

Appendix 1. Flowers pollinated and seed produced using artificial pollination techniques with exotic *Eucalyptus nitens* pollen on native Tasmanian *Symphomyrtus* species

Three techniques were used: controlled sigma pollination (SP), controlled cut-style pollination (CS) and supplementary pollination (SUP). Included are the general locations of each tree and the dates when work was commenced and when seed capsules were harvested

Species	Tree number	Location	Date work commenced	Harvest date	No. of flowers			No. of seeds			
					SP	CS	SUP	SP	CS	SUP	Total
<i>E. archeri</i>	1224	Projection Bluff	22 Jan. 2001	24 Jan. 2002			75			41	41
	1228	Ben Lomond	29 Jan. 2001	7 Apr. 2002		123	111	234	279	51	330
	1229	Ben Lomond	29 Jan. 2001	7 Apr. 2002			73	73		6	6
<i>E. barberi</i>	1985	Lake Leak Hwy	17 May 2002	30 Mar. 2003			74	74		369	369
	1988	Lake Leak Hwy	17 May 2002	30 Mar. 2003		75		75	326		326
	1994	Cherrytree Hill	18 May 2002	30 Mar. 2003			126	126		90	90
<i>E. brookeriana</i>	667	Ornamental	22 Apr. 2002	13 Mar. 2003		164	117	332	0	160	160
	1396	Blessington	29 Dec. 2000	1 Apr. 2002			69	69		129	129
	1505	Margate	09 Apr. 2001	30 Jan. 2002			82	82		324	324
<i>E. cordata</i>	1520	Margate	6 Apr. 2001	24 Apr. 2002		91	63	178	43	147	205
	1996	Snug Plains	21 Dec. 2001	26 Mar. 2003		36	57	129	0	23	70
	2000	Snug Plains	24 Dec. 2001	26 Mar. 2003		32	77	109	37	419	456
<i>E. dalymplicana</i>	1386	Meander	13 Apr. 2000	10 Oct. 2001	613			613	171		171
	1982	Upper Blessington	15 May 2002	30 Mar. 2003			137	137		174	174
	1995	Lower Blessington	14 May 2002	30 Mar. 2003			135	135		13	13
<i>E. gunnii</i>	1394	Snug Plains	21 Jan. 2001	26 Feb. 2002			84	84		316	316
	1978	Snug Plains	2 May 2002	26 Mar. 2003		103	78	214	391	131	559
	2001	Snug Plains	2 May 2002	26 Mar. 2003			118	118		686	686
<i>E. johnstonii</i>	1393	Breona	12 Jan. 2000	5 Jan. 2001			102	102		0	0
	1397	Snug Tier	16 Feb. 2001	24 Apr. 2002		82	59	141	0	105	105
	1504	Mt Wellington	23 Mar. 2001	22 Mar. 2002			53	53		51	51
<i>E. morrisbyi</i>	2010	Mt Wellington	11 Mar. 2001	10 May 2002			271	271	2765		2765
	1367	Ornamental	15 Mar. 2000	25 Feb. 2001		229		229	1142		1142
	1380	Ornamental	21 Mar. 2000	25 Feb. 2001			174	174		25	25
<i>E. ovata</i>	1225	Numamara	24 Jan. 2001	5 Jan. 2002			128	128		7	7
	1509	Mt Nelson	5 Sept. 2001	6 Aug. 2002			191	191		102	102
	1986	Sandy Bay	5 May 2001	22 Mar. 2002			231	231		79	79
<i>E. perriniana</i>	2012	Dunailley	23 Apr. 2001	27 Feb. 2002			109	109		297	297
	1981	Strickland	6 Feb. 2002	27 Mar. 2003			64	64		121	121
	1991	Strickland	6 Feb. 2002	27 Mar. 2003			91	91		0	0
<i>E. rodwayi</i>	1227	Arthurs Lake	2 Mar. 2001	24 Jan. 2002			109	109		39	39
	1501	Mathina Plains	1 Mar. 2001	14 May 2002			154	154		4	4
	1503	Steppes	2 Mar. 2001	24 Jan. 2002			59	59		31	31
<i>E. rubida</i>	1222	Bothwell	30 Dec. 2000	25 Jan. 2002		81	70	70		1	1
	2002	Pelham	30 Dec. 2000	15 Aug. 2001			67	67		176	176
	2004	Hartz Mountains	26 Feb. 2001	22 Apr. 2002			71	71		72	72
<i>E. subcrenulata</i>	1989	Mt Wellington	6 May 2002	15 Mar. 2003			33	33		23	23
	1997	Mt Wellington	24 May 2002	15 Mar. 2003			56	56		16	16
	1399	Hartz Mountains	18 Feb. 2001	23 Mar. 2003			45	45		24	24
<i>E. vernicosa</i>	1400	Hartz Mountains	18 Feb. 2001	23 Mar. 2003			87	87		13	13
	-	Ornamental	26 Apr. 2002	13 May 2003			615	615	151		151
	1381	Hollow Tree	7 Apr. 2000	26 May 2001		621		621	386		386
<i>E. viminalis</i>	1385	Mt Nelson	10 Apr. 2000	18 Apr. 2001		140	118	293	0	74	74
	1976	South Hobart	2 Apr. 2002	17 Jan. 2003		2349	1715	2913	4627	1461	4144
	Total							6977		4144	10232

