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21 Participatory Management of Indigenous Mango Germplasm

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Mango is the choicest fruit of tropical world. Originated in Indo-Malayan region (Mukherjee, 1985), more than one thousand varieties are under commercial cultivation in India (Mukherjee 1949). South Indian varieties of mango are distinct (Yadav and Singh, 1985). Naik and Gangolly (1950) described 135 South Indian varieties, taking fruit character as the main criteria. North Kerala experiencing humid tropical climate is an important zone of variability of mango (Kannan, 1982). Polyembryonic mango cultivars like 'Vellaikolamban', 'Kurukkan' and 'Bappakkai' are traditionally grown here. Over the years, there is erosion in gene pool of rich varietal wealth due to deforestation, urbanisation and large scale rubber cultivation in Kerala. Establishment of field gene bank is an important *ex situ* conservation strategy. Systematic attempts to conserve genepool resulted in collection of more than 1266 varieties in various field gene banks in our country (Chadha, 1976). Field Gene Bank (FGB) has the advantage of being continuously evaluated and desired accessions can immediately be utilized directly or in breeding programmes. Field gene bank very often represents only a fraction of variability of the gene pool and enrichment of the collection is always required for capturing available diversity.

A field gene bank of mango varieties of South India is maintained at Instructional farm of College of Agriculture, Padannakkad, Kasaragod. Situated in coastal belt known for richness of polyembryonic types, this gene bank is over sixty years old and is a unique collection of popular dessert varieties. Physico-chemical features of the mango genotypes grown at the field gene bank are given in (Table). Established varieties from other South Indian states like 'Alphonso' and 'Kalapady' yield high quality fruits here (Pradeepkumar *et al*, 2006). 'Ratnagiri

Alphonso', a seedling variant of 'Alphonso' is a speciality of this gene bank (Table). Among the different genotypes 'Phirangiladua' is the most popular (Table), which is characterized by large fruit (307-417 g), high TSS (22.0° Brix), low acidity (0.33 %) and excellent eating quality. It is a tall and moderately vigorous tree with regular bearing habit.

In an attempt to popularize the genotypes and to enrich collection of mango field gene bank, a unique progamme titled 'mangofest' was conducted at College of Agriculture, Padannakkad during May second fortnight of 2005 and 2006. Competition was organized for farmer's varieties and the best variety(s) brought by farmers were evaluated by an expert committee and awarded a trophy. Programme was conceived with an objective of recognizing and honouring farmers role in popularizing and maintaining mango wealth in our country. Farmers experience in mango cultivation and also the field problems in mango

Physico-chemical characters of mango genotypes in field genebank

S. No.	Varieties	Ripe Fruit wt. (g)	Stone wt. (g)	TSS (°Brix)	Fruit length (cm)	Fruit Perimeter (cm)	Acidity (%)	Ascorbic Acid (mg $100g^{-1}$)	Pulp wt (g)
1	'Alphonso'	197.0	33.0	21.8	8.5	22.0	0.45	106.0	152.2
2	'Banganapalli'	375.0	41.0	22.0	12.6	28.8	0.36	45.2	315.0
3	'Bangalora'	498.2	52.5	17.8	16.9	26.5	1.42	33.9	422.7
4	'Bennet Alphonso'	172.0	34.5	20.1	9.0	19.4	0.67	31.5	114.9
5	'Cherimanga'	245.0	52.5	17.6	11.0	17.6	0.36	57.5	174.5
6	'Chittor'	298.0	45.0	14.5	9.5	24.5	0.73	23.1	229.5
7	'Gomanga'	134.0	21.5	15.5	7.7	19.2	0.65	136.9	114.5
8	'Gudad'	546.5	48.0	19.0	11.2	27.3	0.72	52.0	460.0
9	'Himayuddin'	258.5	37.0	18.5	12.1	22.3	0.28	34.1	200.5
10	'Himayuddin'x 'Kalapady'	215.6	36.3	23.2	12.2	23.0	0.50	41.8	165.7
11	'Himayuddin'x 'Neelam'	353.0	41.5	23.2	12.4	22.6	1.65	108.0	282.5
12	'Kalapady'	170.0	26.9	24.7	8.5	20.8	0.94	115.6	161.0
13	'Karpooram'	438.5	30.5	15.8	9.2	29.2	0.27	139.1	387.3
14	Lord	234.0	35.5	19.0	10.3	22.0	0.59	67.4	179.0
15	'Malgoa'	438.5	52.5	25.2	9.6	29.5	0.52	66.5	341.0
16	Mercury	212.0	26.5	23.1	8.2	22.7	0.31	51.5	170.5
17	'Mundappa'	247.5	27.0	18.5	7.9	24.8	0.37	28.5	202.0
18	'Neelam'	226.0	40.0	20.9	9.0	20.3	0.57	116.1	172.5
19	'Panakkalu'	325.0	59.0	17.5	7.6	25.3	0.71	52.5	233.0
20	'Panchadhara-kalasam'	262.0	36.0	18.5	9.5	23.9	0.25	33.8	192.5
21	'Phirangiladuva'	413.5	55.0	22.0	13.1	27.6	0.33	45.4	330.0
22	'Prior'	262.0	39.5	17.7	9.8	23.0	0.32	33.6	203.0
23	'Ratnagiri Alphonso'	166.0	19.9	17.2	11.0	20.8	0.92	70.5	134.1
24	'Suvarnarekha'	260.9	44.3	16.7	11.4	22.4	0.60	46.0	197.6

