

Supplemental data for

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Supplemental Table 1. Morphological and heartwood formation traits data of red sanders accessions

Accession	Tree height (m)	Clear bole height (m)	Number of forked stems	GBH (cm)	Heartwood length (cm)	Softwood length (cm)	Total core sample length (cm)
S1R1-7	8.50	1.50	0	34.00	0.00	5.40	5.40
S1R1-8	9.00	1.90	0	34.00	0.00	5.40	5.40
S1R1-9	9.50	1.70	0	44.00	0.00	7.00	7.00
S1R1-11	9.50	1.70	0	47.00	0.00	7.50	7.50
S1R1-12	9.20	3.50	0	43.00	0.00	6.30	6.30
S1R1-13	10.50	1.80	0	68.50	1.00	9.90	10.90
S1R1-16	9.30	3.20	0	33.00	0.00	5.20	5.20
S1R1-17	9.30	1.90	0	42.00	1.40	5.30	6.70
S1R1-19	11.50	0.00	2	57.00	0.00	9.07	9.07
S1R1-20	11.60	1.80	0	70.00	2.60	8.50	11.10
S1R1-21	10.50	2.80	0	39.00	0.00	6.20	6.20
S1R1-22	11.00	1.80	0	48.00	0.00	7.70	7.70
S1R1-24	11.70	0.00	0	56.00	0.00	8.90	8.90
S2R1-1	6.00	2.80	0	27.00	0.00	4.20	4.20
S2R1-2	7.50	3.20	0	37.00	0.00	5.90	5.90
S2R1-3	6.20	2.90	0	34.00	0.00	5.40	5.40
S2R1-4	6.40	3.20	0	37.00	0.00	5.90	5.90
S2R1-5	7.50	1.60	0	37.00	0.00	5.90	5.90
S2R1-6	7.50	0.00	3	39.00	0.00	6.40	6.40
S2R1-8	9.20	0.00	2	44.00	0.00	6.80	6.80
S2R1-9	7.70	0.00	3	46.67	0.00	8.30	8.30
S2R1-10	7.40	3.20	0	49.00	0.00	7.80	7.80
S2R1-12	7.70	0.00	2	46.00	0.00	7.50	7.50
S2R1-13	7.50	0.00	2	42.00	0.00	7.50	7.50
S2R1-15	7.60	1.80	0	52.00	0.00	6.30	6.30
S2R1-17	7.60	3.40	0	47.00	0.00	7.50	7.50
S2R1-18	8.20	0.00	3	48.70	0.00	9.10	9.10
S2R1-20	7.00	1.90	0	41.00	0.00	6.50	6.50
S2R1-21	7.40	0.00	2	42.00	0.00	6.90	6.90
S2R1-22	7.30	1.40	0	50.00	0.00	8.00	8.00
S2R1-23	8.50	1.70	0	78.00	4.00	8.50	12.50
S2R1-24	7.80	1.40	0	52.00	0.00	8.20	8.20
S3R1-2	7.80	3.00	0	54.00	0.00	8.60	8.60
S3R1-5	8.50	1.40	0	52.00	1.70	6.60	8.30
S3R1-6	8.20	0.00	2	46.00	0.00	8.10	8.10
S3R1-7	7.60	4.20	0	37.00	0.00	5.90	5.90
S3R1-10	10.50	0.00	2	53.00	0.00	9.40	9.40
S3R1-11	8.00	0.00	2	48.00	0.00	8.50	8.50
S3R1-15	9.50	1.80	0	53.00	0.00	8.40	8.40

