Hierarchical structure of the *Cocos nucifera* (coconut) endocarp: Morphology and its influence on fracture toughness

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Supplementary information 2

Raw data of the morphological parameters of the different hierarchical levels of the coconut endocarp

H2-Endocarp

no.endocarp	l1.mm	w1.mm	w2.mm	w3.mm	t.thick1.mm	t.thick2.mm	t.thick3.mm	t.thin1.mm	t.thin2.mm	t.thin3.mm
C1	102.1	92.0	91.2	95.0	5.24	5.36	5.31	1.76	2.19	1.78
C2	114.6	88.9	86.3	85.0	4.53	4.18	4.27	2.53	2.67	2.57
C3	122.0	87.4	88.5	82.4	3.97	3.77	3.75	2.17	1.95	2.07
C4	104.0	100.5	100.8	101.0	3.83	3.93	4.02	2.20	1.91	2.27
C5	126.8	96.8	94.3	94.5	4.00	4.28	3.97	2.19	2.05	2.01
C6	123.0	93.0	89.5	88.3	4.95	5.02	5.04	2.71	2.67	2.45
C7	106.1	89.5	90.0	88.8	4.46	4.43	4.30	3.81	3.63	3.41
C8	123.6	101.0	101.3	99.6	5.17	5.07	5.19	2.93	2.58	2.88
C9	119.8	91.4	90.3	90.6	5.34	5.42	5.09	2.59	2.64	2.74
C10	122.7	96.3	95.0	95.1	5.36	5.16	5.41	2.85	2.78	2.87

Abbreviations: l: endocarp length [mm]; w: endocarp width [mm]; t.thick: thickness thickest region of the cut surface [mm]; t.thin: thickness thinnest region of the cut surface [mm]

H3

Morphometry results of CT Analyser V.1.18.4.0 (Bruker microCT, Belgium)

Number of layers:	860
Lower vertical position:	4.1999E-002 [mm]
Upper vertical position:	3.6119E+001 [mm]
Pixel size:	4.1999E+001 [um]
Total VOI volume:	5.5667E+003 [mm³]
Object volume:	5.3810E+003 [mm³]
Total porosity:	3.3352E+000[%]

Diameter of vascular bundles (Structure separation):	2.1516E-001 [mm]
Standard deviation:	1.4118E-001 [mm]

Diameter of vascular bundles distribution:

Range	Volume	Percent volume in range
mm	mm³	%
4.1999E-002 - <1.2600E-001	5.3293E+001	27.9
1.2600E-001 - <2.1000E-001	6.9055E+001	36.1
2.1000E-001 - <2.9399E-001	2.5818E+001	13.5
2.9399E-001 - <3.7799E-001	1.9636E+001	10.3
3.7799E-001 - <4.6199E-001	1.2212E+001	6.4
4.6199E-001 - <5.4599E-001	4.6235E+000	2.4
5.4599E-001 - <6.2999E-001	3.3313E+000	1.7
6.2999E-001 - <7.1399E-001	8.9930E-001	0.5
7.1399E-001 - <7.9798E-001	1.0307E+000	0.5
7.9798E-001 - <8.8198E-001	9.8813E-001	0.5
8.8198E-001 - <9.6598E-001	3.6612E-001	0.2