Appendix 2. Characters used in the morphometric analysis of progeny from controlled, supplementary and open-pollination

Included are the transformations used for the analysis (log, logarithmic; sqrt, square root)

Code	Description	Transformation
Bud characters		
BUDFUS	Type of bud fusing (0–2); 0 = no fusing, 1 = partial fusing, 2 = complete fusing, see <i>E. nitens</i> in Fig. 1 for example of fusing	None
LFUS	Length of fusing of the apical bud leaves (mm)	Log
Leaf characters		
CRENM	Crenulate margins (0–2); 0 = none, 2 = max.	None
CORD	Length of extension of the cordate lobes of the lamina, past the base of the petiole/lamina join (mm)	X ^{0.25}
LAML	Length of lamina (mm)	Log
LAMW	Lamina width at widest point (mm)	Sqrt
LA	Leaf angle (°); the axillary angle made by the mid-rib and the stem	None
LGL	Leaf glaucousness (0–7); 0–1 = green, 2–4 = subglaucous and 5–7 = glaucous, converted from Cauvin <i>et al.</i> (1987)	None
LP	Leaf plane (°); cross-sectional angle of the leaf from horizontal	Sqrt
LTA	The acute angle of the leaf tip (°)	X ²
LWP	Length along mid-rib to widest point (mm)	Sqrt
MRRED	Mid-rib redness (0–2); 0 = none, 2 = max.	None
PETL	Length of petiole (mm)	None
Plant characters		
HT10	Height to node 10 (mm)	None
LAT05	Number of laterals from Node 0 to 5 (<i>n</i>)	None
LAT610	Number of laterals from Node 6 to 10 (<i>n</i>)	None
LLLAT	Length of longest lateral (mm)	None
NLLAT	Node of longest lateral (0–10)	None
Stem characters		
INTER10	Inter-node length between Nodes 9 and 10 (mm)	Sqrt
INTRA10	Intra-node length at Node 10 (mm)	None
SGL	Stem glaucousness (0–2); 0 = absent, 2 = max.	None
SRE	Stem rectangularity (mm); SD1/SD2, see Barbour <i>et al.</i> (2003)	None
STEMRED	Stem redness (0–2); 0 = none, 2 = max.	None
SRO	Stem roundness (mm); SD1/SD3, see Barbour <i>et al.</i> (2003)	None
SV	Stem verrucae (0–2); 0 = absent, 2 = max.	None
WW	Waviness of stem wings (0–3); 0 = no wings, 1 = non-wavy wings, 3 = maximum waviness, see <i>E. nitens</i> Fig. 1 for example of wavy wings	None

Appendix 3. F-ratios and P-values of the significance test for the difference between *Eucalyptus nitens* and each native Tasmanian *Symphomyrtus* species for variables used in the canonical discriminant analysis

Missing values indicate the variable was not used in the analysis due to it lacking variance in one or both of the pure species