S3R1-17	6.20	3.50	0	41.00	0.50	7.00	7.50
S3R1-19	8.50	0.00	2	49.50	0.00	8.30	8.30
S3R1-20	8.20	0.00	2	41.00	0.00	7.20	7.20
S3R1-22	7.50	0.00	2	53.50	0.00	9.50	9.50
S3R1-23	8.20	0.00	2	42.00	0.00	6.80	6.80
S3R1-24	8.50	1.50	0	50.00	0.00	8.00	8.00
S4R1-1	7.20	1.40	0	49.00	0.00	7.80	7.80
S4R1-3	9.50	2.80	0	52.00	0.00	8.30	8.30
S4R1-7	5.50	2.40	0	30.00	0.00	4.80	4.80
S4R1-9	5.80	2.10	0	37.00	0.00	5.90	5.90
S4R1-10	5.50	2.20	0	41.00	0.00	6.50	6.50
S4R1-11	5.50	2.50	0	39.00	0.00	6.20	6.20
S4R1-14	7.20	0.00	2	38.00	0.00	6.70	6.70
S4R1-17	7.50	0.00	2	43.50	0.00	8.10	8.10
S4R1-19	7.50	1.60	0	41.00	0.50	6.00	6.50
S4R1-20	7.20	2.10	0	31.00	0.00	4.90	4.90
S4R1-21	7.30	1.90	0	41.00	0.00	6.50	6.50
S4R1-22	5.80	1.70	0	42.00	0.00	6.70	6.70
S4R1-24	7.40	0.00	4	37.75	0.00	7.20	7.20
S4R1-25	8.10	3.00	0	40.00	0.00	6.10	6.10
S5R1-1	9.50	0.00	4	42.00	0.00	6.50	6.50
S5R1-2	9.20	0.00	2	48.50	3.20	4.60	7.80
S5R1-3	9.00	0.00	3	34.33	0.00	6.40	6.40
S5R1-4	9.30	0.00	2	34.00	0.00	5.70	5.70
S5R1-5	9.50	0.00	2	31.50	0.00	6.30	6.30
S5R1-6	9.70	0.00	2	48.50	0.00	8.10	8.10
S5R1-7	9.50	0.00	2	41.50	0.00	7.10	7.10
S5R1-8	9.80	0.00	4	38.00	0.00	7.20	7.20
S5R1-9	9.50	1.50	0	63.00	2.00	8.00	10.00
S5R1-10	8.20	3.40	0	37.00	0.00	5.90	5.90
S5R1-11	8.80	0.00	3	45.00	0.00	9.70	9.70
S5R1-12	10.20	1.90	0	54.00	2.40	6.20	8.60
S5R1-13	9.50	0.00	2	39.50	0.00	6.30	6.30
S5R1-14	9.20	0.00	4	37.75	0.00	6.80	6.80
S5R1-15	10.20	3.30	0	55.00	2.80	5.90	8.70
S5R1-16	8.60	0.00	3	43.33	0.00	7.80	7.80
S5R1-17	9.30	2.50	0	43.00	0.00	6.80	6.80
S5R1-18	7.70	0.00	2	27.00	0.00	4.60	4.60
S5R1-19	9.80	1.40	0	76.00	6.60	5.40	12.00
S5R1-20	9.50	0.00	2	34.00	0.00	6.20	6.20
S5R1-21	9.50	0.00	2	52.50	1.80	7.10	8.90
S5R1-22	8.50	0.00	3	45.33	0.00	8.10	8.10
S5R1-23	8.80	0.00	4	44.00	2.80	5.30	8.10
S5R1-24	8.90	2.20	0	39.00	0.00	6.10	6.10
S5R1-25	9.70	0.00	2	40.50	0.00	6.50	6.50
S5R2-1	7.90	3.40	0	45.00	0.00	7.10	7.10