H4-1

no.endocarp	position	l.complete	l.um	w.um	no.endocarp	position	l.complete	l.um	w.um
C1	mesocarp side	no	181.9	14.4	C8	testa side	yes	627.2	10.4
C1	mesocarp side	yes	869.2	15.0	C8	testa side	no	144.7	9.5
C1	mesocarp side	yes	274.8	10.6	C8	testa side	no	302.5	10.4
C1	mesocarp side	no	248.3	18.1	C8	testa side	no	185.9	11.9
C1	mesocarp side	no	212.0	10.5	C8	testa side	no	83.4	5.7
C1	mesocarp side	no	226.5	10.5	C8	testa side	no	194.2	12.4
C1	mesocarp side	no	170.1	11.1	C8	testa side	no	239.7	8.9
C1	mesocarp side	no	186.9	9.6	C8	testa side	no	87.1	6.5
C1	mesocarp side	no	293.2	13.3	C10	mesocarp side	yes	220.1	11.3
C1	centre	no	423.0	13.1	C10	mesocarp side	no	169.0	14.6
C1	centre	no	316.5	10.1	C10	mesocarp side	no	197.6	10.6
C1	centre	no	193.1	16.1	C10	mesocarp side	no	314.9	12.9
C1	centre	no	424.6	11.3	C10	mesocarp side	no	358.3	12.7
C1	centre	no	349.4	12.8	C10	mesocarp side	no	327.8	8.9
C1	centre	no	285.3	15.3	C10	mesocarp side	no	303.5	9.2
C1	centre	no	295.9	11.3	C10	mesocarp side	no	356.2	12.6
C1	centre	no	273.1	8.7	C10	mesocarp side	no	570.5	9.6
C1	centre	no	208.9	8.1	C10	mesocarp side	no	553.6	8.9
C1	centre	no	144.7	14.1	C10	centre	no	156.6	12.4
C1	testa side	no	401.8	7.5	C10	centre	no	96.1	8.2
C1	testa side	no	601.0	9.5	C10	centre	no	321.5	15.2
C1	testa side	no	419.6	12.0	C10	centre	no	245.5	12.3
C1	testa side	no	177.2	9.0	C10	centre	no	346.9	12.4
C1	testa side	no	347.0	11.7	C10	centre	no	319.8	11.1
C1	testa side	yes	290.1	11.1	C10	centre	no	193.1	11.9
C1	testa side	no	580.9	14.4	C10	centre	no	214.7	12.2
C1	testa side	no	619.4	19.5	C10	centre	no	89.3	10.8
C1	testa side	no	320.5	12.0	C10	testa side	no	111.6	8.1
C1	testa side	no	340.3	14.9	C10	testa side	no	158.1	8.6
C8	mesocarp side	no	605.6	22.6	C10	testa side	no	189.2	7.0
C8	mesocarp side	no	259.3	12.0	C10	testa side	no	268.9	8.9
C8	mesocarp side	no	587.5	23.6	C10	testa side	no	155.4	5.8
C8	mesocarp side	no	548.3	24.5	C10	testa side	no	309.3	6.5
C8	centre	no	82.7	10.0	C10	testa side	no	250.8	7.4
C8	centre	no	269.9	10.6	C10	testa side	no	343.1	6.4
C8	centre	no	420.4	13.7	C10	testa side	no	316.6	10.4
C8	centre	no	237.8	11.0	C10	testa side	no	352.9	7.8
C8	centre	no	400.9	13.5					
C8	centre	no	143.0	8.0					
C8	centre	no	159.2	13.4					
C8	centre	no	181.2	13.0					
C8	centre	no	226.1	9.7					
C8	centre	yes	264.3	11.9					

Abbreviations: l.complete: tracheid length intact, l.um: tracheid length [µm]; w.um: tracheid width [µm]

H4-2

no.endocarp	position	l.um	w.um	no.endocarp	position	l.um	w.um
C1	mesocarp side	89.1	48.1	C1	testa side	239.8	25.0
C1	mesocarp side	119.3	33.1	C1	testa side	104.1	27.8
C1	mesocarp side	107.7	52.9	C1	testa side	78.3	27.0
C1	mesocarp side	117.7	39.7	C1	testa side	106.5	26.3
C1	mesocarp side	98.9	30.2	C1	testa side	131.2	28.4
C1	mesocarp side	70.9	31.8	C1	testa side	89.6	24.7
C1	mesocarp side	89.8	36.0	C1	testa side	167.7	15.9
C1	mesocarp side	85.3	36.3	C1	testa side	181.2	24.1
C1	mesocarp side	89.1	47.9	C1	testa side	158.1	23.7
C1	mesocarp side	123.5	45.5	C1	testa side	170.4	24.1
C1	mesocarp side	116.2	43.6	C1	testa side	75.1	26.8
C1	mesocarp side	120.9	36.6	C1	testa side	159.3	18.2
C1	mesocarp side	95.7	47.0	C8	mesocarp side	134.7	58.3
C1	mesocarp side	76.8	28.0	C8	mesocarp side	124.0	39.7
C1	mesocarp side	76.4	24.6	C8	mesocarp side	105.0	55.6
C1	mesocarp side	115.6	48.4	C8	mesocarp side	140.6	38.8
C1	mesocarp side	91.6	31.5	C8	mesocarp side	136.0	37.5
C1	mesocarp side	75.4	41.7	C8	mesocarp side	130.6	58.1
C1	mesocarp side	94.6	37.3	C8	mesocarp side	97.5	31.6
C1	mesocarp side	82.0	29.1	C8	mesocarp side	124.1	64.4
C1	centre	143.6	29.5	C8	mesocarp side	72.5	31.9
C1	centre	124.8	32.1	C8	mesocarp side	76.6	41.9
C1	centre	79.9	35.8	C8	mesocarp side	130.4	32.0
C1	centre	139.9	18.3	C8	mesocarp side	100.9	42.8
C1	centre	112.1	24.3	C8	mesocarp side	90.8	48.3
C1	centre	117.7	30.8	C8	mesocarp side	141.4	45.9
C1	centre	75.8	22.4	C8	mesocarp side	75.9	26.2
C1	centre	127.0	39.4	C8	mesocarp side	113.6	61.1
C1	centre	127.1	28.4	C8	mesocarp side	109.4	43.9
C1	centre	82.8	28.8	C8	mesocarp side	74.6	37.5
C1	centre	143.5	33.3	C8	mesocarp side	108.4	48.1
C1	centre	162.1	33.5	C8	mesocarp side	129.5	45.9
C1	centre	126.2	26.1	C8	centre	119.6	33.0
C1	centre	114.2	40.6	C8	centre	126.2	52.2
C1	centre	133.8	25.5	C8	centre	91.8	36.5
C1	centre	145.8	32.8	C8	centre	97.5	32.1
C1	centre	87.7	19.8	C8	centre	130.1	27.9
C1	centre	79.7	34.7	C8	centre	172.7	21.7
C1	centre	74.0	27.0	C8	centre	168.4	40.7
C1	centre	176.5	43.6	C8	centre	99.9	40.2
C1	testa side	226.7	22.8	C8	centre	117.3	44.5
C1	testa side	172.5	20.2	C8	centre	135.9	31.9
C1	testa side	119.2	37.7	C8	centre	176.1	24.0
C1	testa side	110.3	22.3	C8	centre	137.3	28.5
C1	testa side	119.7	29.6	C8	centre	77.2	23.6
C1	testa side	201.5	38.1	C8	centre	93.5	33.1
C1	testa side	154.0	30.2	C8	centre	81.7	24.1
C1	testa side	154.2	22.4	C8	centre	88.7	34.5

