

Supplementary

**Characterization and evaluation of pummelo (*Citrus grandis* L.)
half-sib population for economic traits**

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Supplementary Table a: Tree morphological characters of pummelo progenies

Name	Tree height (m)	Tree spread (North-South) (m)	Tree spread (East-West) (m)	Name	Tree height (m)	Tree spread (North-South) (m)	Tree spread (East-West) (m)
HS32-1	5.1	5.8	5.9	HS39-13	4.9	4.6	4.3
HS32-2	5.1	3.5	4.3	HS39-14	5.1	4.1	3.6
HS32-3	5.2	6.2	5.8	HS40-2	4.9	5.2	4.9
HS32-8	4.9	4.5	4.3	HS40-5	5.1	4.6	4.3
HS32-9	5	4.9	7.1	HS40-6	5	4.6	4.3
HS33-3	5.1	4.3	4.4	HS40-7	5.1	3.9	4.1
HS33-4	4.7	4.2	4.6	HS40-16	5.1	5.6	5.2
HS34-7	5.1	4.9	5.6	HS41-5	5.5	6.3	5.7
HS34-13	5.2	4.9	4.1	HS41-6	5.1	3.9	4.4
HS34-10	5.2	5.6	5.5	HS41-7	5.1	4.2	4.9
HS34-19	5	4.5	4.7	HS41-8	5.2	4.8	5.1
HS35-3	5.2	5.4	6.1	HS41-10	5	4.5	4.8
HS35-4	5.3	5.1	5.5	HS41-11	5.1	4.8	5.2
HS35-11	5.2	4.3	5.3	HS42-1	4.15	5.7	5.2
HS35-12	5.5	6.5	6.6	HS42-2	4.9	4.5	5.5
HS36-2	5.4	5.3	4.3	HS42-4	5.1	4.3	5.4
HS36-4	5.1	4.4	4.1	HS42-8	5.1	4.9	5.2
HS36-5	5.2	4.4	4.3	HS42-9	5.2	5.3	5.3
HS36-6	5.3	2.9	2.7	HS42-11	5.1	4.2	4.5
HS36-10	5.4	5.9	4.8	HS42-12	5.2	3.9	5.5
HS37-2	5.6	6.3	5.7	HS42-13	5.1	4.9	5.4
HS37-4	5.1	4.7	4.3	HS42-15	5.1	4.1	4.2
HS38-2	5.3	5.5	4.3	HS42-16	5.1	5.1	4.7
HS38-3	5.3	4.3	4.7	HS42-18	5	3.4	4.1
HS38-4	5.1	5.5	4.6	HS42-19	3.8	4.6	5.1
HS38-5	5.5	5.4	5.3	HS43-1	5.1	4.6	5.1
HS39-2	5.1	5.7	4.6	HS43-5	4.4	4.8	4.4
HS39-3	5.2	4.9	4.7	HS43-6	4.9	4.9	5.5
HS39-4	4.9	4.9	4.7	HS43-7	4.8	4.7	5.6
HS39-9	5.1	5.6	4.9	HS43-9	4.7	4.4	3.7
HS39-10	4.9	3.9	3.9	HS43-10	5.1	4.9	5.3
HS39-11	5.1	4.3	4.4	HS43-11	5.1	4.6	5.2



Name	Tree height (m)	Tree spread (North-South) (m)	Tree spread (East-West) (m)	Name	Tree height (m)	Tree spread (North-South) (m)	Tree spread (East-West) (m)
HS43-15	5.3	4.9	5.1	HS45-18	5.2	4.1	3.5
HS43-16	5.4	4.6	5.8	HS46-5	5.1	3.9	4.9
HS44-1	5.2	4.6	3.4	HS46-6	4.7	5.2	5.8
HS44-4	5	6.3	6.1	HS46-10	5.2	5.5	5.3
HS44-6	5.1	4.7	5.8	HS46-12	4.6	5.4	4.3
HS44-8	4.9	4.4	4.8	HS46-13	4.8	4.2	4
HS44-9	5.1	4.8	4.5	HS46-14	5.3	5.3	4.1
HS44-12	5.2	3.8	3.4	HS47-3	4.7	4.5	4.4
HS44-15	5.3	4.2	3.8	HS47-4	4.5	4.2	4.1
HS44-17	5.2	4.1	5.3	HS47-6	5.2	5.1	5.3
HS45-1	5.6	6	5.3	HS48-10	5.7	5.8	4.9
HS45-9	4.8	5.1	4.9	HS48-12	4.6	5.2	3.8
HS45-10	5.1	5	5.4	HS49 -11	4.9	5.6	6.4
HS45-14	5.1	6.1	5.2	HS49 -12	5	5.2	6.4

