Supplementary Table S1. Description of five mango varieties grafted on three polyembryonic rootstocks.

Genotypes	Description
Mallika	Mallika is a cross between Neelum and Dashehari was released in 1971 by IARI, New Delhi. The fruits have an attractive appearance, with an average weight of 307 gram a pulp percentage of 74% and TSS is (25°Brix). It also has a better keeping quality and also matures later than Dashehari [4,16,34].
Amrapali	It has been evolved from a cross between Dashehari and Neelum and released in 1978 by IARI, New Delhi. It is distinctly dwarf precocious, under north Indian conditions, prolific bearer and highly regular. It is suitable for high density planting (2.5 x 2.5 m). The deep orange red in colour and has about 2.5-3.0 times more β- carotene content then its parents [4,16, 34].
Pusa Arunima	It is a hybrid, derived from the cross between Amrapali and Sensation and released in 2002. It has medium TSS (19.56%) and is rich in vitamin C (43.6 mg/100 g pup) and Beta-carotene content, and has a good flavor with very good shelf-life (10 to 12 days) at room temperature after ripening. It is suitable for domestic market. It can also be accepted in the international markets, because of its attractive red peel color, fibreless pulp, mild flavour, medium TSS, excellent sugar: acid blend and long shelf-life [4, 16].
Pusa Surya	The fruit is medium to large in size (270 g) with attractive apricot yellow peel colour and medium TSS (18.5%). It is rich in vitamin C (42.6 mg/100 g pulp) and Beta carotene content. It ripens by 3rd week of July. It has good shelf-life (8-10 days) at room temperature after ripening. It is suitable for domestic and international markets [4,16].
Dashehari	It is one of the most and popular and important cultivar of north India. The fruit pulp is yellow, firm with almost no fiber, scanty juice and a delightful aroma, very sweet taste of excellent quality [32, 34].
Olour	It is a popular polyembryonic rootstock of Malabar district of Tamil Nadu. Fruit maturity is early to medium. Fruits are small sized, oval in shape, pulp is soft and capucine yellow in colour with moderate fiber. Fruit quality aromatic with slight indication of no agreeable turpentine taste [6, 14].
Kurukkan	Salt resistant, polyembryonic rootstock, high respiration rate, thin peels thickness and medium level of PME activity. It increased more phenolic compounds as well as polyphenol oxidase enzyme activities [6, 14, 36].
K-5	K-5 inhibited vigour in both scion varieties Pusa Arunima and Pusa Surya. Stimulated higher Vitamin C content, high acidity, high peroxidase (POX) activity [6, 14].

Supplementary Table S2. List of primer sequences, annealing temperature and product size of shelf-life specific primers used in five mango varieties grafted on three polyembryonic rootstocks.

