|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Accessions/ Fruit characters | Collec-  tor ID | Fruit weight (gm) | Fruit length (cm) | Fruit width (cm) | Pulp weight (gm) | Pulp (%) | Seed weight (gm) | Seed (%) | No. of seeds | Shell weight (gm) | Shell (%) | Shell thickness (mm) | Pulp: shell |
| B-1 | 14/24 | 1478.80a | 10.60a | 11.60a | 894.30a | 60.477b | 50.40e | 3.407n | 38 | 534.10a | 36.117gh | 2.50c | 1.67ab |
| B-2 | 13/20 | 605.60d | 8.55d | 8.70d | 320.80e | 52.97 e | 48.80g | 8.06j | 37 | 236.00c | 38.97ef | 2.50c | 1.36bc |
| B-3 | 11/22 | 503.00g | 9.10b | 7.95ef | 273.10g | 54.29 de | 28.40m | 5.647m | 20 | 201.50g | 40.06e | 2.40d | 1.36bc |
| B-4 | 13/19 | 587.70de | 8.35e | 7.75gh | 354.40d | 60.303b | 35.30k | 6.01m | 27 | 198.00gh | 33.69j | 2.50c | 1.79ab |
| B-5 | 18/6 | 255.20m | 7.40gh | 6.60l | 38.70r | 15.163op | 55.00c | 21.553a | 45 | 161.50k | 63.283a | 2.50c | 0.24g |
| B-6 | 14/9 | 573.20e | 7.50g | 7.85fg | 321.10e | 56.02 cd | 42.80i | 7.467kl | 33 | 209.30f | 36.513gh | 2.60b | 1.53bc |
| B-7 | 12/20 | 412.40j | 7.40gh | 7.05k | 229.70i | 55.69 cd | 43.00i | 10.427f | 33 | 139.70l | 33.877ij | 2.40d | 1.64ab |
| B-8 | 12/21 | 691.20c | 9.05bc | 9.00c | 421.60c | 61ab | 52.00d | 7.523k | 40 | 217.60e | 31.483k | 1.80f | 1.94a |
| B-9 | 18/2 | 353.20k | 7.90f | 6.65l | 93.9 | 26.583m | 65.00a | 18.407c | 50 | 194.30hi | 55.01b | 2.50c | 0.48g |
| B-10 | 11/23 | 359.20k | 7.15i | 7.50ij | 206.50j | 57.487c | 30.00l | 8.35ij | 23 | 122.70m | 34.16ij | 2.50c | 1.68ab |
| B-11 | 12/23 | 527.30f | 8.90c | 8.10e | 287.40f | 54.50 de | 52.00d | 9.86gh | 42 | 187.90ij | 35.633hi | 2.20e | 1.53bc |
| B-12 | 18/14 | 293.60l | 6.65j | 6.35m | 146.70m | 49.967f | 29.00lm | 9.877gh | 20 | 117.90m | 40.157e | 2.50c | 1.24cd |
| B-13 | 14/6 | 484.80gh | 7.25hi | 7.65hi | 203.80j | 42.04hi | 50.00ef | 10.313fg | 44 | 231.00cd | 47.65cd | 2.70a | 0.88cde |
| B-14 | 18/5 | 461.50i | 8.40de | 7.40j | 186.30k | 40.367ij | 49.00fg | 10.62f | 44 | 226.20d | 49.01c | 2.50c | 0.82cde |
| B-15 | 12/19 | 482.80h | 8.45de | 7.40j | 255.60h | 52.94e | 45.20h | 9.36h | 38 | 182.00j | 37.697fg | 2.50c | 1.40cd |
| B-16 | 18/9 | 372.90k | 8.45de | 8.55d | 229.80i | 61.623ab | 38.50j | 10.323fg | 24 | 104.60n | 28.05l | 2.50c | 2.20a |
| B-17 | 12/10 | 427.80j | 7.35gh | 7.35j | 165.60m | 38.71j | 58.60b | 13.697e | 48 | 203.60fg | 47.593cd | 2.50c | 0.81cde |
| B-18 | 12/7 | 1007.20b | 10.55a | 9.70b | 631.00b | 62.65a | 35.80k | 3.553n | 25 | 340.40b | 33.797ij | 2.70a | 1.85a |
| B-19 | 10/3 | 290.20l | 5.50k | 6.30m | 130.00n | 44.797g | 20.20op | 6.96l | 14 | 140.00l | 48.243c | 2.50c | 0.93cd |
| B-20 | 11/2 | 230.00n | 4.55m | 5.40n | 100.00op | 43.477gh | 20op | 8.697i | 13 | 110.00n | 47.827cd | 2.70a | 0.91cde |
| B-21 | 11/3 | 108.10op | 4.65m | 5.30n | 36.00rs | 33.303k | 22.10n | 20.447b | 15 | 50.00op | 46.253d | 2.60b | 0.72ef |
| B-22 | 10/2 | 95.4op | 4.65m | 4.85op | 32.00rs | 33.543k | 19.4op | 20.337b | 12 | 44op | 46.123d | 2.5c | 0.73ef |