no.endocarp	position	l.um	w.um	no.endocarp	position	l.um	w.um
C8	centre	144.0	33.1	C10	centre	106.9	32.4
C8	centre	133.8	32.0	C10	centre	78.0	33.5
C8	centre	141.7	32.3	C10	centre	78.8	25.4
C8	centre	111.5	28.6	C10	centre	152.8	24.5
C8	testa side	72.1	25.9	C10	centre	108.7	33.5
C8	testa side	130.5	26.9	C10	centre	100.2	43.5
C8	testa side	161.2	20.9	C10	centre	129.3	30.8
C8	testa side	116.9	28.2	C10	centre	71.6	26.6
C8	testa side	171.5	26.6	C10	centre	157.5	29.1
C8	testa side	154.7	22.9	C10	centre	87.3	24.5
C8	testa side	83.5	22.6	C10	centre	104.6	34.7
C8	testa side	113.1	32.3	C10	centre	73.5	37.9
C8	testa side	100.7	29.8	C10	centre	102.7	27.0
C8	testa side	49.1	20.8	C10	centre	98.5	30.7
C8	testa side	91.0	21.2	C10	centre	147.3	29.8
C8	testa side	157.9	19.6	C10	centre	149.3	27.5
C8	testa side	138.8	14.4	C10	centre	102.6	29.0
C8	testa side	107.6	22.5	C10	centre	89.2	37.6
C8	testa side	85.1	16.3	C10	centre	91.7	22.5
C8	testa side	124.7	19.1	C10	centre	90.1	34.2
C8	testa side	101.6	25.1	C10	testa side	120.0	22.9
C8	testa side	134.8	28.0	C10	testa side	163.0	24.9
C8	testa side	124.6	19.2	C10	testa side	80.3	21.3
C8	testa side	62.9	27.5	C10	testa side	81.8	29.8
C10	mesocarp side	100.0	61.1	C10	testa side	148.1	20.6
C10	mesocarp side	135.8	36.1	C10	testa side	152.0	21.4
C10	mesocarp side	97.7	39.9	C10	testa side	112.2	24.0
C10	mesocarp side	77.8	39.4	C10	testa side	133.3	38.4
C10	mesocarp side	100.1	48.5	C10	testa side	93.2	22.3
C10	mesocarp side	99.4	38.3	C10	testa side	83.7	27.8
C10	mesocarp side	116.6	36.6	C10	testa side	92.9	25.6
C10	mesocarp side	69.7	27.8	C10	testa side	95.2	34.0
C10	mesocarp side	114.6	31.7	C10	testa side	117.5	30.3
C10	mesocarp side	70.7	37.8	C10	testa side	119.2	21.4
C10	mesocarp side	95.9	33.8	C10	testa side	93.4	34.1
C10	mesocarp side	63.6	36.7	C10	testa side	133.8	37.2
C10	mesocarp side	66.2	41.3	C10	testa side	126.6	29.7
C10	mesocarp side	81.9	48.0	C10	testa side	157.6	23.4
C10	mesocarp side	101.8	32.7	C10	testa side	103.7	20.4
C10	mesocarp side	105.3	45.8	C10	testa side	101.6	26.6
C10	mesocarp side	70.1	35.0				
C10	mesocarp side	73.1	42.0				
C10	mesocarp side	113.9	43.0				
C10	mesocarp side	110.8	26.6				

Abbreviations: l.um: sclereid length [µm]; w.um: sclereid width [µm]