S.No.	Primer	Forward	F-TM (°C)	Reverse	R-TM (°C)	Annealing temp. (Ta) (°C)	Product size (bp)
1	MSL-1	GGGACAAAGAGACACACCTGA	56.7	CATATTGACAGGGCCAACG	53.8	55.0	151
2	MSL-2	AGCTCCTGCCAACTAATCCA	56.1	AATGCCTCTGCAACATCCTC	55.4	55.0	250
3	MSL-3	GTATTGGAGCTGGGTTGGAA	54.8	GTCACACCAAAACGATGTGC	54.9	55.0	151
4	MSL-4	TTAAGCTTCTTGGGCGAAAA	52.6	TCATGCAAATCGACTCCTTG	53.0	55.0	158
5	MSL-5	GTGGTGCTCCCACAGTTCTT	57.6	CTGTTGCAGGACCGTAGGTT	57.2	55.0	189
6	MSL-6	CTATCCAGCGAAACCACAGC	56.1	GCCTTGGGTCCAAAAAGAG	54.0	55.0	221
7	MSL-7	ACCATCTAGGCGATTCATGG	54.4	GTTCTGGCCACTGAACCTGT	57.6	55.0	205
8	MSL-8	TGAGAGGACTTCTGGCTCGT	57.7	CGACACTTGCAAGCCAACT	56.2	55.0	165
9	MSL-9	AGCAGCTTGTTCACTGCTGA	57.2	GACCGTGGTGATGCAAATAA	53.2	55.0	190
10	MSL-10	CATTGCATTGCTCCGATTTA	51.2	CCTCCAAAATGTTCCTTCCA	52.7	55.0	168
11	MSL-11	GTGGTGCTCCCACAGTTCTT	57.6	CTGTTGCAGGACCGTAGGTT	57.2	55.0	189
12	MSL-12	CTCTATTTGGGCTGCTCAGG	55.4	GTCAACGGGACCCAAGACTA	56.5	55.0	219
13	MSL-13	GCAATTCGCTGATGTCTCAA	53.5	AGTGCCTCAAATTGGGTTTG	53.8	55.0	153
14	NMSLC-1	ATTGCCCTGAGATGACCAAC	55.1	TTTCTTGAACGGTGCACTTG	53.8	55.0	163
15	NMSLC-2	TGAAGCCATGAAAGCTGTTG	53.7	AATGAAGGGGAGACAAGGTC	54.3	55.0	233
16	NMSLC-3	AGACAGCAAGTGTTGCTCCA	56.9	GTCCGGGTAAGTGTCCTTGA	56.5	55.0	210
17	NMSLC-4	CCAAGTGAAGTTGGGGACAT	55.1	TTCCAACCCAGCTCCAATAC	54.8	55.0	219
18	NMSLC-5	GCACATCGTTTTGGTGTGAC	54.9	GGTCGAATCCCATCATCAAC	53.4	55.0	188
19	NMSLC-6	GCCTGATCCAAAC	54.8	CTGTGGATTGGGG	55.4	48.5	214

		TGAGGAA		TGTAAGG			
20	NMSLC-7	GAGATTGCGATTG CAGTGAA	53.5	CAGAATCAAGGGG TTTGCTC	53.8	52.0	215
21	NMSLC-8	ATGGGGCACAGAT TACTTCG	54.8	GGCGTGAGTAATG TGGGTTT	55.5	55.0	236
22	NMSLC-9	TGAGCAAGCATGG AATGAAG	53.3	TTCCATTAGGGTCT CGCATC	54.3	55.0	155
23	NMSLC-10	ATTAACCGGAAGG CCATGTT	54.6	TGAGTGGCCAGTA AAAAGCA	54.7	55.0	152
24	NMSLC-11	GCTTGTGCAGCCTA AATGGT	56.1	CAATAGCTGGGGC TGGAATA	54.5	55.0	209
25	NMSLC-12	TTTCCATGTTCAGC AGTTTGA	52.8	AAAACCATCATCC CACAACAA	52.9	48.5	216
26	NMSLC-13	TTGGCTGTATTTGG TTGCAG	53.8	CCTTGGCTTCCCAG AAGTAA	54.5	55.0	158
27	NMSLC-14	GATTCACGTAAGA ATAAACATTTCG	50.8	AATTGGTGTGCAA GTGGTGA	55.2	55.0	192
28	EXPM-1	GGCAATGGTAGGT TTGAGCA	55.6	TACCATACCCACA CGCTCCT	57.9	55.0	173
29	EXPM-2	CAATGGTAGGTTTG AGCATGG	54.0	CACCACAACTGAA CCCATTG	54.3	55.0	249
30	EXPM-3	ATGGCCTGCATTCT GTCTCT	56.4	AGCATGCACCACA ACTGAAC	56.2	55.0	238
31	EXPM-4	TACCTTTTACGGCG GTTCTG	54.9	TGCACACTTGATTT CGAAGC	53.9	55.0	160
32	EXPM-5	TGCTTCGAAATCA AGTGTGC	53.9	CATGGCAAGGTCA AAATGTG	52.6	51.0	159
33	EXPM-6	CAAACTACGCCCT ACCAAGC	56.0	TAACGCTCACCTTC ACGATG	54.9	51.0	246
34	EXPM-7	CGAGCTGGTATTGT CCCAGT	56.8	GCCAGTTTTGACCC CAGTTA	55.3	55.0	202
35	EXPM-8	CATCGTGAAGGTG AGCGTTA	54.9	TCTTTCCGACGAAT GTTTGA	52.0	48.5	200