Supplementary Table b: Leaf morphological characters of pummelo progenies

Name	Lamina length (cm)	Lamina width (cm)	Thickness (mm)	Lamina Shape	Lamina Margin	Apex	Wing width	Wing Shape
HS32-1	9.3	7.17	5.21	Obovate	Crenate	Accute	Medium	Obcordate
HS32-2	10.7	8.6	5.4	Orbicular	Crenate	Obtuse	Narrow	Obovate
HS32-3	11.5	7.7	6	Obovate	Dentate	Obtuse	Narrow	Obdeltate
HS32-8	10.3	7.5	5.41	Obovate	Entire	Obtuse	Narrow	Obdeltate
HS32-9	12.2	8	6.8	Elliptic	Entire	Accute	Narrow	Obdeltate
HS33-3	9.32	7.42	5.6	Orbicular	Crenate	Obtuse	Medium	Obcordate
HS33-4	9.49	6.54	4.6	Obovate	Crenate	Obtuse	Medium	Obcordate
HS34-7	8.64	5.59	6.06	Ovate	Crenate	Accuminate	Medium	Obcordate
HS34-13	9.15	5.04	6.2	Lanceolate	Crenate	Accuminate	Medium	Obdeltate
HS34-10	8.64	5.59	6.06	Ovate	Crenate	Accuminate	Medium	Obcordate
HS34-19	10.22	6.6	6.7	Obovate	Crenate	Obtuse	Narrow	Obdeltate
HS35-3	10.07	6.25	7.06	Obovate	Dentate	Accute	Medium	Obdeltate
HS35-4	10.7	8.6	5.4	Orbicular	Crenate	Obtuse	Narrow	Obovate
HS35-11	9.27	5.86	6.8	Ovate	Dentate	Accute	Narrow	Obovate
HS35-12	8.66	5.15	6.44	Ovate	Dentate	Accute	Narrow	Obovate
HS36-2	10.1	6.29	7.2	Obovate	Crenate	Accute	Narrow	Obovate
HS36-4	10.32	6.27	8	Obovate	Crenate	Accute	Narrow	Obovate
HS36-5	9.4	6.19	4.2	Obovate	Entire	Accute	Medium	Obdeltate
HS36-6	10.6	6.32	5	Obovate	Entire	Accute	Medium	Obdeltate
HS36-10	9.6	6.54	6.4	Obovate	Crenate	Accute	Narrow	Obovate
HS37-2	9.52	6.22	4.52	Obovate	Crenate	Obtuse	Narrow	Obovate
HS37-4	10.37	6.46	4.6	Ovate	Entire	Accute	Narrow	Obdeltate
HS38-2	12.65	8.55	5.4	Obovate	Crenate	Obtuse	Narrow	Obcordate
HS38-3	10.8	6.85	6.5	Ovate	Dentate	Accute	Medium	Obdeltate

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HS38-4	10.11	7.05	4.8	Obovate	Dentate	Accute	Medium	Obcordate
HS38-5	8.75	5.01	5.1	Obovate	Crenate	Accute	Narrow	Obdeltate
HS39-2	11.54	6.29	7	Ovate	Entire	Accute	Medium	Obdeltate
HS39-3	10.03	5.95	7.26	Ovate	Entire	Accute	Medium	Obdeltate
HS39-4	11.05	6	6.8	Ovate	Entire	Accute	Medium	Obovate
HS39-9	8.85	5.82	5.8	Ovate	Dentate	Accute	Medium	Obdeltate
HS39-10	10.4	7.27	5.5	Obovate	Entire	Accute	Medium	Obcordate
HS39-11	8.95	5.59	5.4	Ovate	Crenate	Accute	Narrow	Obdeltate
HS39-13	11.55	8.1	5.2	Obovate	Dentate	Accute	Medium	Obdeltate
HS39-14	12.32	7.88	6	Ovate	Crenate	Accute	Medium	Obcordate
HS40-2	10.62	7.32	7.2	Obovate	Dentate	Accute	Medium	Obcordate
HS40-5	11.91	7.83	8	Elliptic	Dentate	Accute	Medium	Obdeltate
HS40-6	9.47	6.31	8	Ovate	Dentate	Accute	Narrow	Obovate
HS40-7	12.05	7.85	6.5	Ovate	Entire	Accute	Narrow	Obovate
HS40-16	11.8	8.3	4.83	Obovate	Entire	Obtuse	Narrow	Obdeltate
HS41-5	11.6	7.39	7	Obovate	Sinuuate	Obtuse	Medium	Obdeltate
HS41-6	11.05	7.69	7.2	Obovate	Sinuuate	Obtuse	Medium	Obdeltate
HS41-7	11.7	7.45	8.11	Ovate	Dentate	Accute	Medium	Obcordate
HS41-8	11.4	7.62	8.5	Ovate	Dentate	Accute	Narrow	Obovate
HS41-10	10.75	6.85	7.16	Ovate	Entire	Accute	Narrow	Obovate
HS41-11	12.5	8.81	8.54	Obovate	Sinuuate	Obtuse	Medium	Obdeltate
HS42-1	8.32	5.21	5.8	Ovate	Crenate	Accute	Narrow	Obovate
HS42-2	13.4	8.17	8.4	Elliptic	Entire	Accute	Narrow	Obcordate
HS42-4	12.7	8.47	8.2	Ovate	Dentate	Accute	Narrow	Obovate
HS42-8	11	7.5	7.5	Ovate	Entire	Accute	Narrow	Obovate
HS42-9	10.1	6.54	7.1	Obovate	Sinuuate	Obtuse	Narrow	Obovate
HS42-11	10.15	6.46	6.5	Elliptic	Dentate	Obtuse	Medium	Obovate
HS42-12	12.35	7.4	6.6	Elliptic	Entire	Accute	Narrow	Obovate
HS42-13	10.15	6.36	6.2	Elliptic	Dentate	Accute	Medium	Obdeltate
HS42-15	11.42	7.72	6.12	Obovate	Crenate	Obtuse	Medium	Obcordate
HS42-16	11.95	6.95	5.6	Elliptic	Entire	Accute	Narrow	Obovate
HS42-18	10.1	6.65	5.8	Elliptic	Dentate	Accute	Narrow	Obovate
HS42-19	10.35	6.84	6.22	Elliptic	Dentate	Accute	Narrow	Obovate
HS43-1	11.2	6.45	7.21	Elliptic	Dentate	Accute	Broad	Obdeltate
HS43-5	11.9	7.1	7.5	Obovate	Dentate	Obtuse	Medium	Obdeltate
HS43-6	7.92	5.41	6.2	Obovate	Crenate	Obtuse	Narrow	Obdeltate
HS43-7	10.8	6.92	7	Ovate	Crenate	Obtuse	Medium	Obcordate
HS43-9	12.02	5.69	7.5	Lanceola-te	Dentate	Accute	Medium	Obdeltate
HS43-10	12.2	7.33	7.2	Ovate	Dentate	Accute	Medium	Obdeltate
HS43-11	11.35	7.42	6.3	Obovate	Dentate	Obtuse	Narrow	Obdeltate
HS43-15	11.48	7.13	6.1	Obovate	Crenate	Obtuse	Medium	Obdeltate
HS43-16	12.7	7.15	5.9	Elliptic	Entire	Accute	Medium	Obcordate
HS44-1	11.15	7.55	5.47	Ovate	Crenate	Accute	Medium	Obdeltate
HS44-4	11.65	7.23	6.4	Ovate	Entire	Accute	Narrow	Obcordate