S5R2-2	8.40	0.00	3	44.33	0.00	7.90	7.90
S5R2-3	9.00	0.00	2	59.50	0.00	10.80	10.80
S5R2-4	8.70	0.00	2	50.50	4.00	5.00	9.00
S5R2-5	8.50	1.90	0	54.00	2.70	5.80	8.50
S5R2-6	8.50	1.60	0	60.00	0.00	9.50	9.50
S5R2-7	8.00	0.00	2	45.00	0.00	7.30	7.30
S5R2-8	9.20	2.20	0	57.00	0.00	9.10	9.10
S5R2-10	7.50	0.00	2	31.50	0.00	6.30	6.30
S5R2-11	9.70	0.00	2	41.50	0.00	6.30	6.30
S5R2-12	10.00	1.30	0	75.00	1.20	10.70	11.90
S5R2-13	9.30	0.00	3	36.67	2.10	6.20	8.30
S5R2-14	9.10	0.00	3	48.67	2.00	7.70	9.70
S5R2-15	7.20	0.00	2	35.00	0.00	5.90	5.90
S5R2-16	6.80	0.00	2	35.00	0.00	6.30	6.30
S5R2-17	7.80	0.00	3	35.00	1.30	5.20	6.50
S5R2-18	8.60	0.00	2	50.00	0.00	8.20	8.20
S5R2-19	6.90	2.00	0	38.00	0.00	6.00	6.00
S5R2-20	7.60	1.50	0	38.00	0.00	6.00	6.00
S5R2-21	8.60	0.00	3	34.67	0.00	6.60	6.60
S5R2-22	9.10	0.00	3	51.33	0.00	9.70	9.70
S5R2-23	7.20	2.10	0	45.00	0.00	7.10	7.10
S5R2-25	7.10	0.00	5	31.80	0.00	5.50	5.50
S4R2-1	8.40	2.10	0	61.00	0.00	9.70	9.70
S4R2-5	7.70	0.00	2	34.00	0.00	7.30	7.30
S4R2-8	8.30	0.00	3	43.33	0.00	7.30	7.30
S4R2-9	8.40	0.00	3	39.33	0.00	7.00	7.00
S4R2-11	8.20	3.10	0	39.00	0.00	6.20	6.20
S4R2-15	6.80	1.90	0	30.00	0.00	4.80	4.80
S4R2-20	9.10	0.00	3	47.00	0.00	8.40	8.40
S4R2-21	7.90	2.00	0	54.00	0.00	8.50	8.50
S4R2-22	8.10	0.00	3	39.00	0.00	6.30	6.30
S4R2-23	8.40	0.00	3	42.33	0.00	7.60	7.60
S4R2-24	8.30	0.00	2	44.50	0.00	8.10	8.10
S1R2-1	7.90	1.70	0	46.00	0.00	7.30	7.30
S1R2-2	8.50	1.90	0	73.00	3.30	8.30	11.60
S1R2-4	8.00	2.00	0	40.00	0.00	6.30	6.30
S1R2-5	8.40	1.50	0	49.00	0.00	7.80	7.80
S1R2-7	7.80	4.60	0	32.00	0.00	5.10	5.10
S1R2-12	8.20	5.10	0	49.00	0.00	7.80	7.80
S1R2-13	8.50	6.20	0	53.00	0.00	6.00	8.40
S1R2-14	9.50	3.60	0	60.00	0.00	8.60	9.50
S1R2-15	8.40	2.10	0	48.00	0.00	7.60	7.60
S1R2-16	8.60	1.30	0	65.00	0.00	10.20	10.20
S1R2-17	8.70	1.40	2	45.00	0.00	7.40	7.40
S1R2-18	7.50	5.20	0	40.00	0.00	6.30	6.30
S1R2-19	8.20	3.10	0	47.00	0.00	7.40	7.40

S1R2-20	9.10	4.10	0	46.00	0.00	7.30	7.30
S1R2-21	7.90	0.00	2	46.50	1.10	6.70	7.80
S1R2-22	9.40	0.00	2	46.50	0.00	8.30	8.30
S1R2-23	8.50	0.00	2	51.50	2.00	7.00	9.00
S1R2-24	8.20	2.60	0	42.00	0.00	6.60	6.60
S1R2-25	7.80	2.40	0	43.00	0.00	6.80	6.80
S2R2-2	9.80	1.70	0	55.00	0.00	8.70	8.70
S2R2-3	8.80	4.50	0	38.00	0.00	6.10	6.10
S2R2-4	10.30	0.00	3	52.67	1.00	7.70	8.70
S2R2-5	10.50	0.00	2	51.00	0.00	9.50	9.50
S2R2-6	8.50	1.70	0	45.00	0.00	7.20	7.20
S2R2-7	8.50	0.00	3	48.00	0.00	8.20	8.20
S2R2-8	9.00	0.00	3	37.67	0.00	7.00	7.00
S2R2-9	9.20	0.00	2	47.50	0.00	8.00	8.00
S2R2-11	8.20	0.00	2	39.00	0.00	6.70	6.70
S2R2-12	8.00	2.20	0	34.00	0.00	5.40	5.40
S2R2-13	8.50	0.00	2	41.00	0.00	5.80	5.80
S2R2-14	8.80	2.00	0	57.00	0.00	9.10	9.10
S2R2-15	9.50	0.00	3	50.67	0.00	10.30	10.30
S2R2-16	8.40	1.70	0	72.00	0.00	11.50	11.50
S2R2-17	8.80	2.20	0	56.00	0.00	8.90	8.90
S2R2-18	9.00	0.00	2	43.50	0.00	7.80	7.80
S2R2-23	9.50	3.50	0	55.00	2.00	6.50	8.50
S2R2-24	8.00	0.00	2	40.50	0.00	7.10	7.10
S2R2-25	8.20	0.00	2	44.50	0.00	8.30	8.30
S3R2-2	6.50	3.40	0	26.00	0.00	4.00	4.00
S3R2-3	7.50	0.00	4	35.50	0.00	7.00	7.00
S3R2-4	10.00	0.00	3	47.33	0.00	8.10	8.10
S3R2-5	6.40	2.40	0	30.00	0.00	4.80	4.80
S3R2-6	8.70	1.50	0	60.00	0.00	9.50	9.50
S3R2-7	9.20	0.00	2	49.50	0.00	8.10	8.10
S3R2-9	9.00	0.00	2	41.00	0.00	7.10	7.10
S3R2-10	7.50	4.20	0	41.00	0.00	6.50	6.50
S3R2-11	8.80	0.00	2	40.50	0.00	6.10	6.10
S3R2-12	8.70	0.00	3	37.00	0.00	6.10	6.10
S3R2-13	9.00	0.00	2	38.50	0.00	6.50	6.50
S3R2-14	8.20	4.80	0	35.00	0.00	5.60	5.60
S3R2-15	7.20	3.00	0	39.00	0.00	6.20	6.20
S3R2-17	8.50	1.60	0	37.00	0.00	6.00	6.00
S3R2-18	9.50	0.00	3	48.33	0.00	9.20	9.20
S3R2-19	6.40	1.50	0	26.00	0.00	4.10	4.10
S3R2-20	7.00	1.30	0	69.00	3.60	7.40	11.00
S3R2-21	8.60	0.00	3	42.00	0.00	7.50	7.50
S3R2-22	8.80	0.00	2	54.50	3.50	6.00	9.50
S3R2-23	9.20	1.90	0	68.00	2.30	8.50	10.80
S3R2-25	9.50	0.00	2	49.00	1.50	7.60	9.10