Supplementary Table S3. Distribution of five mango varieties grafted on three polyembryonic rootstocks in different clusters using shelf-life specific primers.

Cluster	**Number of rootstock(s) and scion/rootstock(s) in cluster**	**Total Population**
A	5 (PS/K-5, PA/K-5, D/K-5, A/K-5, M/K-5)	33.33 %
B	10 (D/OL, M/KU, A/KU, PS/KU, M/OL, PS/OL, D/KU, PA/KU, A/OL, PA/OL)	66.66 %

1.PusaArunima/Kurukkan (PA/KU), 2.Pusa Surya/Kurukkan (PS/KU), 3.Amrapali/Kurukkan(A/KU), 4.Mallika/Kurukkan(M/KU), 5.Dashehari/Kurukkan (D/KU), 6.Pusa Arunima/Olour (PA/OL), 7.Pusa Surya/Olour

(PS/OL), 8.Amrapali/Olour(A/OL), 9. Mallika/Olour (M/OL), 10. Dashehari/Olour (D/OL), 11. Pusa Arunima/K-5 (PA/K-5), 12. Pusa Surya/K-5 (PS/K-5), 13. Amrapali/K-5 (A/K-5), 14. Mallika/K-5 (M/K-5), 15. Dashehari/K-5 (D/K-5)

Figure S1 Variance explained by Principal Component (individual and cumulative) for various fruit quality traits in 15 scion/rootstock combinations.