H5-1

no.endocarp	t1.um	t2.um	t3.um	r1.um	r2.um	r3.um	no.endocarp	t1.um	t2.um	t3.um	r1.um	r2.um	r3.um
C1	1.1	0.9	1.1	4.2	4.1	4.8	C8	1.4	2.2	1.5	5.0	5.5	4.8
C1	1.0	1.3	1.2	2.7	3.2	3.4	C8	2.2	2.6	1.4	7.9	7.9	7.3
C1	1.7	1.7	1.5	4.5	4.5	4.2	C8	1.8	1.7	1.9	9.5	8.7	10.5
C1	1.9	1.9	2.0	6.0	6.0	6.2	C8	1.3	1.6	2.2	3.9	5.4	5.7
C1	1.1	1.1	1.2	4.4	3.8	4.1	C8	1.9	2.3	2.0	6.9	8.4	7.8
C1	1.7	1.3	1.7	4.8	3.6	4.2	C10	1.5	3.6	2.1	3.7	8.0	5.2
C1	2.2	2.2	2.5	7.0	7.0	7.1	C10	2.2	1.3	1.0	9.3	6.8	5.0
C1	1.9	1.3	1.9	5.9	4.1	5.4	C10	2.0	1.9	4.0	5.7	4.9	9.8
C1	2.6	3.4	2.5	9.2	9.7	7.5	C10	1.5	1.5	1.1	6.4	5.7	4.6
C1	1.5	1.9	2.5	6.1	5.7	6.8	C10	1.6	1.1	2.1	4.6	2.7	7.8
C8	2.0	1.7	2.4	7.1	5.5	7.7	C10	1.4	1.1	1.3	5.5	5.2	5.3
C8	1.6	2.0	2.3	5.2	5.4	6.8	C10	1.4	1.9	1.7	4.9	7.2	8.6
C8	1.3	1.2	1.3	4.3	3.9	4.4	C10	1.2	1.2	1.0	5.3	5.1	5.9
C8	1.2	1.7	1.3	3.5	4.8	4.5	C10	1.4	1.7	1.2	4.7	6.2	4.5
C8	2.0	1.8	1.4	5.7	7.0	5.5	C10	1.4	1.2	1.4	5.4	4.7	5.1

Abbreviations: t: thickness tracheid cell wall [µm]; r: radius tracheid [µm]

H5-2

no.endocarp	no.cell	t1.um	t2.um	t3.um	r1.um	r2.um	r3.um
C1	S1	11.1	11.7	10.1	11.8	13.0	11.0
C1	S2	11.4	12.5	14.1	12.7	14.1	15.9
C1	S3	17.0	13.5	13.9	18.7	15.5	16.0
C1	S4	13.1	15.5	12.7	15.1	18.0	14.9
C1	S5	13.1	15.5	15.3	14.8	16.9	16.8
C1	S6	13.5	13.9	13.3	14.6	15.1	14.1
C1	S7	16.6	14.3	13.3	17.3	15.1	13.9
C1	S8	13.2	10.1	14.1	14.9	11.6	16.8
C1	S9	10.7	11.0	9.5	12.1	13.8	10.5
C1	S10	20.1	17.7	18.9	24.4	18.5	23.9
C8	S1	17.5	13.9	12.7	18.4	14.9	13.4
C8	S2	11.3	14.5	16.5	12.0	15.5	17.4
C8	S3	18.1	14.0	17.9	21.1	17.3	22.3
C8	S4	16.5	19.0	19.8	17.1	20.5	21.0
C8	S5	15.8	13.1	15.6	18.3	14.6	18.0
C8	S6	16.9	25.7	22.0	18.7	28.8	27.8
C8	S7	12.2	8.6	10.2	12.8	9.6	11.0
C8	S8	8.9	8.9	8.0	10.4	10.3	9.8
C8	S9	10.5	17.3	10.2	12.6	20.6	12.7
C8	S10	6.3	13.2	10.8	7.1	18.2	12.2
C10	S1	12.8	12.2	11.6	15.5	14.8	14.3
C10	S2	15.7	13.7	13.7	17.6	15.6	15.8
C10	S3	16.4	14.2	18.7	17.2	14.9	19.1
C10	S4	15.7	12.8	14.3	17.2	14.5	17.4
C10	S5	13.2	12.9	11.1	14.4	14.4	12.3
C10	S6	9.5	13.8	11.8	9.9	14.6	12.5
C10	S7	11.8	13.4	14.2	12.2	14.0	14.9
C10	S8	10.6	9.8	10.9	13.0	10.9	12.2
C10	S9	13.1	12.8	13.0	14.5	14.3	14.7
C10	S10	16.9	23.0	13.4	18.0	26.8	14.5

Abbreviations: no.cell: ; t: thickness sclereid cell wall [µm]; r: radius sclereid [µm]