S2R3-1	9.20	2.60	0	49.00	0.00	7.80	7.80
S2R3-2	9.40	0.00	4	41.00	0.00	6.80	6.80
S2R3-3	6.70	3.40	0	42.00	0.00	6.60	6.60
S2R3-4	8.10	0.00	2	46.50	0.00	9.70	9.70
S2R3-5	9.20	0.00	3	44.00	0.00	8.10	8.10
S2R3-6	8.10	4.20	0	33.00	0.00	5.20	5.20
S2R3-8	9.70	2.20	0	56.00	0.00	8.90	8.90
S2R3-10	9.40	0.00	4	47.00	0.00	7.90	7.90
S2R3-11	7.00	1.60	0	31.00	0.00	4.90	4.90
S2R3-12	9.20	0.00	2	53.00	0.00	8.60	8.60
S2R3-13	8.20	1.80	0	42.00	0.00	6.70	6.70
S2R3-14	8.50	3.40	0	34.00	0.00	5.40	5.40
S2R3-15	8.50	0.00	3	35.33	0.00	5.80	5.80
S2R3-16	9.20	0.00	2	47.50	0.00	8.10	8.10
S2R3-17	7.50	1.40	0	35.00	0.00	5.60	5.60
S2R3-18	8.60	2.20	0	52.00	0.00	8.30	8.30
S2R3-19	9.40	0.00	3	60.00	0.00	11.30	11.30
S2R3-21	9.00	0.00	2	38.00	0.00	6.70	6.70
S2R3-22	9.40	0.00	2	57.00	1.70	7.50	9.20
S2R3-23	8.60	0.00	2	41.00	0.00	7.10	7.10
S2R3-25	9.50	0.00	2	46.00	0.00	7.50	7.50
S3R3-2	8.90	0.00	2	39.50	1.00	5.50	6.50
S3R3-3	7.80	5.00	0	37.00	0.00	5.90	5.90
S3R3-4	9.60	0.00	3	47.33	2.70	5.60	8.30
S3R3-6	9.50	0.00	2	58.50	1.20	9.00	10.20
S3R3-7	9.10	0.00	2	45.00	0.00	7.80	7.80
S3R3-8	8.90	0.00	5	32.40	0.00	6.50	6.50
S3R3-9	8.50	0.00	2	44.00	0.00	7.20	7.20
S3R3-10	8.00	2.70	0	37.00	0.00	5.90	5.90
S3R3-11	8.60	0.00	2	37.50	0.00	6.00	6.00
S3R3-12	9.00	0.00	3	37.00	0.00	6.20	6.20
S3R3-13	9.30	0.00	2	42.50	0.00	6.80	6.80
S3R3-14	9.60	0.00	2	53.50	2.50	6.50	9.00
S3R3-15	7.00	0.00	2	32.00	0.00	5.70	5.70
S3R3-16	8.80	2.20	0	52.00	0.00	8.30	8.30
S3R3-17	8.90	1.70	0	60.00	0.00	9.50	9.50
S3R3-19	9.20	1.60	0	66.00	0.00	9.80	9.80
S3R3-20	9.00	0.00	2	55.00	0.00	9.00	9.00
S3R3-21	9.00	3.50	0	51.00	0.00	8.10	8.10
S3R3-22	7.80	2.60	0	35.00	0.00	5.50	5.50
S3R3-23	8.80	0.00	2	44.50	0.00	7.50	7.50
S3R3-24	9.50	2.00	0	66.00	0.00	10.50	10.50
S3R3-25	8.80	2.40	0	42.00	0.00	6.70	6.70
S4R3-1	8.60	0.00	4	40.75	0.00	7.20	7.20
S4R3-3	9.10	1.80	0	50.00	2.30	5.70	8.00
S4R3-4	8.80	1.90	0	46.00	0.00	7.30	7.30