Character	<i>E. archeri</i> F-ratio	<i>E. barberi</i> F-ratio	<i>E. brookeriana</i> F-ratio	<i>E. cordata</i> F-ratio	<i>E. dalrympleana</i> F-ratio	<i>E. gunnii</i> F-ratio	<i>E. morrisbyi</i> F-ratio	<i>E. johnstonii</i> F-ratio	P-value
Bud character									
BUDFUS	92.3	0.000		2.2	0.141	1.3	0.259		
LFUS	135.5	0.000		442.3	0.000	278.3	0.000		
Leaf character									
CRENM	30.4	0.000	10.6	0.002	54.9	0.000	322.6	0.000	1.3
CORD	265.8	0.000	1072.2	0.000	1664.4	0.000	96.8	0.000	456.9
LAML	984.7	0.000	167.0	0.000	123.2	0.000	374.4	0.000	107.3
LAMW	200.7	0.000	266.9	0.000	80.0	0.000	54.0	0.000	86.9
LA	6.4	0.015	4.8	0.034	0.1	0.762	0.8	0.378	0.2
LGL	4.4	0.043	194.1	0.000	151.9	0.000	23.7	0.000	20.2
LP	0.6	0.458	4.8	0.033	2.2	0.146	0.2	0.671	0.0
LTA	33.4	0.000	1.6	0.207	1.1	0.295	19.9	0.000	28.7
LWP	187.4	0.000	37.4	0.000	30.9	0.000	201.4	0.000	82.3
MRRED	17.6	0.000	0.7	0.406	2.3	0.135	33.0	0.000	1.4
PETL			79.0	0.000	208.9	0.000			
Plant character									
HT10	281.3	0.000	76.2	0.000	1.5	0.224	76.6	0.000	10.9
LAT05	0.6	0.454	7.2	0.010	5.9	0.019	6.0	0.017	0.1
LAT610	6.0	0.019	2.4	0.127	54.0	0.000	2.3	0.131	11.0
LLLAT	1.1	0.295	10.8	0.002	1.0	0.322	3.5	0.067	6.0
NLLAT	1.7	0.204	0.3	0.573	3.3	0.074	0.0	0.915	3.5
Stem character									
INTER10	30.2	0.000	14.7	0.000	0.1	0.733	1.7	0.200	1.0
INTRAT10			51.0	0.000	62.9	0.000			
SGL	43.2	0.000	208.9	0.000	124.8	0.000	2.7	0.104	64.6
SRE	5.4	0.024	4.4	0.042	18.1	0.000	0.0	0.982	6.9
STEMRED	24.8	0.000	19.4	0.000	1.1	0.298	38.3	0.000	0.2
SRO	727.6	0.000	928.7	0.000	392.4	0.000	184.9	0.000	548.4
SV	58.5	0.000	43.6	0.000	73.9	0.000	133.9	0.000	9.6
WW	257.2	0.000	362.5	0.000	257.2	0.000	231.7	0.000	257.2

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Appendix 3. (continued)

Character	<i>E. ovata</i> F-ratio	<i>E. perrinitiana</i> F-ratio	<i>E. rodwayi</i> F-ratio	<i>E. rubida</i> F-ratio	<i>E. subcrenulata</i> F-ratio	<i>E. urnigera</i> F-ratio	<i>E. vermicosa</i> F-ratio	<i>E. viminalis</i> F-ratio
	P-value	P-value	P-value	P-value	P-value	P-value	P-value	P-value
Bud character								
BUDFUS	1.3	0.259						251.7
LFUS	51.5	0.000		496.1	0.000			0.000
Leaf character								
CRENM	11.3	0.001	2.7	0.108	61.4	0.000	12.2	0.002
CORD	858.7	0.000	2132.3	0.000	239.8	0.000	614.8	0.000
LAML	66.7	0.000	181.0	0.000	337.6	0.000	330.9	0.000
LAMW	44.9	0.000	228.7	0.000	58.5	0.000	139.7	0.000
LA	0.6	0.434	1.0	0.333	0.8	0.386	1.7	0.198
LGL	88.6	0.000	75.0	0.000	75.0	0.000	44.7	0.000
LP	2.9	0.096	0.0	0.939	4.4	0.043	0.1	0.805
LTA	7.5	0.008	10.2	0.003	24.3	0.000	1.2	0.277
LWP	4.5	0.039	22.1	0.000	58.3	0.000	70.3	0.000
MRRED	1.8	0.183	8.7	0.006	8.7	0.006	5.2	0.030
PETL	210.4	0.000	61.7	0.000			95.6	0.000
Plant character								
HT10	1.2	0.287	134.9	0.000	68.0	0.000	272.5	0.000
LAT05	0.2	0.637	22.6	0.000	37.0	0.000	18.7	0.000
LAT610	52.3	0.000	43.8	0.000	33.3	0.000	31.7	0.000
LLLAT	2.3	0.139	1.3	0.268	0.5	0.466	0.7	0.419
NLLAT	10.9	0.002	0.4	0.527	1.3	0.258	0.0	0.889
Stem character								
INTER10	0.1	0.783	40.3	0.000	2.2	0.148	43.8	0.000
INTRA10	220.6	0.000	353.9	0.000	2.7	0.108	4.9	0.035
SGL	224.1	0.000	73.2	0.000	73.2	0.000	43.6	0.000
SRE	30.9	0.000	6.9	0.013	9.8	0.004	2.0	0.164
STEMRED	55.8	0.000	20.6	0.000	8.5	0.006	8.2	0.008
SRO	513.4	0.000	412.4	0.000	82.9	0.000	89.1	0.000
SV	0.7	0.399	72.4	0.000	42.9	0.000	5.2	0.030
WW	238.3	0.000	127.0	0.000	50.1	0.000	32.0	0.000

