18	74.87	11.95	4.39	19.58
Vellaikolamban	67.83	16.86	9.77	7.63	1.03	13.41	74.60	12.00	4.45	19.50
Olour	36.42	9.06	9.35	7.30	1.03	13.53	74.32	12.15	4.43	19.69
Kalepad	40.33	10.19	9.58	7.35	1.02	12.93	75.41	11.66	4.41	19.63
Random stock	37.67	9.49	9.59	7.31	1.03	13.69	75.53	11.78	4.64	19.34
Mean	51.73	12.99	9.60	7.39	1.03	13.35	74.89	11.88	4.46	19.42
SEm+	5.11	1.21	0.11	0.11	0.01	0.35	0.41	0.16	1.21	0.41
CD 5%	15.03	3.55	NS	NS	NS	NS	NS	NS	3.56	NS

vegetative propagation in langra variety of mango. It is therefore recommended that Bappakai, Vellaikolamban and Chandrakaran can be adopted on commercial scale for budding/grafting of langra in mango.

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