S4R3-6	8.70	3.10	0	35.00	0.00	5.50	5.50
S4R3-7	8.50	1.70	0	52.00	1.40	6.90	8.30
S4R3-8	8.70	2.00	0	46.00	0.00	7.30	7.30
S4R3-9	9.20	1.40	0	54.00	0.00	8.60	8.60
S4R3-10	7.50	2.40	0	37.00	0.00	5.90	5.90
S4R3-11	8.60	2.10	0	55.00	0.00	8.80	8.80
S4R3-13	8.80	1.90	0	52.00	0.00	8.30	8.30
S4R3-14	8.90	1.60	0	49.00	0.00	7.80	7.80
S4R3-16	9.10	0.00	2	54.50	0.00	9.00	9.00
S4R3-18	9.30	1.50	0	62.00	3.20	6.70	9.90
S4R3-22	9.30	1.40	0	63.00	4.30	5.70	10.00
S4R3-24	8.90	1.70	0	54.00	3.10	5.50	8.60
S4R3-25	7.60	2.10	0	43.00	0.00	6.80	6.80
S5R3-1	10.40	0.00	2	50.50	0.00	8.30	8.30
S5R3-2	10.30	0.00	3	42.00	0.00	8.40	8.40
S5R3-3	10.30	0.00	3	39.67	0.00	7.80	7.80
S5R3-4	9.80	0.00	3	37.67	3.40	4.20	7.60
S5R3-5	10.40	0.00	2	63.00	2.20	8.50	10.70
S5R3-6	9.60	1.70	0	61.00	2.70	7.00	9.70
S5R3-7	9.70	0.00	3	46.67	0.00	8.10	8.10
S5R3-8	10.40	0.00	4	30.75	0.00	6.70	6.70
S5R3-9	10.00	0.00	2	46.50	0.00	7.60	7.60
S5R3-10	10.20	0.00	2	43.00	0.00	7.80	7.80
S5R3-11	10.30	0.00	3	45.00	0.00	9.00	9.00
S5R3-12	10.00	1.70	0	56.00	0.00	9.00	9.00
S5R3-13	10.30	0.00	2	35.50	0.00	7.00	7.00
S5R3-14	9.70	0.00	3	40.00	0.00	6.40	6.40
S5R3-15	10.40	0.00	3	42.67	0.00	7.80	7.80
S5R3-16	8.70	0.00	3	38.00	0.00	6.50	6.50
S5R3-17	9.10	0.00	3	36.33	0.00	6.50	6.50
S5R3-18	8.40	0.00	4	30.25	0.00	5.40	5.40
S5R3-19	10.30	1.40	0	66.00	4.30	6.20	10.50
S5R3-20	8.20	0.00	2	46.50	1.60	5.90	7.50
S5R3-21	10.50	0.00	4	41.75	0.00	8.40	8.40
S5R3-22	9.60	0.00	3	36.33	0.00	6.00	6.00
S5R3-23	10.40	0.00	2	42.00	0.00	8.10	8.10
S5R3-24	10.20	0.00	2	43.50	0.00	7.00	7.00
S5R3-25	10.10	0.00	3	39.33	2.30	5.20	7.50
S1R3-1	10.60	4.20	0	63.00	1.00	9.00	10.00
S1R3-2	10.70	1.50	0	55.00	1.80	7.00	8.80
S1R3-3	10.80	0.00	3	39.33	0.00	6.70	6.70
S1R3-4	9.60	2.10	0	50.00	1.40	6.60	8.00
S1R3-5	9.20	1.80	2	44.00	0.00	8.10	8.10
S1R3-6	9.70	0.00	3	27.67	0.00	4.60	4.60
S1R3-7	10.90	0.00	2	52.00	2.10	6.60	8.70
S1R3-8	10.90	2.80	0	59.00	2.50	7.00	9.50