Appendix 4. Untransformed means for the characters assessed in the morphometric analysis of *Eucalyptus nitens*, native Tasmanian *Symphomyrtus* species and their F₁ hybrids with *E. nitens*

	<i>E. archeri</i>	<i>E. archeri</i> F ₁	<i>E. barberi</i>	<i>E. barberi</i> F ₁	<i>E. brookeriana</i>	<i>E. brookeriana</i> F ₁	<i>E. cordata</i>	<i>E. dalrympleana</i>	<i>E. dalrympleana</i> F ₁	<i>E. gunnii</i>	<i>E. gunnii</i> F ₁	<i>E. johnstonii</i>	<i>E. morrisbyi</i>	<i>E. morrisbyi</i> F ₁
Bud character														
BUDFUS (0–2)	0.5	2.0	0.0	1.0	0.0	1.2	1.9	2.0	2.0	0.0	1.6	0.1	0.0	1.4
LFUS (mm)	1.0	8.8	0.0	8.9	0.0	13.7	8.1	9.9	14.8	0.0	7.8	0.6	0.0	6.0
Leaf character														
CRENM (0–2)	0.6	0.2	0.4	0.4	0.9	0.9	1.7	0.1	0.0	1.4	0.7	1.2	1.9	0.6
CORD (mm)	1.4	5.0	0.0	2.3	0.0	2.9	4.5	1.2	3.2	2.2	6.1	0.0	3.2	4.9
LAML (mm)	20.2	56.5	45.7	71.3	53.0	72.4	39.1	49.1	73.0	18.4	45.2	40.8	23.2	38.1
LAMW (mm)	22.0	41.1	18.6	36.1	27.7	35.6	34.9	27.0	34.4	21.2	35.9	26.9	26.4	34.2
LA (°)	72.8	91.0	106.0	97.3	88.1	85.2	96.8	93.5	100.0	95.8	80.5	77.5	132.8	85.0
LGL (0–2)	2.6	2.2	0.0	0.5	0.0	0.0	2.9	1.3	2.0	4.0	3.0	0.0	3.5	3.4
LP (°)	6.5	5.0	18.9	13.6	16.3	14.3	10.3	8.3	7.5	4.8	7.4	10.0	11.5	16.8
LTA (°)	98.2	95.0	85.6	89.5	86.1	84.7	95.4	76.3	84.6	96.0	97.1	94.1	98.7	99.2
LWP (mm)	8.4	12.0	19.3	24.1	20.5	25.9	11.1	13.6	21.3	6.6	13.5	16.9	7.9	12.2
MRRED (0–2)	0.0	0.0	0.5	0.8	0.4	0.3	0.0	0.5	1.0	0.0	0.1	0.1	0.0	0.3
PETL (mm)	0.0	0.1	1.5	0.0	4.1	0.2	0.0	0.0	0.0	0.0	0.0	1.9	0.0	0.0
Plant character														
HT10 (mm)	160	254	211	239	332	332	250	286	274	230	277	288	214	268
LAT05	3.6	2.8	5.4	5.3	4.9	1.6	4.8	3.1	1.5	4.2	5.4	9.7	8.5	6.8
LAT610	4.2	4.2	3.8	5.8	7.7	5.2	3.8	4.8	4.5	5.2	4.1	9.2	7.8	4.3
LLLAT (mm)	106	80	158	203	105	88	116	128	145	123	120	116	133	121
NLLAT (node)	5.8	5.2	5.3	6.5	6.8	5.8	4.8	6.4	8.0	5.6	5.7	4.3	7.6	5.8
Stem character														
INTER10 (mm)	20.5	31.4	24.6	35.6	33.9	39.2	30.4	35.7	35.7	26.2	37.0	47.6	25.4	31.9
INTRA10 (mm)	0.3	0.0	5.0	0.2	8.2	0.4	0.0	0.0	0.0	0.0	0.0	2.4	0.3	0.0
SGL (0–2)	0.5	0.8	0.0	0.0	0.1	0.1	1.8	0.3	0.5	1.4	1.3	0.0	1.2	1.8
SRE (mm)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
STEMRED (0–2)	0.3	0.6	1.4	0.8	0.7	0.4	0.2	0.9	0.0	0.3	0.2	0.5	0.1	0.4
SRO (mm)	0.9	0.8	0.9	0.8	0.9	0.6	0.8	1.0	0.9	0.9	0.8	0.8	1.0	0.8
SV (0–2)	1.0	0.6	1.0	0.5	1.2	0.9	1.4	0.5	0.5	1.0	0.7	1.8	1.2	0.5
WW (0–3)	0.0	0.0	0.0	0.5	0.0	0.7	0.2	0.0	0.0	0.0	0.1	0.0	0.0	0.2

