

Eucalypt Cooperative Report No.10

January 2008 tree
selection and seed
collection, Tylees *E.*
fastigata progeny trial

by
C. B. Low, G.T. Stovold,
M.A. Miller & K. Fleet

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January 2008 tree selection and seed collection, Tylees *E. fastigata* progeny trial

C.B. Low, G. T. Stovold, M. A. Miller and K. Fleet

INTRODUCTION

Eucalyptus fastigata was initially overlooked as a favoured species as its early growth can be slow compared to fast-growing species such as *E. nitens*. However, it is much more resistant to the fungi and insects that defoliate many eucalypt species in New Zealand. Once it gets into its stride, it can grow extremely rapidly, although in mixed plantings it can be suppressed early on by fast-growing competitors. Its main drawback is a propensity to fork, which is most undesirable as the two (or more) limbs of a fork allow room for each other, creating a bow in each stem.

The New Zealand *Eucalyptus fastigata* breeding population is represented in two series of progeny trials. The first trial was planted in 1978 on two sites (Kinleith and Kaingaroa) and featured a number of progenies from trees selected in New Zealand stands and some selections from native Australian stands.

In 1993 there was an opportunity to get seed of progenies from two South African seed orchards and more Australian selections. This seed produced enough plants for two sites, Tylees and Kinleith. Tylees was planted as 30 replicates of single-tree plots, while the Kinleith site was planted as five replicates of 10-tree row plots, to enable better within family selection.

All sites were assessed and attempts were made to select second generation plus trees within the trials and collect seed from 2001 to 2003. This was done, but the number of selected trees that had seed was disappointingly small. The Kinleith site also had a complication that it became infested with blackberry causing much hindrance to any operation. The seed collection revealed that the South African seed orchard progenies tended to carry better seed crops than the Australian selections.

Unfortunately, the high price of dairy products in 2008 forced the land owners to sell the land of the Tylees block to a company who wished to convert it from forest to a dairy farm. The option of waiting for regular seed production no longer existed, so if any seed was to be collected it had to be done in 2008. This operation was further complicated by the felling of some of the selected trees in late 2007.

MATERIALS AND METHODS

The Tylees trial featured 135 progenies that were ranked by an assessment at age 7 into three groups. The first group of twenty families were considered superior for both growth and form. The second group were considered around average for growth but superior in form.

A high priority was placed on obtaining trees from families in the first and second groups, but the low frequency of trees with seed crops meant that all well-grown and well-formed trees were considered. Attempts were made to find a good tree from the Barrington Tops control seedlot, but no such trees were found. An excellent tree with a seed crop was located within the control seedlot from Rossi, however.

RESULTS

In the end, 76 trees were felled and seed was collected. Up to ten grams per tree were set aside for a potential second generation progeny trial, but the remainder is still being kept with full tree identity.

Seed was collected from 30 trees selected in 2003, some of which had seed collected at the time of selection. A further 46 trees were selected. These have been entered into the ortet register with 2008 series clone numbers from 101 to 146 to minimise confusion with the 2003 series selections, which have clone numbers that are less than 100. Tree identity and seed quantities are listed in Table 1.

OTHER SEED COLLECTIONS

Seed has also been collected from (Appendix 1)

1996 38 individual lots ex Mondi Forests

1997 46 trees from the 1979 trial RO1975 Kaingaroa cpt 1207

2001 13 selected trees in the 1979 trial RO1976 at Atiamuri

2002 35 trees from Kaingaroa cpt 1227 -commercial planting of the vigorous Oakura stand

2005 26 seedlots from the Waerenga Clonal Seed orchard

CONCLUSIONS

As of March 2008, seed of 236 selected *E. fastigata* trees is stored in the SCION seed store, awaiting progeny testing.