H6-2

Primary cell wall layer (l1)

no.endocarp	no.cell	t.um	no.endocarp	no.cell	t.um	no.endocarp	no.cell	t.um
C1	S1	2.55	C8	S1	2.23	C10	S1	2.48
C1	S2	NA	C8	S2	1.88	C10	S2	1.88
C1	S3	2.34	C8	S3	2.06	C10	S3	1.43
C1	S4	1.75	C8	S4	1.55	C10	S4	2.30
C1	S5	1.70	C8	S5	1.10	C10	S5	2.74
C1	S6	NA	C8	S6	NA	C10	S6	1.57
C1	S7	2.09	C8	S7	NA	C10	S7	NA
C1	S8	2.31	C8	S8	2.16	C10	S8	1.86
C1	S9	1.51	C8	S9	1.22	C10	S9	NA
C1	S10	3.17	C8	S10	2.40	C10	S10	2.65

Secondary cell wall layers (l2)

no.endocarp	no.cell	t.um	no.endocarp	no.cell	t.um	no.endocarp	no.cell	t.um	no.endocarp	no.cell	t.um
C1	S1	0.25	C1	S7	0.24	C8	S6	0.18	C10	S8	0.24
C1	S1	0.31	C1	S10	0.27	C8	S6	0.19	C10	S8	0.23
C1	S1	0.21	C1	S10	0.29	C8	S6	0.23	C10	S8	0.28
C1	S1	0.26	C1	S10	0.24	C8	S6	0.22	C10	S8	0.25
C1	S1	0.19	C1	S10	0.33	C8	S6	0.17	C10	S8	0.20
C1	S1	0.20	C1	S10	0.35	C8	S6	0.17	C10	S8	0.14
C1	S1	0.27	C1	S10	0.29	C8	S6	0.18	C10	S8	0.17
C1	S1	0.14	C1	S10	0.34	C8	S6	0.16	C10	S8	0.17
C1	S1	0.19	C1	S10	0.33	C8	S6	0.17	C10	S9	0.23
C1	S1	0.14	C1	S10	0.27	C8	S6	0.14	C10	S9	0.26
C1	S3	0.34	C1	S10	0.29	C8	S10	0.17	C10	S9	0.25
C1	S3	0.48	C8	S3	0.28	C8	S10	0.17	C10	S9	0.26
C1	S3	0.47	C8	S3	0.34	C8	S10	0.21	C10	S9	0.19
C1	S3	0.31	C8	S3	0.37	C8	S10	0.16	C10	S9	0.21
C1	S3	0.29	C8	S3	0.43	C8	S10	0.17	C10	S9	0.22
C1	S3	0.30	C8	S3	0.32	C8	S10	0.17	C10	S9	0.22
C1	S3	0.28	C8	S3	0.34	C8	S10	0.14	C10	S9	0.17
C1	S3	0.30	C8	S3	0.29	C8	S10	0.17	C10	S9	0.20
C1	S3	0.37	C8	S3	0.41	C8	S10	0.15	C10	S10	0.23
C1	S3	0.28	C8	S4	0.34	C8	S10	0.21	C10	S10	0.32
C1	S4	0.21	C8	S4	0.30	C10	S1	0.34	C10	S10	0.33
C1	S4	0.21	C8	S4	0.26	C10	S1	0.24	C10	S10	0.21
C1	S4	0.23	C8	S4	0.24	C10	S1	0.31	C10	S10	0.23
C1	S4	0.28	C8	S4	0.24	C10	S1	0.27	C10	S10	0.33
C1	S4	0.20	C8	S4	0.28	C10	S1	0.27	C10	S10	0.43
C1	S4	0.20	C8	S4	0.35	C10	S1	0.25	C10	S10	0.37
C1	S4	0.22	C8	S4	0.34	C10	S1	0.21	C10	S10	0.47
C1	S4	0.21	C8	S4	0.33	C10	S1	0.22	C10	S10	0.46
C1	S4	0.15	C8	S4	0.38	C10	S3	0.28			
C1	S4	0.20	C8	S5	0.22	C10	S3	0.24			
C1	S7	0.19	C8	S5	0.24	C10	S3	0.21			
C1	S7	0.22	C8	S5	0.26	C10	S3	0.31			
C1	S7	0.18	C8	S5	0.21	C10	S3	0.26			
C1	S7	0.22	C8	S5	0.20	C10	S3	0.22			
C1	S7	0.29	C8	S5	0.25	C10	S3	0.24			
C1	S7	0.29	C8	S5	0.21	C10	S3	0.24			
C1	S7	0.32	C8	S5	0.16	C10	S3	0.18			
C1	S7	0.25	C8	S5	0.18	C10	S3	0.21			
C1	S7	0.32	C8	S5	0.22	C10	S8	0.22			