HS44-6	9.64	6.5	5.21	Ovate	Dentate	Accute	Narrow	Obdeltate
HS44-8	10.4	7.02	6.12	Obovate	Dentate	Obtuse	Narrow	Obdeltate
HS44-9	11.42	7.25	4.62	Ovate	Dentate	Accute	Narrow	Obdeltate
HS44-12	8.72	5.74	5.32	Obovate	Crenate	Obtuse	Medium	Obdeltate
HS44-15	10.2	6.6	5.3	Ovate	Crenate	Accute	Narrow	Obdeltate
HS44-17	10.1	6.69	6	Obovate	Dentate	Obtuse	Medium	Obdeltate
HS45-1	12.09	7.96	6.2	Obovate	Entire	Obtuse	Narrow	Obovate
HS45-9	11.66	7.02	7.3	Elliptic	Dentate	Accute	Medium	Obdeltate
HS45-10	14.12	9.16	8.4	Ovate	Dentate	Obtuse	Narrow	Obcordate
HS45-14	12.11	8.13	5.6	Obovate	Dentate	Obtuse	Narrow	Obdeltate
HS45-18	10.46	6.81	5.6	Ovate	Dentate	Accute	Medium	Obdeltate
HS46-5	9.44	6.37	6.24	Ovate	Dentate	Accute	Medium	Obdeltate
HS46-6	8.3	5.32	4.1	Ovate	Dentate	Accute	Medium	Obcordate
HS46-10	9.68	6.01	6.92	Ovate	Crenate	Obtuse	Medium	Obdeltate
HS46-12	12.33	7.39	7.8	Elliptic	Entire	Accute	Medium	Obcordate
HS46-13	12.28	8.21	7.2	Obovate	Dentate	Obtuse	Narrow	Obdeltate
HS46-14	11.34	6.99	6.6	Ovate	Dentate	Obtuse	Medium	Obcordate
HS47-3	11.36	7.42	6.42	Obovate	Dentate	Obtuse	Medium	Obdeltate
HS47-4	9.9	6.91	5.5	Obovate	Crenate	Obtuse	Medium	Obdeltate
HS47-6	10.19	6.73	6.4	Obovate	Dentate	Obtuse	Broad	Obcordate
HS48-10	12.02	7	5.8	Ovate	Dentate	Accute	Medium	Obdeltate
HS48-12	9.2	6.48	5.12	Obovate	Crenate	Obtuse	Narrow	Obdeltate
HS49 -11	12.42	6.17	6.18	Ovate	Sinuate	Accute	Narrow	Obovate
HS49 -12	12.75	6.92	7.8	Ovate	Sinuate	Accute	Narrow	Obovate

Supplementary Table c: Fruit exterior morphological characters of pummelo progenies