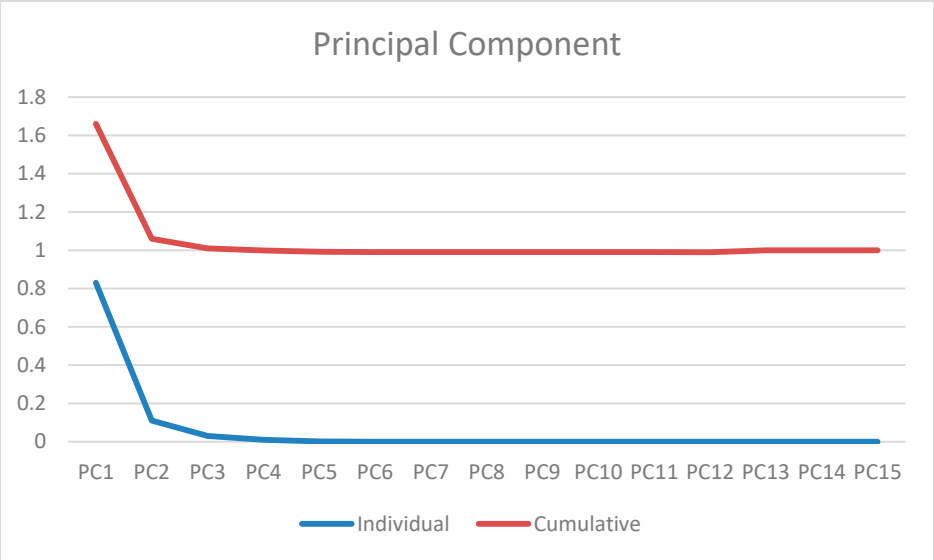
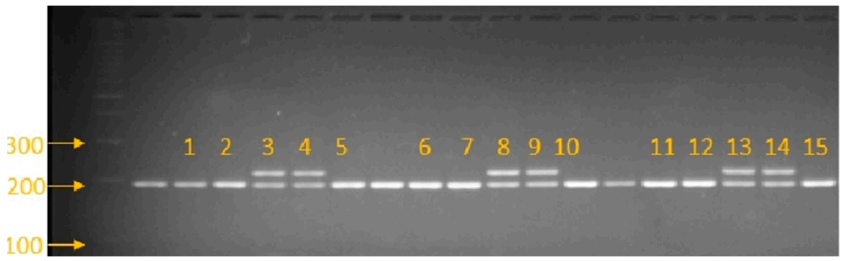
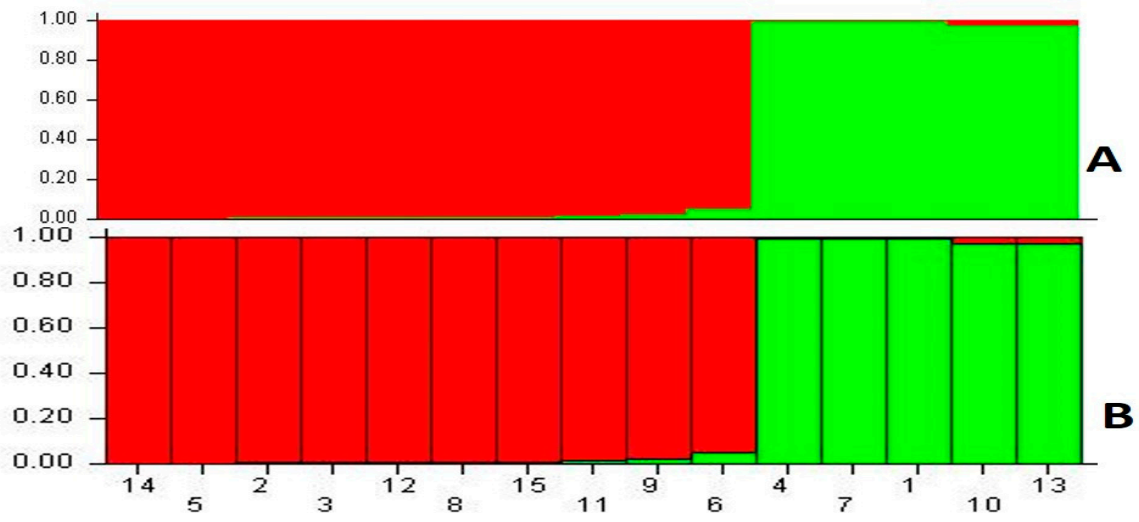


Figure S2. Molecular profiling of five mango varieties grafted on three polyembryonic rootstocks using shelf-life specific simple sequence repeat locus NMSLC-14.



L- 100 bp ladder 1. Pusa Arunima/Kurukkan, 2. Pusa Surya/Kurukkan, 3. Amrapali/ Kurukkan, 4. Mallika/Kurukkan, 5. Dashehari/Kurukkan, 6. Pusa Arunima/Olour, 7. Pusa Surya/Olour, 8. Amrapali/Olour, 9. Mallika/Olour, 10. Dashehari/Olour, 11. Pusa Arunima/K-5, 12. Pusa Surya/K-5, 13. Amrapali/K-5, 14. Mallika/K-5,15. Dashehari/K-5.

Figure S3 (A, B & C). Model based population structure plot for each variety with K=2, using Structure with 24 SSR markers. Color codes are as follows: Population A red, Population B green, population. Delta *K* vs *K*Evanno plot showing *K*=2 having the peak delta *K* value, suggesting existence of two sub-populations in 15 scion/rootstock combinations.