| B-23 | 9/3 | 88op | 4.95l | 4.75op | 26.00st | 29.543l | 12.00t | 13.637e | 8 | 50op | 56.817b | 2.60b | 0.52fg |
| B-24 | 9/2 | 79op | 3.50n | 3.25r | 15.00t | 18.99n | 14.00s | 17.72d | 10 | 50op | 63.293a | 2.50c | 0.30g |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Accessions/ Fruit characters | Collec-  tor ID | TSS (0B) | Total sugars (g/100g) | Carotenoids (µg/g fw) | FRAP (mg AEAC/100g) | DPPH (mg AEAC/100g) | Vitamin C (mg/100g) | Acidity (%) | Total phenols (mg GAE/g fw) | Flavonoids (mg CE/g fw) |
| B-1 | 14/24 | 33bcd | 25.07a | 5.68ghi | 146.66abcd | 89.90cdefgh | 35.42hi | 0.12l | 12.56lm | 24.97ij |
| B-2 | 13/20 | 36a | 17.16gh | 5.24ij | 148.99abc | 85.17h | 37.72hi | 0.45hijk | 20.69cd | 49.34d |
| B-3 | 11/22 | 33bcd | 16.15hi | 6.53efg | 148.02abc | 94.36abc | 56.58cd | 0.43ijk | 21.39c | 57.65c |
| B-4 | 13/19 | 34abc | 21.78cd | 8.78c | 148.22abc | 85.26gh | 64.86ab | 0.56fgh | 23.44ab | 55.62c |
| B-5 | 18/6 | 28f | 5.91l | 6.46fgh | 145.50abcd | 90.52cdefg | 58.88c | 0.35jk | 16.05jk | 26.82hi |
| B-6 | 14/9 | 32cd | 15.19i | 4.96ijk | 148.41abc | 90.08cdefgh | 49.22ef | 0.36jk | 18.00gh | 49.40d |
| B-7 | 12/20 | 34abc | 21.04de | 3.98klm | 150.16ab | 90.17cdefgh | 48.76ef | 0.34k | 19.38e | 47.92d |
| B-8 | 12/21 | 33bcd | 23.96ab | 4.88ijk | 150.16ab | 92.04abcdef | 47.84ef | 0.34k | 18.30fg | 55.70c |
| B-9 | 18/2 | 27f | 22.11bcd | 11.26b | 145.69abcd | 90.79bcdef | 68.08a | 0.69de | 20.01de | 29.70h |
| B-10 | 11/23 | 34abc | 21.03de | 3.33lm | 150.93ab | 93.38abcd | 46.00ef | 0.61ef | 22.89b | 74.63a |
| B-11 | 12/23 | 36a | 23.71abc | 3.25m | 146.47abcd | 88.20defgh | 32.20i | 0.69de | 19.31ef | 38.50f |
| B-12 | 18/14 | 35ab | 17.72fgh | 3.40lm | 145.11abcd | 92.22abcde | 34.04hi | 0.55fghi | 15.43jk | 42.78e |
| B-13 | 14/6 | 33bcd | 23.75ab | 6.31fgh | 145.50abcd | 92.13abcdef | 45.08f | 0.61ef | 22.84b | 69.14b |
| B-14 | 18/5 | 29ef | 11.59j | 3.52lm | 141.62cdef | 96.24a | 49.22ef | 0.59efg | 17.55gh | 27.63hi |
| B-15 | 12/19 | 33bcd | 19.05fg | 4.30jkl | 142.59bcde | 89.45cdefgh | 38.64gh | 0.59ef | 22.95b | 57.05c |
| B-16 | 18/9 | 29ef | 19.48ef | 14.96a | 139.29defg | 85.26gh | 44.16fg | 0.51fghi | 15.19k | 37.23fg |
| B-17 | 12/10 | 31de | 22.09bcd | 5.88fghi | 138.52defg | 94.27abc | 58.42c | 0.58efg | 24.39a | 66.41b |
| B-18 | 12/7 | 33bcd | 17.20gh | 4.00klm | 133.47fghi | 90.35cdefgh | 36.80hi | 0.47ghij | 16.38ij | 34.49g |
| B-19 | 10/3 | 33bcd | 6.86kl | 5.48hi | 129.40hi | 89.19cdefgh | 59.34bc | 1.11bc | 11.66m | 15.91lm |
| B-20 | 11/2 | 34abc | 7.61kl | 10.29b | 125.32i | 96.06ab | 64.86ab | 0.75d | 13.16l | 16.51l |
| B-21 | 11/3 | 32cd | 8.15k | 8.27cd | 129.98hi | 86.86fgh | 62.10bc | 1.21ab | 13.40l | 18.96bl |
| B-22 | 10/2 | 33bcd | 3.92n | 8.23cd | 128.43i | 87.22efgh | 58.88c | 1.23a | 12.69lm | 16.78l |
| B-23 | 9/3 | 34abc | 1.56n | 6.84ef | 136.77efgh | 85.35gh | 51.52de | 1.20ab | 15.76jk | 21.25jk |
| B-24 | 9/2 | 34abc | 1.99mn | 7.50de | 131.144ghi | 91.24abcdef | 23.00j | 1.03c | 17.12hi | 12.32m |