Name	Weight (kg)	Diameter (cm)	Length (cm)	Fruit shape	Fruit base	Fruit apex	Fruit colour
HS32-1	1.16	14.24	16.12	Pyriiform	Necked	Rounded	Light yellow
HS32-2	1.58	16.18	16.8	Pyriiform	Concave collared	Truncate	Yellow
HS32-3	1.21	14.96	13.42	Spheroid	Convex	Rounded	Light yellow
HS32-8	1.61	17.54	14.76	Obloid	Truncate	Depressed	Light yellow
HS32-9	0.89	12.58	13.9	Spheroid	Convex	Truncate	Light yellow
HS33-3	1.38	16.22	14.84	Spheroid	Truncate	Depressed	Yellow
HS33-4	1.04	14.38	13.3	Spheroid	Concave collared	Truncate	Green-yellow
HS34-7	1.10	14.66	13.68	Spheroid	Convex	Truncate	Yellow
HS34-13	1.50	16.1	14.68	Spheroid	Convex	Truncate	Green-yellow
HS34-10	1.62	16.96	14.76	Spheroid	Truncate	Truncate	Green-yellow
HS34-19	1.00	14.72	14.46	Spheroid	Convex	Truncate	Yellow
HS35-3	0.84	11.66	11.64	Spheroid	Convex	Truncate	Yellow
HS35 -4	1.22	15.86	14.26	Spheroid	Truncate	Truncate	Yellow
HS35-11	0.78	12.42	12.1	Spheroid	Truncate	Truncate	Light- yellow
HS35-12	1.60	17.02	16.4	Spheroid	Truncate	Truncate	Yellow
HS36-2	2.08	18.2	17.86	Spheroid	Truncate	Truncate	Yellow

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HS36-4	1.05	13.14	13.04	Pyriiform	Convex	Rounded	Yellow
HS36-5	2.18	20.54	14.94	Spheroid	Truncate	Depressed	Orange
HS36-6	1.02	13.64	14.3	Spheroid	Convex	Truncate	Yellow
HS36-10	2.21	17.82	17.9	Spheroid	Convex	Truncate	Yellow
HS37-2	1.16	15.16	14.1	Obloid	Truncate	Depressed	Yellow
HS37-4	1.69	17	12.68	Obloid	Truncate	Truncate	Yellow
HS38-2	1.63	16.6	14.04	Spheroid	Convex	Truncate	Green-yellow
HS38-3	1.50	16.36	14.2	Spheroid	Truncate	Truncate	Yellow
HS38-4	1.75	16.84	14.58	Obloid	Truncate	Truncate	Yellow
HS38-5	0.91	14	15.04	Spheroid	Convex	Rounded	Green-yellow
HS39-2	1.87	18.4	17.72	Spheroid	Convex	Truncate	Yellow
HS39-3	1.50	16.98	11.9	Spheroid	Convex	Rounded	Pink-yellow
HS39-4	0.94	12.7	11.86	Spheroid	Convex	Truncate	Light yellow
HS39-9	1.03	14.42	13.86	Spheroid	Truncate	Depressed	Yellow
HS39-10	1.22	15.5	13.94	Spheroid	Convex	Truncate	Yellow
HS39-11	1.04	13.72	14.36	Ellipsoid	Truncate	Truncate	Green-yellow
HS39-13	1.39	14.74	15.14	Spheroid	Convex	Truncate	Yellow
HS39-14	1.12	15.18	14.5	Ellipsoid	Convex	Truncate	Yellow
HS40-2	1.06	16.16	11.16	Obloid	Truncate	Depressed	Green-yellow
HS40-5	1.35	16.28	14.1	Spheroid	Truncate	Truncate	Yellow
HS40-6	1.11	14.78	13.66	Spheroid	Concave	Truncate	Pink-yellow
HS40-7	1.48	16.18	13.6	Obloid	Truncate	Truncate	Dark- yellow
HS40-16	2.42	19.06	16.4	Spheroid	Convex	Truncate	Dark- yellow
HS41-5	0.92	13.02	12.5	Spheroid	Convex	Truncate	Yellow
HS41-6	0.91	13.34	13.68	Obloid	Truncate	Depressed	Yellow
HS41-7	1.94	18.2	15.14	Spheroid	Convex	Truncate	Dark- yellow
HS41-8	1.47	16.52	14.28	Spheroid	Convex	Truncate	Green-yellow
HS41-10	0.92	13.1	12.1	Spheroid	Convex	Truncate	Orange
HS41-11	1.35	15.28	16.4	Spheroid	Collard with neck	Truncate	Yellow
HS42-1	1.13	16.04	15.24	Ellipsoid	Truncate	Depressed	Yellow
HS42-2	1.99	18.78	16.38	Obloid	Truncate	Truncate	Dark- yellow
HS42-4	0.89	13.26	11.64	Obloid	Truncate	Truncate	Yellow
HS42-8	1.36	16.1	13.06	Spheroid	Truncate	Truncate	Yellow
HS42-9	1.48	16.86	14.88	Spheroid	Convex	Truncate	Green-yellow
HS42-11	0.91	12.98	14.74	Ellipsoid	Convex	Rounded	Yellow
HS42-12	0.98	14.02	11.9	Ovoid	Truncate	Truncate	Green-yellow
HS42-13	1.09	13.68	14.2	Ellipsoid	Convex	Truncate	Yellow
HS42-15	0.95	14.02	12.8	Oblique	Necked	Truncate	Yellow
HS42-16	1.49	16.8	15	Spheroid	Truncate	Truncate	Yellow
HS42-18	1.46	16.56	14.48	Spheroid	Concave	Truncate	Yellow