Pits

no.endocarp	no.cell	l.um	w.um
C1	S11	2.15	1.84
C1	S11	2.47	1.70
C1	S11	2.52	1.71
C1	S11	2.54	1.51
C1	S11	1.71	1.16
C1	S11	2.25	1.57
C1	S11	2.44	1.23
C1	S11	2.25	1.53
C1	S11	2.41	1.86
C1	S11	3.10	1.80
C1	S11	2.38	1.40
C1	S11	1.91	1.63
C1	S11	2.35	1.74
C1	S11	2.07	1.89
C1	S11	2.33	1.61
C1	S11	2.30	1.70
C1	S11	3.99	2.02
C1	S11	2.26	1.64
C1	S11	1.85	1.59
C1	S11	2.43	1.60
C1	S11	2.35	1.77
C1	S11	2.13	1.53
C1	S11	2.62	2.17
C1	S12	2.61	2.05
C1	S12	2.71	1.78
C1	S12	2.79	1.79
C1	S12	1.50	1.01
C1	S12	3.27	2.40
C1	S12	1.70	1.57
C1	S12	2.45	2.09
C1	S12	1.71	1.18
C1	S12	1.97	1.43
C1	S12	2.37	1.88
C1	S12	2.21	1.77
C1	S12	3.00	1.94
C1	S12	3.10	2.17
C1	S12	1.94	1.77
C1	S12	1.93	1.30
C1	S12	2.07	1.92
C1	S12	2.50	1.70
C1	S12	2.48	1.77
C1	S12	2.37	1.99
C1	S12	3.11	2.18
C1	S12	2.87	2.04
C1	S13	2.09	1.89
C1	S13	1.81	1.68
C1	S13	1.92	1.45
C1	S13	1.81	1.41
C1	S13	2.14	1.76
C1	S13	1.78	1.36
C1	S13	2.40	2.00
C1	S13	2.09	1.42
C1	S13	2.48	1.74
C1	S13	1.78	1.31
C1	S13	1.18	1.18
C1	S13	2.14	1.90
C1	S13	3.36	1.60
C1	S13	3.32	2.54
C1	S13	2.29	1.72
C1	S13	2.57	1.68
C1	S13	2.93	2.17
C1	S13	3.58	2.44
C1	S14	3.27	2.28
C1	S14	2.13	1.88
C1	S14	2.52	1.75
C1	S14	3.25	2.44
C1	S14	1.46	1.16
C1	S14	3.11	2.06
C1	S14	1.98	1.04
C1	S14	3.02	1.32
C1	S14	4.43	1.93
C1	S14	1.18	0.75
C1	S14	2.49	1.47
C1	S14	2.64	2.20
C1	S14	1.38	0.84
C1	S14	3.89	2.32
C1	S14	2.71	1.92
C1	S14	3.06	1.92
C1	S14	2.10	1.68
C1	S14	2.83	1.50
C1	S14	2.54	2.19
C1	S15	3.31	2.04
C1	S15	2.69	2.06
C1	S15	1.76	1.32
C1	S15	3.68	2.40
C1	S15	2.20	2.14
C1	S15	1.77	1.53
C1	S15	2.51	2.10
C1	S15	3.04	2.25
C1	S15	2.73	1.90
C1	S15	2.61	1.77
C1	S15	3.53	2.81
C1	S15	3.77	2.04
C1	S15	2.41	1.76
C1	S15	2.43	2.19
C1	S15	2.57	2.20
C1	S15	2.75	1.62
C1	S15	3.93	2.31
C1	S15	3.45	2.09
C1	S15	3.08	1.76
C1	S15	2.19	1.55
C1	S15	3.12	1.61
C1	S15	2.48	1.84
C1	S15	2.18	1.76
C1	S15	2.44	1.91
C1	S15	3.21	1.97
C1	S16	1.50	1.37
C1	S16	1.69	1.56
C1	S16	2.08	2.04
C1	S16	2.73	2.45
C1	S16	1.50	1.33
C1	S16	2.53	2.08
C1	S16	3.00	2.53
C1	S16	2.06	1.91
C1	S16	2.36	2.24
C1	S16	1.38	1.06
C1	S16	2.52	1.87
C1	S16	3.64	2.53
C1	S16	3.16	1.90
C1	S16	2.76	1.95
C1	S16	1.56	1.37
C1	S16	3.19	2.14
C1	S16	3.14	2.06
C1	S16	3.56	2.28
C1	S16	2.76	1.77
C1	S16	2.92	1.77
C1	S16	2.57	1.88