Supplementary Table S1. Analysis of variance for various pomological traits in 24 A. *marmelos* genotypes. Means followed by similar case letters in each column are not significantly different (p>0.05)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | PC1 | PC2 | PC3 | PC4 |
| Fruit\_weight | -0.25 | 0.16 | -0.29 | 0.00 |
| Fruit\_length | -0.27 | -0.01 | -0.12 | -0.11 |
| Fruit\_width | -0.28 | 0.09 | -0.14 | -0.12 |
| Pulp\_weight | -0.25 | 0.24 | -0.22 | 0.00 |
| Seed\_weight | -0.19 | -0.36 | -0.20 | -0.21 |
| Seeds\_number | -0.18 | -0.39 | -0.20 | -0.13 |
| Shell\_weight | -0.23 | 0.06 | -0.39 | 0.01 |
| Shell\_thickness | 0.10 | 0.09 | -0.16 | -0.02 |
| Pulp: shell | -0.23 | 0.26 | 0.27 | -0.11 |
| Pulp\_per | -0.23 | 0.27 | 0.25 | -0.01 |
| Seed\_per | 0.21 | -0.27 | -0.08 | -0.18 |
| Shell\_per | 0.22 | -0.24 | -0.31 | 0.12 |
| TSS | -0.27 | -0.11 | 0.13 | -0.02 |
| Total\_sugars | -0.26 | -0.12 | 0.12 | -0.13 |
| Carotenoids | 0.11 | 0.06 | 0.01 | -0.65 |
| FRAP | -0.22 | -0.24 | 0.14 | 0.02 |
| DPPH | -0.03 | -0.20 | -0.14 | 0.45 |
| Vitamin\_C | 0.09 | -0.14 | 0.02 | -0.44 |
| Acidity\_per | 0.26 | 0.10 | 0.07 | -0.05 |
| Total\_phenols | -0.13 | -0.37 | 0.31 | 0.08 |
| Flavonoids | -0.19 | -0.24 | 0.37 | 0.10 |
| TSS: acidity | -0.25 | 0.04 | -0.17 | 0.03 |
| Variance | 76.553 | 8.716 | 6.946 | 2.561 |
| % Total variance | 76.553 | 85.269 | 92.215 | 94.776 |

Supplementary Table S2. Eigenvectors of principal component axes from the PCA for morphological and biochemical characters in *A. marmelos* genotypes.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Source | df | SS | MS | Est. Var. | % |
| Among Pops | 1 | 59.396 | 59.396 | 5.740 | 70% |
| Within Pops | 22 | 54.437 | 2.474 | 2.474 | 30% |
| Total | 23 | 113.833 |  | 8.214 | 100% |
|  |  |  |  |  |  |
| Stat | Value | P(rand >= data) | |  |  |
| PhiPT | 0.699 | 0.001 |  |  |  |

Supplementary Table S3. AMOVA analysis of genetic variances within and among populations of *A. marmelos*

 

 

 

 

Supplementary Figure S1: The whole and cut fruits of genotype B18, B8, B1and B10 identified as superior in the study.