HS42-19	1.16	15.02	13.48	Spheroid	Truncate	Truncate	Yellow
HS43-1	1.15	12.26	13.58	Ellipsoid	Convex	Rounded	Light- yellow
HS43-5	1.06	14.36	13.66	Spheroid	Convex	Truncate	Yellow
HS43-6	1.30	16.36	14.5	Pyriform	Concave collared	Rounded	Yellow
HS43-7	0.61	10.28	11.84	Spheroid	Truncate	Truncate	Yellow
HS43-9	1.14	15.16	12.08	Obloid	Truncate	Truncate	Yellow
HS43-10	1.39	16.04	15.24	Spheroid	Convex	Truncate	Yellow
HS43-11	1.04	14.74	12.88	Obloid	Truncate	Truncate	Yellow
HS43-15	0.51	10.96	10.88	Spheroid	Convex	Truncate	Yellow
HS43-16	1.97	18.66	16.6	Spheroid	Convex	Truncate	Light- yellow
HS44-1	0.93	14.68	12.4	Spheroid	Convex	Truncate	Green-yellow
HS44-4	0.81	13	11.34	Spheroid	Convex	Truncate	Yellow
HS44-6	2.07	18.54	15.78	Spheroid	Convex	Truncate	Yellow
HS44-8	1.18	15.84	11.9	Obloid	Truncate	Truncate	Yellow
HS44-9	2.41	17.86	16.34	Spheroid	Convex	Truncate	Yellow
HS44-12	0.90	14.5	15.28	Pyriform	Necked	Truncate	Dark- yellow
HS44-15	1.82	18.44	17.1	Spheroid	Convex	Truncate	Green-yellow
HS44-17	1.14	14.38	12.86	Spheroid	Convex	Truncate	Yellow
HS45-1	0.66	12.12	10.7	Spheroid	Convex	Truncate	Yellow
HS45-9	1.38	16.06	17.2	Pyriform	Convex	Rounded	Green-yellow
HS45-10	1.09	14.38	12.96	Spheroid	Convex	Truncate	Light- orange
HS45-14	0.73	12.52	10.72	Spheroid	Convex	Truncate	Dark- yellow
HS45-18	0.97	14.84	12.74	Spheroid	Convex	Truncate	Dark- yellow
HS46-5	1.42	15.1	16.6	Pyriform	Necked	Truncate	Green-yellow
HS46-6	1.15	13.98	13.34	Spheroid	Truncate	Truncate	Green-yellow
HS46-10	1.61	16.48	15.4	Spheroid	Necked	Truncate	Dark- yellow
HS46-12	1.36	14.86	14.66	Spheroid	Convex	Truncate	Yellow
HS46-13	1.25	14.16	14.5	Spheroid	Truncate	Truncate	Light- orange
HS46-14	0.74	12.34	11.52	Spheroid	Convex	Truncate	Yellow
HS47-3	0.94	13.14	12.74	Pyriform	Convex	Truncate	Green-yellow
HS47-4	1.59	16.64	15.14	Spheroid	Truncate	Truncate	Green-Yellow
HS47-6	1.16	13.98	14	Pyriform	Convex	Truncate	Yellow
HS48-10	0.57	11.08	10.6	Spheroid	Convex	Truncate	Dark- yellow
HS48-12	0.49	9.96	9.68	Spheroid	Convex	Truncate	Dark- yellow
HS49 -11	1.52	15.96	16.5	Spheroid	Convex	Truncate	Dark- yellow
HS49 -12	2.02	18.86	16.4	Obloid	Convex	Truncate	Dark- yellow
Mean	1.28	15.16	14.04				
CD (at 5%)	0.31	1.74	1.64				
SE(m)	0.11	0.63	0.59				
SE (d)	0.16	0.89	0.83				
C.V	19.73	9.24	9.37				
Range	0.49- 2.42	9.96- 20.54	9.68- 17.90				

Supplementary Table d: Fruit internal morphological parameters of pummelo progenies