S1R3-9	11.20	2.10	0	61.00	0.00	9.70	9.70
S1R3-11	11.10	0.00	4	38.25	0.00	7.50	7.50
S1R3-12	10.70	0.00	2	52.50	0.00	8.50	8.50
S1R3-13	11.10	0.00	2	49.00	0.00	8.50	8.50
S1R3-14	10.70	1.40	0	64.00	1.00	9.20	10.20
S1R3-15	7.80	1.60	0	29.00	0.00	4.60	4.60
S1R3-16	10.70	0.00	2	41.50	0.00	6.70	6.70
S1R3-17	8.20	1.90	0	30.00	0.00	4.80	4.80
S1R3-18	5.70	3.30	0	41.00	0.80	5.70	6.50
S1R3-19	10.90	1.40	0	59.00	0.00	9.30	9.30
S1R3-20	10.60	1.90	0	55.00	0.00	8.80	8.80
S1R3-21	8.80	2.80	0	41.00	0.00	6.52	6.52
S1R3-22	9.50	0.00	2	48.50	0.00	8.30	8.30
S1R3-23	9.30	0.00	2	38.00	0.00	6.20	6.20
S1R3-24	9.60	1.60	0	65.00	1.90	8.40	10.30
S4R4-1	7.40	0.00	3	35.67	0.00	6.30	6.30
S4R4-2	9.20	0.00	3	44.00	2.00	6.10	8.10
S4R4-3	8.60	0.00	2	37.50	0.00	6.20	6.20
S4R4-4	9.80	0.00	2	42.00	0.00	6.80	6.80
S4R4-5	8.30	1.40	0	31.00	0.00	4.90	4.90
S4R4-6	10.30	1.80	0	55.00	3.00	5.70	8.70
S4R4-9	8.30	0.00	2	26.50	0.00	5.10	5.10
S4R4-11	9.60	0.00	3	45.67	0.00	7.90	7.90
S4R4-12	10.00	2.80	0	42.00	0.00	6.60	6.60
S4R4-13	10.50	0.00	2	47.50	0.00	8.10	8.10
S4R4-14	11.50	0.00	2	44.50	0.00	8.20	8.20
S4R4-15	8.30	0.00	4	35.75	0.00	6.50	6.50
S4R4-16	7.90	2.70	0	30.00	0.00	4.70	4.70
S4R4-17	11.00	0.00	2	46.50	2.00	5.80	7.80
S4R4-18	10.00	3.00	0	53.00	0.00	8.40	8.40
S4R4-19	10.20	0.00	3	49.00	0.00	9.10	9.10
S4R4-20	10.10	0.00	2	39.00	0.00	6.50	6.50
S4R4-21	8.60	3.00	0	54.00	0.00	8.50	8.50
S4R4-22	8.20	0.00	3	38.33	0.00	6.80	6.80
S4R4-23	7.00	3.00	0	33.00	0.00	5.20	5.20
S4R4-25	9.50	0.00	3	41.67	0.00	7.30	7.30
S5R4-1	9.70	0.00	5	36.60	0.00	7.00	7.00
S5R4-2	10.30	1.50	0	63.00	4.00	6.00	10.00
S5R4-3	9.70	0.00	3	38.33	2.30	5.10	7.40
S5R4-4	9.50	0.00	3	36.67	3.90	4.00	7.90
S5R4-5	9.80	0.00	3	40.67	0.00	7.10	7.10
S5R4-6	10.50	0.00	4	38.00	0.00	6.60	6.60
S5R4-7	10.10	0.00	2	48.00	0.00	9.50	9.50
S5R4-8	10.00	0.00	2	38.00	0.00	6.00	6.00
S5R4-9	10.50	0.00	2	55.00	2.90	6.60	9.50
S5R4-10	9.90	0.00	2	40.00	0.00	6.50	6.50