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Appendix 4. (continued)

	<i>E. ovata</i>	<i>E. ovata</i> F ₁	<i>E. perriniana</i>	<i>E. perriniana</i> F ₁	<i>E. rodwayi</i>	<i>E. rubida</i>	<i>E. subcrenulata</i>	<i>E. urnigera</i>	<i>E. vernicosa</i>	<i>E. vernicosa</i> F ₁	<i>E. viminalis</i>	<i>E. viminalis</i> F ₁	<i>E. nitens</i>
Bud character													
BUDFUS (0–2)	0.0	1.3	1.9	2.0	0.0	2.0	0.0	0.0	0.0	2.0	2.0	2.0	2.0
LFUS (mm)	0.0	14.3	3.7	10.8	0.0	4.3	0.0	0.0	0.0	15.1	11.7	17.9	35.5
Leaf character													
CRENM (0–2)	0.4	0.3	0.1	0.0	0.1	0.9	1.0	1.4	0.3	0.0	0.1	0.1	0.0
CORD (mm)	0.1	3.4	0.1	8.4	0.0	2.4	1.8	3.6	0.0	2.7	1.5	3.4	8.6
LAML (mm)	59.5	76.9	21.9	54.1	38.9	25.7	29.7	24.9	17.0	46.4	40.6	61.2	94.4
LAMW (mm)	33.5	39.6	49.9	53.6	13.1	31.7	27.7	25.6	11.6	24.9	20.9	33.0	49.4
LA (°)	95.6	78.9	98.3	93.3	99.5	109.0	98.5	99.5	75.0	50.0	111.5	100.3	90.4
LGL (0–2)	0.4	0.5	4.8	3.3	0.0	4.8	0.0	0.6	0.0	0.0	1.0	1.7	2.1
LP (°)	16.6	14.6	7.0	3.3	4.5	9.5	15.5	13.5	7.5	0.0	10.5	10.5	9.4
LTA (°)	93.3	86.7	108.3	101.5	78.8	101.3	99.8	98.4	84.3	81.6	76.5	80.3	87.7
LWP (mm)	27.0	28.1	1.8	13.2	18.7	9.1	12.7	7.2	7.6	14.0	9.4	14.7	31.7
MRRED (0–2)	0.5	0.3	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.2	0.7
PETL (mm)	4.5	0.0	0.0	0.0	0.9	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.0
Plant character													
HT10 (mm)	330	338	244	244	188	214	215	222	86	193	262	285	319
LAT05	2.6	3.7	1.7	2.2	7.4	4.7	8.3	7.4	7.8	10.0	3.6	2.5	2.9
LAT610	7.0	3.7	0.8	3.3	7.5	4.8	6.9	9.1	7.7	10.0	5.4	4.5	2.7
LLLAT (mm)	113	106	59	155	71	122	105	188	72	170	120	109	91
NLLAT (node)	7.7	6.5	3.6	6.3	3.5	6.6	6.1	5.6	4.2	3.0	6.3	7.8	4.6
Stem character													
INTER10 (mm)	32.7	39.9	27.2	26.2	16.1	23.8	28.4	35.2	11.6	30.0	30.4	34.0	33.3
INTRA10 (mm)	16.3	0.2	0.0	0.0	7.6	0.0	0.3	0.0	0.4	0.0	0.0	0.0	0.0
SGL (0–2)	0.0	0.1	2.0	1.5	0.0	1.4	0.0	0.0	0.0	0.0	0.2	0.7	1.6
SRE (mm)	1.0	1.0	1.0	0.9	1.0	1.0	1.0	1.0	1.0	1.1	1.0	1.0	1.0
STEMRED (0–2)	0.1	0.5	0.6	0.0	0.2	0.7	0.4	0.6	0.3	0.0	0.7	0.4	0.8
SRO (mm)	0.9	0.6	1.0	0.8	1.0	1.0	0.7	0.9	0.7	0.5	0.9	0.8	0.4
SV (0–2)	0.2	0.7	0.2	0.3	1.0	0.1	1.1	1.5	0.5	1.0	0.9	0.6	0.1
WW (0–3)	0.2	0.8	0.0	0.2	0.0	0.0	0.7	0.2	0.3	0.1	0.0	0.3	2.5