Name	Rind thickness (cm)	Rind colour	Segments	Axis diameter (cm)	Vesicle length (cm)	Pulp colour	Pulp colour intensity
HS32-1	1.42	White	12.2	2.46	10.36	Deep pink	Dark
HS32-2	1.84	White	12	2.84	11.49	Deep pink	Dark
HS32-3	2.36	Pink	14.8	2.2	10.4	White	Light
HS32-8	2.6	Pink	13.4	2.66	12.28	White	Light
HS32-9	1.74	White	10.4	1.64	9.2	White	Light
HS33-3	2.12	Pink	12.2	2.5	11.6	Pink	Dark
HS33-4	1.7	White	11	2.3	10.38	Pink	Light
HS34-7	1.68	Pink	12.2	2.28	10.7	Pink	Dark
HS34-13	1.62	White	14.4	2.34	12.14	Pink	Light
HS34-10	1.88	White	10.8	2.44	12.64	White	Dark
HS34-19	2.28	White	15.2	3.96	8.48	Green	Light
HS35-3	1.58	Pink	12.4	1.42	8.66	Pink	Light
HS35-4	2.18	White	16.2	2.52	11.16	White	Light
HS35-11	1.02	Pink	10.8	1.78	9.62	Deep pink	Dark
HS35-12	2.18	Pink	10.2	1.84	13	Deep pink	Light
HS36-2	2.66	Pink	12.8	3.04	12.5	Deep pink	Dark
HS36-4	1.88	Pink	10.4	2.44	8.82	White	Light
HS36-5	1.94	White	11.4	4.9	13.7	Pink	Light
HS36-6	1.86	Pink	13.8	1.56	10.22	Pink	Light
HS36-10	1.64	Pink	13.2	4.98	11.2	Pink	Light
HS37-2	2.38	Pink	12.8	2.74	10.04	Pink	Dark
HS37-4	2.44	Pink	16	3.16	11.4	Pink	Dark
HS38-2	1.62	White	11.6	5.34	9.64	Deep pink	Dark
HS38-3	1.56	Pink	13.8	3.88	10.92	Pink	Dark
HS38-4	2.28	Pink	13.8	3.06	11.5	Deep pink	Dark
HS38-5	2.62	White	11	0.86	10.52	White	Dark
HS39-2	1.94	Pink	13.6	3.7	12.76	Pink	Dark
HS39-3	2.44	Pink	12.4	2.26	12.28	Pink	Light
HS39-4	1.38	Pink	11	2.52	8.8	Pink	Light
HS39-9	1.96	Pink	9.8	2.12	10.34	Orange red	Dark
HS39-10	1.42	Pink	11.2	2.48	11.6	Pink	Light
HS39-11	2.46	White	11.4	2.58	8.68	White	Light
HS39-13	1.5	Pink	13.4	2.4	10.84	Deep pink	Light
HS39-14	1.9	White	11.2	2.52	10.76	Pink	Light
HS40-2	2	Pink	15	3.94	10.22	Pink	Light
HS40-5	2.3	Pink	12	2.74	11.24	Pink	Light
HS40-6	1.78	Pink	11.8	3.24	9.76	Deep pink	Light
HS40-7	1.58	White	10.8	1.4	13.2	White	Dark
HS40-16	1.56	White	12.4	2.76	14.74	White	Dark
HS41-5	1.32	Pink	11.6	3.58	8.12	Pink	Dark
HS41-6	2.12	White	11.4	2.44	8.78	White	Dark
HS41-7	1.68	White	14	3.92	12.6	Deep pink	Dark
HS41-8	1.98	White	13.4	4.16	10.38	White	Dark
HS41-10	1.26	Pink	11.4	2.16	9.68	Pink	Light
HS41-11	1.94	White	9.6	1.96	11.38	White	Dark

HS42-1	1.98	White	14.8	2.18	11.88	White	Light
HS42-2	2.68	Pink	11.2	3.6	12.5	Pink	Light
HS42-4	1.84	White	13.2	2.5	8.92	Pink	Light
HS42-8	1.14	Pink	12.8	4.1	10.86	Pink	Light
HS42-9	2.56	White	15.8	2.52	11.78	Pink	Light
HS42-11	1.82	White	12.6	2.26	8.9	Orange red	Light
HS42-12	2.24	White	14.8	3.48	8.3	White	Light
HS42-13	1.6	Pink	13.6	1.88	10.2	Pink	Light
HS42-15	1.3	Pink	13.4	3.44	9.28	Pink	Light
HS42-16	1.46	Pink	13.8	3.76	11.58	Pink	Dark
HS42-18	2.48	White	12.2	2.82	11.26	White	Light
HS42-19	1.84	White	18.2	4	9.18	White	Dark
HS43-1	1.94	Pink	13	2.36	7.96	Pink	Light
HS43-5	1.64	Pink	12.4	2.2	10.52	Pink	Dark
HS43-6	2.24	White	14.4	2.3	11.82	Green	Dark
HS43-7	2.84	Pink	11.8	1.88	5.56	Green	Light
HS43-9	2.54	White	12.2	2.32	10.3	Pink	Light
HS43-10	1.9	White	11.2	2.76	11.38	White	Light
HS43-11	2.48	Pink	11.6	2.28	9.98	White	Light
HS43-15	2.04	Pink	10.4	1.1	7.82	White	Dark
HS43-16	2.3	Pink	13	1.64	14.72	Red	Dark
HS44-1	1.48	White	11	3	10.2	Pink	Light
HS44-4	1.32	White	19.8	2.06	9.62	Pink	Light
HS44-6	1.8	White	13.4	2.36	14.38	White	Light
HS44-8	1.94	White	12.4	3.04	10.86	White	Light
HS44-9	2.2	White	18.2	2.8	12.86	White	Light
HS44-12	2.7	Pink	11.8	1.54	10.26	White	Light
HS44-15	2.5	Pink	12.2	3.4	12.54	Pink	Dark
HS44-17	2.3	Pink	14.4	2.52	9.56	Pink	Dark
HS45-1	1.42	White	12.8	3	7.7	White	Light
HS45-9	2.06	Pink	11.4	2.5	11.5	Deep Pink	Light
HS45-10	1.6	White	14	3.14	9.64	White	Dark
HS45-14	2.06	Pink	12.8	3.32	7.14	Deep Pink	Dark
HS45-18	2.84	Pink	13.4	2.72	9.28	Deep Pink	Dark
HS46-5	1.54	White	13.8	1.62	11.94	White	Light
HS46-6	1.3	White	12.2	3.36	9.32	White	Dark
HS46-10	2.34	White	12.8	2.04	12.1	White	Dark
HS46-12	1.9	White	12.4	2.52	10.44	White	Dark
HS46-13	1.02	White	12.8	2.2	10.94	Deep Pink	Dark
HS46-14	1.74	White	12.6	1.72	8.88	White	Dark
HS47-3	1.22	White	12.4	1.96	9.96	Pink	Light
HS47-4	1.76	White	11.8	3.44	11.44	White	Dark
HS47-6	1.62	White	12	2	10.36	White	Dark
HS48-10	1.34	White	13	1.32	8.42	White	Dark
HS48-12	0.98	White	12	0.88	8.1	Orange Pink	Light
HS49 -11	3.2	Pink	13.2	3.1	9.66	Pink	Dark
HS49 -12	2.04	Pink	12.6	3.58	13.24	Deep Pink	Light
Mean	1.92		12.76	2.66	10.58		
C.V	19.67		14.01	21.99	14.39		
Range	0.98- 3.20		9.60- 19.80	0.86- 5.34	5.56- 14.74		