no.endocarp	no.cell	l.um	w.um
C8	S11	3.07	2.55
C8	S11	2.02	1.80
C8	S11	2.22	1.92
C8	S11	2.74	2.01
C8	S11	1.77	1.36
C8	S11	2.21	1.74
C8	S11	2.52	1.78
C8	S11	2.70	2.02
C8	S11	1.88	1.51
C8	S11	1.72	1.68
C8	S11	2.34	1.84
C8	S11	3.29	2.15
C8	S11	2.70	2.33
C8	S11	2.85	2.50
C8	S11	2.56	1.91
C8	S11	1.94	1.64
C8	S11	2.60	1.90
C8	S11	2.86	2.54
C8	S11	3.53	2.95
C8	S11	2.67	1.98
C8	S11	2.74	2.42
C8	S11	1.88	1.46
C8	S11	2.56	1.79
C8	S11	2.85	2.00
C8	S11	2.98	2.02
C8	S11	1.99	1.43
C8	S11	2.16	1.66
C8	S11	2.08	1.84
C8	S11	2.08	1.68
C8	S11	2.49	1.82
C8	S11	2.82	2.35
C8	S11	2.32	2.17
C8	S11	3.04	2.16
C8	S11	2.47	2.28
C8	S11	4.04	2.89
C8	S11	2.74	2.68
C8	S11	3.09	2.64
C8	S12	1.77	1.38
C8	S12	2.10	1.77
C8	S12	1.91	1.47
C8	S12	2.41	1.80
C8	S12	2.56	1.87
C8	S12	2.27	1.65
C8	S12	1.92	1.63
C8	S12	2.02	1.45
C8	S12	2.90	2.16
C8	S12	1.81	1.69
C8	S12	2.32	2.11
C8	S12	1.70	1.62
C8	S12	2.67	1.81
C8	S12	2.47	1.88
C8	S12	2.95	1.78
C8	S12	3.30	1.75
C8	S13	2.33	1.75
C8	S13	2.68	1.79
C8	S13	2.40	1.45
C8	S13	3.35	1.95
C8	S13	1.96	1.34
C8	S13	2.60	2.03
C8	S13	2.09	1.80
C8	S13	1.54	1.31
C8	S13	1.71	1.67
C8	S13	1.83	1.59
C8	S13	3.08	1.80
C8	S13	3.58	2.55
C8	S13	2.95	1.93
C8	S14	1.68	1.43
C8	S14	3.87	2.54
C8	S14	2.29	1.94
C8	S14	2.12	1.73
C8	S14	1.35	1.27
C8	S14	1.65	1.39
C8	S14	2.06	1.61
C8	S14	1.90	1.67
C8	S14	2.72	1.89
C8	S14	2.21	1.45
C8	S14	1.87	1.03
C8	S14	2.01	1.77
C8	S14	2.80	2.37
C8	S14	2.27	1.87
C8	S14	2.18	2.00
C8	S14	4.24	2.18
C8	S14	2.13	1.47
C8	S14	2.11	1.54
C8	S14	3.40	1.64
C8	S14	2.44	1.74
C8	S14	2.47	1.58
C8	S14	2.48	1.78
C8	S14	2.39	2.24
C8	S14	2.05	1.83
C8	S14	1.22	0.98
C8	S14	2.73	2.09
C8	S14	2.29	1.35
C8	S14	2.42	1.77
C8	S14	2.63	2.13
C8	S14	2.46	1.98
C8	S14	2.45	1.51
C8	S14	2.48	1.88
C8	S14	2.74	2.31
C8	S14	2.44	2.01
C8	S14	2.47	2.25
C8	S14	3.00	2.19
C8	S14	3.24	2.78
C8	S14	1.95	1.46
C8	S14	3.42	2.35
C8	S15	2.40	1.70
C8	S15	1.36	1.29
C8	S15	1.25	0.96
C8	S15	1.51	1.28
C8	S15	2.47	2.03
C8	S15	2.56	1.92
C8	S15	2.12	1.75
C8	S15	2.25	2.00
C8	S15	2.33	1.72
C8	S15	2.69	1.99
C8	S15	1.42	1.07
C8	S15	2.78	1.76
C8	S15	2.76	1.65
C8	S15	2.07	1.22
C8	S15	2.31	2.19
C8	S15	2.46	1.72
C8	S15	2.21	1.85
C8	S15	1.92	1.30
C8	S15	2.47	1.54
C8	S16	2.20	1.72
C8	S16	2.79	2.44
C8	S16	3.60	2.71
C8	S16	2.43	1.97
C8	S16	2.43	1.76
C8	S16	2.13	1.95
C8	S16	1.92	1.47
C8	S16	2.63	1.82
C8	S16	1.29	0.84
C8	S16	1.85	1.40
C8	S16	2.42	1.66
C8	S16	2.04	1.62
C8	S16	2.82	1.92