Physico-chemical characters of farmer's mango types

Code No	Fresh wt g	Length cm	Width cm	TSS ° Brix	Stone wt g	Acidity (%)
MA 1	0.198	9.0	6.5	22	21.71	0.74
MA 2	0.253	8.0	6.5	24	16.49	0.69
MA 3	0.219	8.0	7.0	21	20.59	1.40
MA 4	0.249	8.5	6.5	14	33.10	0.43
MA 5	0.292	10.0	8.0	17	18.85	1.29
MA 6	0.192	8.0	7.5	14	13.82	0.78
MA 7	0.133	7.3	6.0	19	15.65	0.48
MA 8	0.161	7.5	6.7	14	21.50	0.38
MA 9	0.167	8.0	6.5	16	13.84	0.93
MA 10	0.228	7.7	6.7	20	16.64	1.19
MA 11	0.236	9.2	7.3	14	25.34	0.66
MA 11	0.290	9.4	6.7	21	24.36	0.57
MA 12	0.276	7.6	8.5	20	25.57	0.60
MA 13	0.287	9.7	7.7	12	34.51	0.25
MA 14	0.150	8.2	8.2	10	24.56	0.37
MA 15	0.215	7.7	5.8	12	24.74	0.44
MA 16	0.215	8.7	6.8	13	24.48	0.33
MA 17	0.125	6.6	5.5	11	13.96	0.25
MA 18	0.450	12.3	8.5	13	44.66	0.24
MA 19	0.150	6.4	6.3	14	20.36	0.51
MA 20	0.215	7.7	7.8	15	20.37	0.23
MA 21	0.200	8.8	7.4	15	14.01	0.30
MA 22	0.150	7.5	6.7	12	24.37	0.44
MA 23	0.100	7.4	6.0	21	16.65	0.43
MA 24	0.435	9.5	9.0	12	38.50	0.64
MA 25	0.356	11.5	8.0	15	36.20	0.53
MA 26	0.201	7.8	6.5	14	21.56	0.32
MA 27	0.171	8.0	7.0	13	18.95	0.42

cultivation were well documented. Salient features of physico- chemical properties of mango types registered for competition are given in Table. As revealed by farmers most of the types were generated from seedlings and is a rich pool of diverse traits requiring scientific evaluation. Mango type, from Pallikkara, North Kerala (MA-23) was awarded the first prize during the mangofest of 2006. Fruit was highly attractive with excellent taste, high TSS (21°Brix) and low acidity (0.43 %). Scions were collected from promising accessions and epicotyl grafts were generated for planting in field gene bank. This programme was highly effective in enriching the field gene bank of mango and capturing available diversity of popular dessert mango types in a locality. This is an unique method in management of mango germplasm resources with farmers participation and can be simulated in other centres during mango harvest season.

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