Supplementary Table e: Fruit biochemical parameters of pummelo progenies

Name	TSS (°Brix)	Acidity (%)	Ascorbic acid (mg/100ml juice)	Reducing sugars (%)	Total sugars (%)	Phenols (mg/100ml GAE)	Flavonoids (mg catechin eq./100g)
HS32-1	8.16	1.81	36.30	1.91	3.83	157.14	18.03
HS32-2	8.54	0.92	39.21	1.71	3.38	123.29	16.95
HS32-3	9.58	1.05	44.10	2.97	5.54	126.79	10.09
HS32-8	8.48	1.50	50.40	2.53	5.32	96.98	12.15
HS32-9	9.50	2.37	30.30	1.76	4.20	138.82	11.08
HS33-3	10.80	1.33	31.20	2.50	5.72	115.33	10.63
HS33-4	8.22	1.79	33.90	2.61	5.87	119.83	12.59
HS34-7	7.80	1.71	52.50	1.71	3.31	163.61	14.95
HS34-13	9.54	0.68	47.10	2.38	6.26	147.95	18.52
HS34-10	8.52	2.05	53.70	1.71	4.05	131.61	17.30
HS34-19	6.76	2.37	45.30	0.90	3.00	169.40	15.24
HS35-3	6.46	2.15	52.50	1.51	3.09	156.98	15.19
HS35-4	8.32	1.78	50.40	0.85	3.84	127.98	15.05
HS35-11	7.14	2.16	50.10	1.43	3.83	121.16	16.17
HS35-12	8.80	1.82	49.50	1.52	3.75	131.67	17.25
HS36-2	8.22	1.86	61.20	1.30	3.89	119.67	12.45
HS36-4	8.00	1.38	27.90	0.92	3.83	110.19	10.98
HS36-5	8.32	1.36	24.00	1.36	3.72	118.66	10.98
HS36-6	9.22	0.82	36.60	3.14	6.20	81.10	10.98
HS36-10	8.42	0.78	50.70	1.38	3.39	147.50	10.19
HS37-2	10.56	1.13	27.00	2.29	6.60	45.17	11.03
HS37-4	7.46	0.86	37.80	1.26	3.37	72.58	11.22
HS38-2	8.68	1.41	26.40	1.40	3.70	43.20	7.79
HS38-3	8.80	1.56	22.50	1.31	3.05	84.20	7.94
HS38-4	9.66	0.95	52.80	1.11	5.68	85.20	6.81
HS38-5	6.76	0.84	36.00	0.86	2.87	121.35	9.36
HS39-2	8.66	1.16	31.50	1.68	3.76	119.79	14.99
HS39-3	7.52	1.38	51.30	1.21	3.38	118.50	11.27
HS39-4	9.78	1.71	43.80	2.25	6.21	124.91	11.12
HS39-9	7.98	1.79	63.30	1.93	3.36	123.84	18.57
HS39-10	9.50	0.91	33.00	2.72	6.20	142.06	21.66
HS39-11	8.00	1.84	38.10	1.20	3.86	173.39	9.85
HS39-13	9.08	1.27	48.30	3.32	6.07	162.77	5.20
HS39-14	10.12	0.63	25.20	3.07	6.32	161.64	15.43
HS40-2	8.00	1.78	47.40	1.81	3.35	178.01	14.46
HS40-5	7.62	1.93	39.00	2.21	4.46	161.25	12.79
HS40-6	9.48	1.61	42.60	2.29	5.90	138.70	13.08
HS40-7	9.42	0.82	57.60	3.02	6.25	129.02	18.57
HS40-16	7.90	1.15	34.20	1.31	4.29	129.44	15.34
HS41-5	9.28	1.09	20.40	3.27	6.34	129.38	13.67
HS41-6	9.04	0.81	43.80	3.30	6.31	157.11	12.79
HS41-7	9.88	1.10	39.60	3.33	6.28	133.07	16.56
HS41-8	9.02	1.71	48.30	3.71	6.22	131.93	20.14
HS41-10	8.46	1.86	38.40	2.10	4.40	129.83	15.73
HS41-11	9.78	0.67	31.80	2.90	5.30	113.59	16.71
HS42-1	7.52	0.69	29.10	0.87	3.43	159.28	12.45