1. PusaArunima/Kurukkan(PA/KU), 2.Pusa Surya/Kurukkan (PS/KU), 3.Amrapali/Kurukkan(A/KU), 4.Mallika/Kurukkan(M/KU), 5.Dashehari/Kurukkan (D/KU), 6.Pusa Arunima/Olour (PA/OL), 7.Pusa Surya/Olour (PS/OL), 8.Amrapali/Olour(A/OL), 9. Mallika/Olour (M/OL), 10. Dashehari/Olour (D/OL), 11. Pusa Arunima/K-5 (PA/K-5), 12. Pusa Surya/K-5 (PS/K-5), 13. Amrapali/K-5 (A/K-5), 14. Mallika/K-5 (M/K-5),15. Dashehari/K-5 (D/K-5).

C

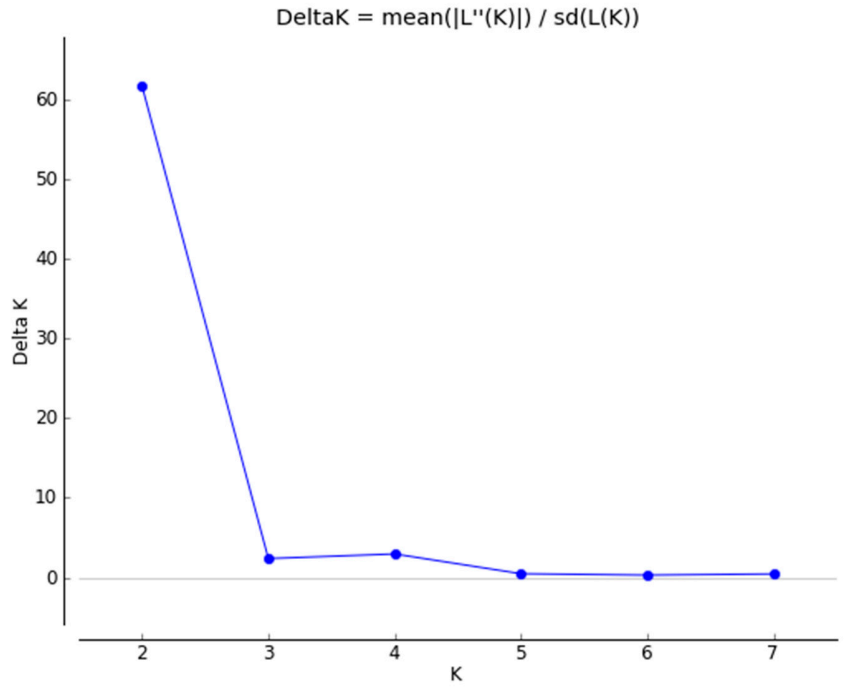
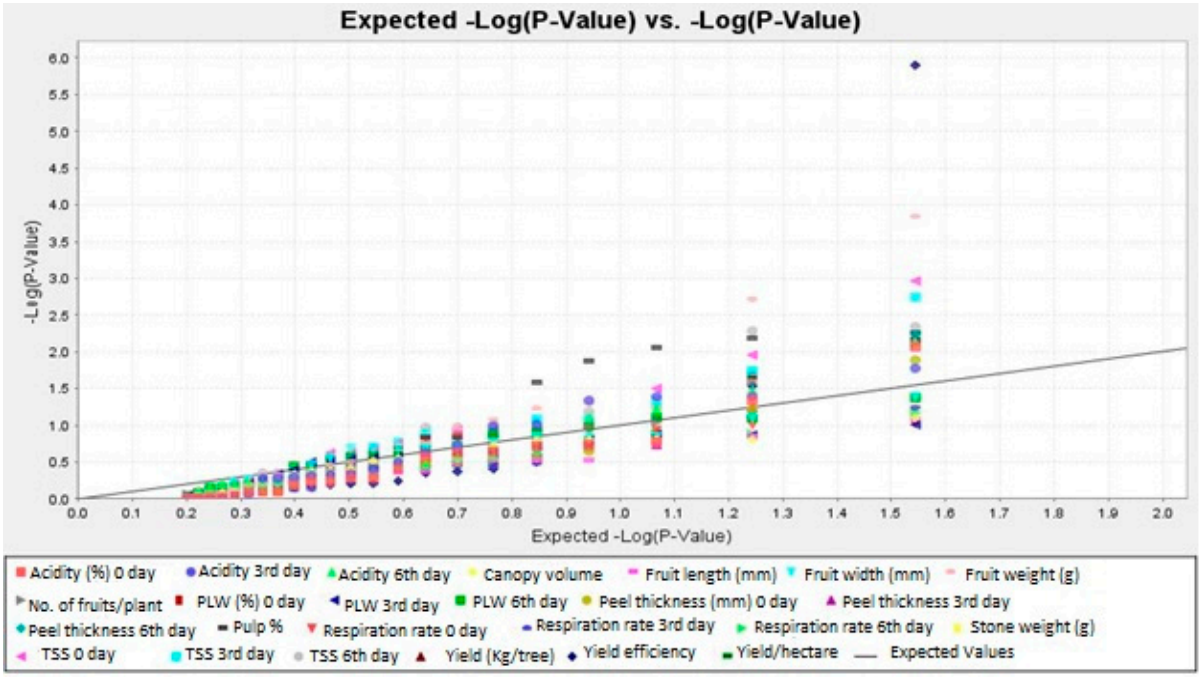
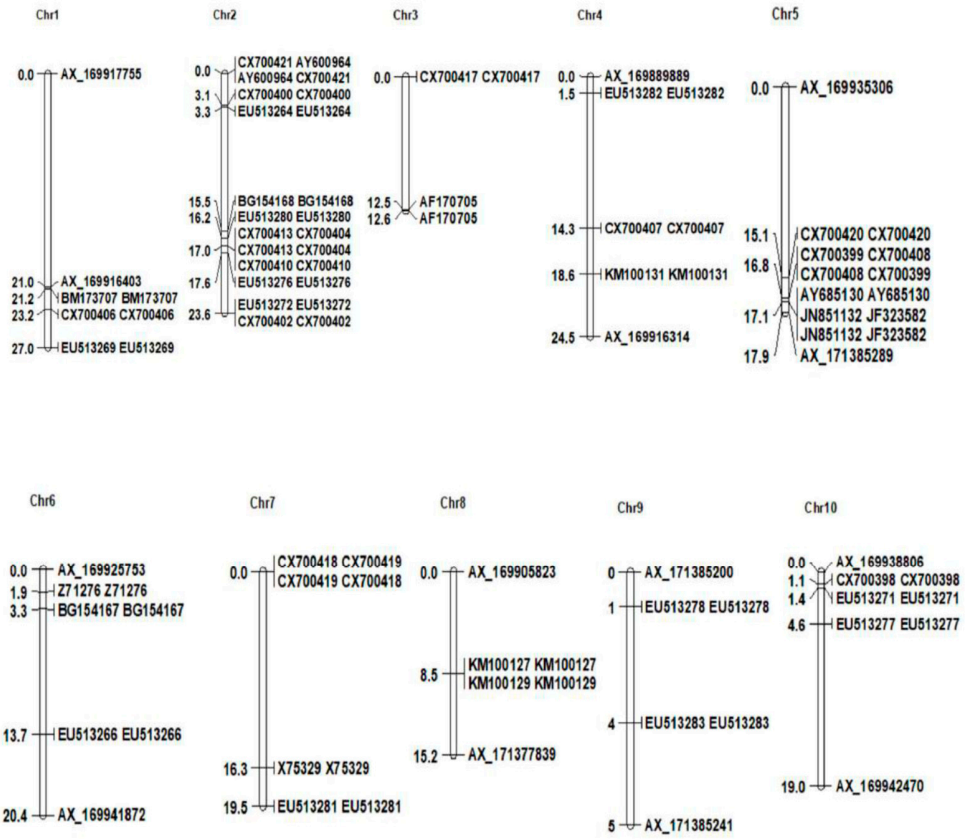
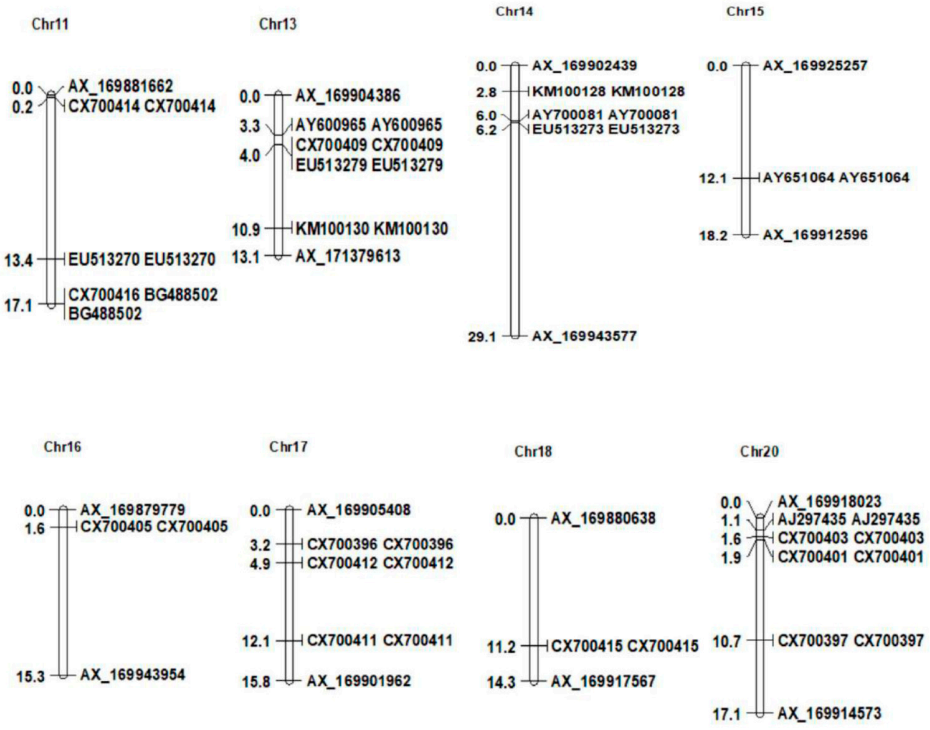