no.endocarp	no.cell	l.um	w.um
C10	S11	1.68	1.45
C10	S11	2.53	1.79
C10	S11	2.13	1.63
C10	S11	2.79	1.77
C10	S11	1.45	1.17
C10	S11	2.48	1.99
C10	S11	1.60	1.38
C10	S11	2.67	1.95
C10	S11	3.60	2.15
C10	S11	2.23	2.12
C10	S11	3.06	2.73
C10	S11	2.96	2.33
C10	S11	3.78	2.06
C10	S11	3.11	2.12
C10	S11	3.38	2.26
C10	S11	2.70	2.00
C10	S11	1.95	1.63
C10	S11	2.13	1.88
C10	S11	1.84	1.75
C10	S11	4.14	2.10
C10	S11	2.59	2.54
C10	S11	2.27	1.99
C10	S12	2.51	2.49
C10	S12	2.11	2.04
C10	S12	2.19	1.58
C10	S12	2.35	2.05
C10	S12	2.35	1.71
C10	S12	3.06	1.68
C10	S12	3.26	1.86
C10	S12	2.44	1.96
C10	S12	3.15	2.02
C10	S12	2.10	1.75
C10	S12	2.50	1.90
C10	S12	2.65	1.82
C10	S12	2.66	2.42
C10	S12	2.92	1.44
C10	S12	2.04	1.88
C10	S12	1.79	1.60
C10	S12	2.83	2.15
C10	S12	1.89	1.62
C10	S12	1.89	1.70
C10	S12	3.38	1.80
C10	S12	2.73	2.09
C10	S12	2.78	1.93
C10	S12	2.67	1.93
C10	S12	2.30	1.68
C10	S13	1.59	1.29
C10	S13	2.26	1.83
C10	S13	2.35	1.67
C10	S13	2.45	1.78
C10	S13	1.96	1.54
C10	S13	2.40	1.83
C10	S13	2.43	1.54
C10	S13	1.51	1.23
C10	S13	2.69	2.10
C10	S13	1.81	1.25
C10	S13	1.80	1.44
C10	S13	1.31	1.05
C10	S13	1.94	1.68
C10	S13	2.19	2.05
C10	S13	2.16	2.11
C10	S14	2.47	1.92
C10	S14	2.50	1.52
C10	S14	2.52	1.40
C10	S14	2.77	1.35
C10	S14	3.04	1.62
C10	S14	2.35	1.46
C10	S14	5.02	1.76
C10	S14	5.17	2.04
C10	S14	2.07	1.09
C10	S14	1.84	1.09
C10	S14	2.98	1.46
C10	S14	3.22	1.78
C10	S14	1.92	1.14
C10	S14	3.45	2.06
C10	S14	2.61	1.75
C10	S14	2.73	1.45
C10	S14	2.05	1.60
C10	S14	2.42	1.36
C10	S14	1.97	1.19
C10	S14	2.25	1.50
C10	S14	1.69	1.34
C10	S14	3.09	1.84
C10	S14	2.46	1.20
C10	S14	1.79	1.10
C10	S14	2.05	1.61
C10	S14	2.13	1.41
C10	S14	1.88	1.52
C10	S14	3.06	1.63
C10	S14	2.56	1.42
C10	S14	1.99	1.83
C10	S14	1.77	1.20
C10	S14	1.63	1.28
C10	S14	2.27	1.28
C10	S14	2.96	1.85
C10	S14	1.84	1.54
C10	S15	2.75	1.87
C10	S15	2.78	1.50
C10	S15	2.24	1.65
C10	S15	2.19	1.92
C10	S15	2.50	1.58
C10	S15	2.60	1.56
C10	S15	2.18	1.43
C10	S15	1.78	1.44
C10	S15	2.50	1.10
C10	S15	1.63	1.19
C10	S15	2.18	1.22
C10	S15	2.18	1.59
C10	S15	2.39	1.27
C10	S15	2.56	1.56
C10	S15	2.24	1.00
C10	S15	2.56	1.47
C10	S15	2.81	1.67
C10	S15	1.95	1.37
C10	S15	2.02	1.66
C10	S15	2.54	1.43
C10	S15	2.45	1.43
C10	S15	2.97	1.57
C10	S15	2.81	1.67
C10	S15	2.91	1.33
C10	S15	2.16	1.59
C10	S15	2.59	0.98
C10	S15	3.59	1.84
C10	S15	1.65	1.06
C10	S15	1.98	1.34
C10	S16	3.89	2.17
C10	S16	3.09	2.07
C10	S16	2.90	2.06
C10	S16	2.14	1.74
C10	S16	2.56	2.10
C10	S16	2.94	2.51
C10	S16	2.95	2.16
C10	S16	2.21	2.03
C10	S16	2.46	1.57
C10	S16	2.69	1.87
C10	S16	3.16	2.27
C10	S16	3.08	2.74
C10	S16	1.15	1.10
C10	S16	4.15	2.46
C10	S16	2.06	1.41
C10	S16	1.82	1.23
C10	S16	3.30	2.08
C10	S16	3.03	2.02
C10	S16	2.08	1.67
C10	S16	2.23	1.83
C10	S16	3.01	1.93
C10	S16	3.22	2.18
C10	S16	1.71	1.33
C10	S16	3.67	2.67
C10	S16	2.64	1.57