HS42-2	9.06	1.23	38.10	2.75	6.78	130.42	12.74
HS42-4	8.52	1.52	51.90	0.87	4.86	151.70	12.55
HS42-8	7.88	0.97	48.00	0.87	3.47	179.60	10.98
HS42-9	9.00	1.04	45.90	1.40	6.70	181.44	11.22
HS42-11	9.06	1.71	50.10	2.33	5.51	170.38	12.69
HS42-12	8.68	1.48	27.90	1.64	4.28	163.26	20.83
HS42-13	8.80	1.77	44.10	1.60	4.28	165.65	16.51
HS42-15	8.68	1.77	45.30	0.85	3.97	141.48	12.01
HS42-16	8.98	1.48	38.40	0.86	3.85	120.09	15.68
HS42-18	8.44	1.79	49.80	0.84	3.50	138.31	17.79
HS42-19	9.56	0.93	32.70	3.00	5.31	149.89	16.22
HS43-1	8.50	1.46	35.10	0.87	4.00	65.95	17.54
HS43-5	11.02	3.56	50.40	2.83	5.24	91.26	17.25
HS43-6	11.48	0.63	35.40	2.47	5.24	32.68	9.85
HS43-7	8.12	1.55	42.30	1.20	3.86	89.47	17.25
HS43-9	8.60	1.37	34.80	1.43	3.53	113.58	15.39
HS43-10	8.66	1.41	36.60	1.22	3.76	98.18	16.46
HS43-11	9.62	0.99	27.60	2.05	5.80	124.13	12.59
HS43-15	10.80	0.59	24.60	3.47	5.77	50.06	12.79
HS43-16	7.96	0.95	24.30	1.02	3.89	51.65	5.59
HS44-1	9.50	0.85	51.90	3.19	5.68	51.84	9.16
HS44-4	8.78	1.96	40.50	1.23	4.26	50.84	8.04
HS44-6	8.04	1.55	49.80	1.20	3.77	53.88	5.49
HS44-8	9.94	1.03	42.60	2.99	5.64	52.62	6.26
HS44-9	9.58	1.01	50.70	2.91	6.20	82.88	11.13
HS44-12	8.30	1.70	37.50	3.15	3.87	134.65	14.50
HS44-15	9.24	0.96	51.30	3.20	6.43	32.20	10.78
HS44-17	7.56	0.97	24.30	1.19	3.65	32.75	9.31
HS45-1	10.30	0.57	28.80	3.47	6.19	44.50	9.21
HS45-9	8.06	1.19	29.40	1.27	4.26	49.32	4.26
HS45-10	7.06	1.65	33.60	1.07	3.43	73.13	6.47
HS45-14	10.16	0.76	27.30	2.59	6.17	142.29	10.88
HS45-18	9.56	0.86	30.60	2.29	7.34	83.00	9.90
HS46-5	8.72	0.88	26.40	1.10	3.54	146.40	16.07
HS46-6	9.40	1.23	35.40	2.46	5.63	149.34	16.46
HS46-10	8.62	1.28	25.80	1.87	3.56	139.31	11.37
HS46-12	10.18	1.65	30.30	3.25	5.23	120.57	15.04
HS46-13	10.32	0.60	30.00	2.85	6.88	50.61	13.43
HS46-14	8.78	1.34	52.20	1.12	2.83	131.87	20.24
HS47-3	11.24	1.88	50.10	3.13	6.23	64.10	12.20
HS47-4	8.50	1.49	35.40	1.91	3.75	61.10	10.19
HS47-6	9.06	2.01	49.80	3.56	6.16	63.65	9.70
HS48-10	9.44	1.24	23.70	2.01	6.68	158.56	18.77
HS48-12	10.34	1.00	24.00	3.21	7.25	125.23	18.97
HS49 -11	8.54	1.00	35.70	1.69	3.92	128.79	19.90
HS49 -12	9.00	1.05	35.70	3.08	6.39	118.44	18.62
Mean	8.87	1.35	39.26	2.03	4.80	115.50	13.28
CD	0.86	0.19	4.59	0.28	0.19	9.29	0.96
SE(m)	0.31	0.07	1.65	0.10	0.07	3.33	0.34
SE (d)	0.44	0.09	2.34	0.14	0.10	4.70	0.49
C.V	7.75	11.05	9.40	8.66	2.44	4.99	4.49
Range	6.46-11.48	0.57-3.56	20.40-63.30	0.84-3.71	2.83-7.34	32.20-181.44	4.26-21.66