S5R4-11	9.50	1.50	0	51.00	0.00	8.10	8.10
S5R4-12	9.50	1.40	0	43.00	0.00	6.80	6.80
S5R4-13	9.00	1.50	0	47.00	3.00	4.40	7.40
S5R4-14	9.50	0.00	2	53.00	0.00	9.00	9.00
S5R4-15	10.00	0.00	3	41.67	3.80	4.40	8.20
S5R4-16	11.50	1.50	0	66.00	0.00	10.50	10.50
S5R4-17	11.70	0.00	2	47.50	0.00	8.20	8.20
S5R4-18	10.90	0.00	3	44.00	2.30	5.50	7.80
S5R4-19	10.50	0.00	2	40.50	0.00	6.60	6.60
S5R4-20	9.80	2.10	0	59.00	5.00	4.30	9.30
S5R4-21	11.00	0.00	3	38.67	2.30	4.70	7.00
S5R4-23	10.20	0.00	4	35.50	0.00	7.40	7.40
S5R4-24	8.20	0.00	3	36.33	0.00	7.40	7.40
S5R4-25	11.30	0.00	4	38.50	4.50	3.60	8.10
S6R4-1	10.30	0.00	3	47.00	0.00	8.90	8.90
S6R4-2	9.80	0.00	4	38.75	0.00	7.30	7.30
S6R4-3	10.10	2.40	0	58.00	5.20	4.00	9.20
S6R4-4	9.60	0.00	2	49.00	0.00	8.90	8.90
S6R4-5	8.60	1.90	0	45.00	0.00	7.10	7.10
S6R4-6	10.40	0.00	2	40.00	0.00	7.90	7.90
S6R4-7	10.00	2.30	0	45.00	0.00	7.10	7.10
S6R4-8	10.50	0.00	2	46.50	0.00	8.10	8.10
S6R4-9	10.20	2.30	0	54.00	0.00	8.50	8.50
S6R4-10	10.20	1.50	0	54.00	0.00	8.50	8.50
S7R4-1	8.90	0.00	2	33.00	0.00	5.00	5.00
S7R4-2	9.40	0.00	2	44.00	0.00	8.20	8.20
S7R4-3	10.10	1.70	0	56.00	0.00	8.90	8.90
S7R4-4	10.20	1.40	0	62.00	5.50	4.30	9.80
S7R4-5	10.50	0.00	3	48.33	0.00	8.20	8.20
S7R4-6	9.30	2.50	0	47.00	0.00	7.40	7.40
S7R4-7	9.50	0.00	2	48.00	0.00	7.80	7.80
S7R4-8	8.90	1.80	0	38.00	0.00	6.00	6.00
S7R4-9	10.60	0.00	3	38.33	0.00	7.10	7.10
S7R4-10	9.90	0.00	3	46.33	0.00	7.80	7.80
S8R4-1	10.50	0.00	2	44.00	0.00	7.30	7.30
S8R4-2	10.30	0.00	3	40.33	0.00	7.00	7.00
S8R4-3	10.50	0.00	3	39.67	0.00	8.40	8.40
S8R4-4	10.10	0.00	6	26.00	0.00	5.70	5.70
S8R4-5	9.80	0.00	3	39.67	0.00	7.30	7.30
S3R4-1	9.70	0.00	2	45.00	0.00	6.80	6.80
S3R4-3	10.20	0.00	3	45.00	0.00	8.60	8.60
S3R4-4	10.20	0.00	4	41.50	1.10	6.20	7.30
S3R4-5	10.60	0.00	3	41.67	0.00	7.50	7.50
S3R4-6	10.30	0.00	2	43.50	0.00	7.00	7.00
S3R4-7	8.50	3.20	0	54.00	0.00	8.60	8.60
S3R4-8	8.70	0.00	2	43.50	0.00	7.30	7.30

