**Table S1.** Details of breeding history, major characteristic traits and origin of the genotypes evaluated in the diversity study.

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| --- | --- | --- | --- | --- |
|  |  |  | Fruit characteristics |  |
| No. | Genotypename | Character | weight (kg) | Rind colora | Stripe typeb | Shape | Fruit Colour | Width(cm) | Length(cm) | Rind thickness(cm) | SSCCc | SSCEd | Source |
| 1 | Hong 5-2 | Inbred line | 2.60 | GR | NS | Round | Red | 16.9 | 16.4 | 0.5 | 10.5 | 8.7 | Taiwan |
| 2 | SW043 | Inbred line | 1.72 | GR | NS | Round | Yellow | 15.0 | 14.5 | 0.5 | 11.9 | 9.6 | Taiwan |
| 3 | Red flesh 8424 | Inbred line | 3.64 | LR | No stripe | Round | Red | 18.7 | 17.1 | 1.0 | 10.8 | 8.7 | Xinjiang |
| 4 | MW095 | Inbred line | 2.80 | GR | SS | Round | Red | 18.2 | 16.8 | 0.9 | 9.6 | 8.4 | Xinjiang |
| 5 | MW099 | Inbred line | 3.80 | GR | WS | Round | Red | 19.8 | 18.5 | 1.2 | 10.4 | 9.5 | Xinjiang |
| 6 | G10 | Wild type | 2.15 | GR | No stripe | Round | White | 16.7 | 15.5 | 1.5 | 2.2 | 2.0 | Xinjiang |
| 7 | P4 | Inbred line | 4.82 | DG | No stripe | Round | Red | 21.0 | 20.7 | 1.3 | 10.9 | 7.3 | Jiangsu |
| 8 | K3 | Variety | 2.08 | GR | NS | Round | Pink | 16.3 | 15.9 | 0.6 | 10.5 | 8.4 | Jiangsu |
| 9 | J2 | Inbred line | 2.90 | GR | NS | Round | Pink | 18.9 | 18.1 | 0.4 | 10.0 | 8.8 | Jiangsu |
| 10 | P1-3 | Inbred line | 3.04 | DG | No stripe | Elongated | Red | 22.8 | 15.6 | 0.9 | 11.7 | 10.2 | Jiangsu |
| 11 | R-1-2 | Inbred line | 1.40 | GR | No stripe | Elongated | Yellow | 22.1 | 10.9 | 0.5 | 8.8 | 7.6 | Jiangsu |
| 12 | R-1-3 | Inbred line | 1.60 | GR | No stripe | Round | Yellow | 15.0 | 14.0 | 0.6 | 9.5 | 8.8 | Jiangsu |
| 13 | R-2-1-2 | Inbred line | 0.89 | GR | NS | Round | Yellow | 12.4 | 11.5 | 0.5 | 9.0 | 8.7 | Jiangsu |
| 14 | MW026 | Inbred line | 5.00 | GR | NS | Round | White | 21.9 | 20.4 | 1.0 | 8.4 | 7.1 | Jiangsu |
| 15 | P3-1 | Inbred line | 4.32 | DG | No stripe | Round | Red | 22.5 | 20.4 | 1.1 | 11.1 | 8.7 | Jiangsu |
| 16 | MW022 | Inbred line | 3.50 | GR | NS | Round | Red | 19.3 | 18.6 | 0.9 | 11.0 | 10.0 | Beijing |
| 17 | MW096 | Inbred line | 2.30 | DG | No stripe | Round | Red | 16.7 | 15.9 | 0.8 | 10.3 | 9.0 | Beijing |
| 18 | MW097 | Inbred line | 3.70 | GR | NS | Round | Red | 19.0 | 18.6 | 1.0 | 11.0 | 8.6 | Beijing |
| 19 | Crimson sweet | Variety | 3.00 | YG | NS | Round | Pink | 17.3 | 17.1 | 1.0 | 10.6 | 9.0 | USA |
| 20 | LW023 | Inbred line | 5.20 | GR | NS | Round | Red | 22.5 | 20.9 | 1.1 | 11.1 | 9.0 | USA |
| 21 | 9 jiu | Variety | 3.10 | LR | No stripe | Elongated | Red | 24.8 | 14.5 | 0.8 | 9.0 | 6.7 | USA |
| 22 | LW022 | Inbred line | 5.46 | LR | No stripe | Elongated | Red | 33.7 | 16.2 | 1.3 | 10.8 | 9.5 | USA |
| 23 | Sugarbaby | Variety | 2.10 | Black | No stripe | Round | Red | 15.6 | 16.0 | 1.1 | 9.6 | 7.9 | USA |
| 24 | SSD | variety | 2.50 | LR | NS | Round | Red | 17.7 | 16.6 | 0.6 | 10.0 | 7.6 | USA |
| 25 | Charleston Gray | Variety | 3.10 | LR | No stripe | Elongated | Pink | 23.8 | 16.1 | 1.2 | 9.0 | 6.9 | USA |
| 26 | Calhoun Gray | Variety | 5.00 | LR | No stripe | Elongated | Pink | 30.7 | 19.0 | 1.1 | 9.0 | 8.0 | USA |
| 27 | Smokylee | Variety | 8.10 | DG | No stripe | Elongated | Red | 34.6 | 20.4 | 1.7 | 11.1 | 8.6 | USA |
| 28 | Au-GSC | Variety | 2.34 | GR | NS | Round | Red | 15.0 | 15.6 | 0.7 | 9.6 | 6.2 | USA |
| 29 | All Sweet | Variety | 2.34 | GR | NS | Elongated | Red | 21.8 | 14.7 | 0.7 | 8.2 | 5.9 | USA |
| 30 | Au-RS | Variety | 2.60 | GR | NS | Round | Red | 16.4 | 16.7 | 0.6 | 7.2 | 5.7 | USA |
| 31 | Sugarlee | Variety | 5.2 | GR | NS | Round | Red | 22.5 | 20.9 | 1.1 | 11.1 | 9.0 | USA |
| 32 | PI 189225 | Wild type | 0.58 | GR | No stripe | Round | White | 9.2 | 10.2 | 1.1 | 4.0 | 2.0 | Zaire |
| 33 | MW089 | Inbred line | 3.50 | GR | NS | Round | Red | 19.1 | 18.3 | 0.9 | 10.5 | 9.0 | Japan |
| 34 | FurongF8 | Inbred line | 2.70 | GR | NS | Round | Red | 17.4 | 16.9 | 0.6 | 10.3 | 9.0 | Japan |
| 35 | Fuxing F8 | Inbred line | 1.80 | GR | NS | Elongated | Red | 22.3 | 12.3 | 0.5 | 11.2 | 9.6 | Korea |
| 36 | SW055-1 | Inbred line | 2.55 | LR | No stripe | Elongated | Red | 23.0 | 14.2 | 0.8 | 10.2 | 9.6 | Australia |
| 37 | SW057 | Inbred line | 1.90 | GR | NS | Elongated | Red | 21.4 | 13.0 | 0.6 | 11.0 | 9.0 | Australia |

a GR, Green; LR, Light green; YG, Yellow green; DG, Dark green

b NF, Narrow stripes; SS, Straight stripe; WS, Wide stripes

c SSCC, soluble sugars content in center position (%)

d SSCE, soluble sugar content in edge position (%)