Figure S4 Quantile–quantile (QQ) plots showing the distribution of observed verses expected p values. Significant associations were observed for fruit weight, yield efficiency, peel thickness, pulp percent, total soluble solids and acidity.



Figures S5 Mapchart indicating the position and relative distance of the tested markers on different mango chromosomes.




Chr11
0.0 AX_169881662
0.2 CX700414 CX700414
13.4 EU513270 EU513270
17.1 CX700416 BG488502
BG488502
Chr13
0.0 AX_169904386
3.3 AY600965 AY600965
4.0 CX700409 CX700409
EU513279 EU513279
10.9 KM100130 KM100130
13.1 AX_171379613
Chr14
0.0 AX_169902439
2.8 KM100128 KM100128
6.0 AY700081 AY700081
6.2 EU513273 EU513273
29.1 AX_169943577
Chr15
0.0 AX_169925257
12.1 AY651064 AY651064
18.2 AX_169912596
Chr16
0.0 AX_169879779
1.6 CX700405 CX700405
15.3 AX_169943954
Chr17
0.0 AX_169905408
3.2 CX700396 CX700396
4.9 CX700412 CX700412
12.1 CX700411 CX700411
15.8 AX_169901962
Chr18
0.0 AX_169880638
11.2 CX700415 CX700415
14.3 AX_169917567
Chr20
0.0 AX_169918023
1.1 AJ297435 AJ297435
1.6 CX700403 CX700403
1.9 CX700401 CX700401
10.7 CX700397 CX700397
17.1 AX_169914573