S3R4-9	9.50	0.00	3	35.67	0.00	6.20	6.20
S3R4-10	9.20	3.30	0	43.00	0.00	6.80	6.80
S3R4-11	10.50	0.00	3	41.67	0.00	8.90	8.90
S3R4-13	10.20	0.00	2	50.50	0.00	8.10	8.10
S3R4-14	8.60	0.00	5	33.80	2.00	4.30	6.30
S3R4-15	11.00	2.50	0	61.00	2.00	7.70	9.70
S3R4-16	8.20	0.00	3	34.33	0.00	6.50	6.50
S3R4-17	11.20	3.10	0	47.00	0.00	7.50	7.50
S3R4-18	11.00	0.00	5	39.20	0.00	7.50	7.50
S3R4-19	10.60	2.10	0	44.00	0.00	7.00	7.00
S3R4-20	10.40	0.00	4	46.00	0.00	8.30	8.30
S3R4-21	11.50	0.00	2	58.50	4.00	7.10	11.10
S3R4-22	10.60	1.40	0	53.00	0.00	8.40	8.40
S3R4-23	9.50	1.50	0	74.00	5.00	6.80	11.80
S3R4-24	8.80	0.00	3	48.00	1.50	6.40	7.90
S3R4-25	9.10	0.00	2	40.50	0.00	7.10	7.10
S2R4-1	11.20	0.00	3	39.67	0.00	7.80	7.80
S2R4-2	10.90	0.00	5	41.60	0.00	7.00	7.00
S2R4-3	10.20	0.00	3	45.00	0.00	8.00	8.00
S2R4-4	10.60	0.00	4	36.50	0.00	6.20	6.20
S2R4-5	10.80	4.30	0	33.00	0.00	5.40	5.40
S2R4-6	10.60	0.00	4	41.50	0.00	7.00	7.00
S2R4-7	11.40	0.00	3	43.33	0.00	8.30	8.30
S2R4-9	10.80	0.00	3	45.00	0.00	8.30	8.30
S2R4-10	11.80	0.00	3	46.67	0.00	8.60	8.60
S2R4-11	8.30	0.00	4	37.25	0.00	7.50	7.50
S2R4-13	10.20	0.00	2	34.00	0.00	6.80	6.80
S2R4-14	8.50	4.50	0	34.00	0.00	5.40	5.40
S2R4-15	9.40	0.00	2	44.50	0.00	7.30	7.30
S2R4-16	7.20	3.70	0	40.00	0.00	6.30	6.30
S2R4-17	8.30	4.80	0	40.00	0.00	6.30	6.30
S2R4-18	8.10	1.90	0	40.00	0.00	6.30	6.30
S2R4-19	7.80	0.00	4	28.25	0.00	6.50	6.50
S2R4-20	8.60	0.00	2	36.00	0.00	5.80	5.80
S2R4-21	9.50	0.00	2	53.50	0.00	9.50	9.50
S2R4-22	9.00	0.00	4	43.25	0.00	8.20	8.20
S2R4-23	8.70	0.00	2	32.25	0.00	6.20	6.20
S2R4-24	9.30	0.00	2	43.00	0.00	8.20	8.20
S2R4-25	7.80	2.30	0	39.00	0.00	6.20	6.20
Average	9.04	1.05	1.49	45.00	0.47	7.11	7.58

Supplemental Table 2. Summary of principal components showing eigenvalues and percentage of variance explained

PC	Eigenvalue	Variance explained	Cumulative variance
PC1	2.86	40.85	40.85
PC2	2.02	28.86	69.71
PC3	1.27	18.20	87.91
PC4	0.61	8.69	96.60
PC5	0.19	2.67	99.27
PC6	0.05	0.69	99.96
PC7	0.00	0.04	100.00

Supplemental Table 3. Principal component loadings of morphological and heartwood formation traits showing the contribution of each trait to the respective components in red sanders accessions

	PC1	PC2	PC3	PC4	PC5	PC6	PC7
Tree height	0.35	0.28	0.14	0.88	-0.08	0.02	0.00
Clear bole height	-0.10	-0.63	-0.10	0.32	0.69	-0.03	-0.03
Number of forked stems	-0.02	0.66	0.09	-0.16	0.67	-0.27	-0.03
Girth at breast height	0.55	-0.23	0.00	-0.13	-0.11	-0.79	-0.03
Heartwood length	0.24	-0.14	0.78	-0.17	0.08	0.25	-0.47
Sapwood length	0.42	0.08	-0.60	-0.10	0.09	0.30	-0.59
Total core sample length	0.58	-0.04	0.02	-0.21	0.19	0.40	0.65