Table 1. Seed collected from Tylees, January 2008

series	clone	code	block	provenance	total seed	progeny test	remaining seed
2008	101	444	31f	Rossi	29	10	19
2003	20	784	33a	Jessievale S. O.	0.94	0.94	0
2008	102	788	11a	Jessievale S. O.	9	9	0
2003	21	789	21a	Jessievale S. O.	14	10	4
2008	104	818	19c	Banchea SF	6	6	0
2008	103	818	3c	Banchea SF	17	10	7
2008	105	840	2c	Monga SF	7	7	0
2008	106	867	12c	Vulcan SF, Oberon	0.05	0.05	0
2008	107	870	5c	Riamukka SF	7	7	0
2008	108	873	10c	Riamukka SF	6	6	0
2008	109	885	27c	Nitens rd, Glenbog	30	10	20
2008	110	885	35c	Nitens rd, Glenbog	0.12	0.12	0
2008	111	891	6c	Coolangubra SF	8	8	0
2008	112	896	19f	Eastern Transvaal	371	10	361
2003	49	897	29f	Eastern Transvaal	16	10	6
2008	113	898	9f	Eastern Transvaal	164	10	154
2008	114	905	6f	Eastern Transvaal	156	10	146
2008	115	907	8f	Eastern Transvaal	6	6	0
2003	53	908	13f	Eastern Transvaal	10	10	0
2003	54	909	14f	Eastern Transvaal	7	7	0
2003	55	910	34f	Eastern Transvaal	90	10	80
2003	56	911	24f	Eastern Transvaal	25	10	15
2003	57	913	30f	Eastern Transvaal	13	13	0
2008	116	913	34f	Eastern Transvaal	1.6	1.6	0
2008	117	916		Eastern Transvaal	55	10	45
2003	58	919	40e	Eastern Transvaal	209	10	199
2008	118	921	4e	Eastern Transvaal	0.35	0.35	0
2008	119	923	8e	Eastern Transvaal	0.15	0.15	0
2003	59	924	8e	Eastern Transvaal	23	10	13
2008	120	925	28e	Eastern Transvaal	0.4	0.4	0
2003	25	927	9e	Eastern Transvaal	24	10	14
2008	121	928	24e	Eastern Transvaal	36	10	26
2008	122	930	32e	Eastern Transvaal	43	10	33
2003	26	936	35e	Eastern Transvaal	229	10	219
2008	123	937	39e	Eastern Transvaal	4	4	0
2003	60	938	38e	Eastern Transvaal	197	10	187
2003	27	940	30e	Eastern Transvaal	6	6	0
2008	124	943	16e	Eastern Transvaal	25	10	15
2008	125	945	17e	Eastern Transvaal	4	4	0
2003	61	945	22e	Eastern Transvaal	96	10	86
2008	126	947	16e	Eastern Transvaal	0.78	0.78	0
2008	127	949	33e	Eastern Transvaal	1.5	1.5	0

Table 1 continued. Seed collected from Tylees, January 2008

series	clone	code	block	provenance	total seed	progeny test	remaining seed
2008	128	952	22a	Jessievale S. O.	48	10	38
2008	129	955	36a	Jessievale S. O.	12	12	0
2008	130	957	19a	Jessievale S. O.	0.43	0.43	0
2008	131	957	20a	Jessievale S. O.	12	12	0
2003	29	960	19a	Jessievale S. O.	0.37	0.37	0
2008	132	961	26a	Jessievale S. O.	92	10	82
2003	66	961	4a	Jessievale S. O.	0.62	0.62	0
2003	67	963	4a	Jessievale S. O.	1	1	0
2008	133	965	19a	Jessievale S. O.	35	10	25
2008	134	966	21a	Jessievale S. O.	3	3	0
2003	30	966	36a	Jessievale S. O.	3	3	0
2003	68	967	22a	Jessievale S. O.	17	10	7
2003	31	969	40a	Jessievale S. O.	18	10	8
2003	32	971	6b	Jessievale S. O.	108	10	98
2008	135	972	10b	Jessievale S. O.	0.23	0.23	0
2003	33	972	16b	Jessievale S. O.	3	3	0
2003	69	973	36b	Jessievale S. O.	62	10	52
2008	136	974	14b	Jessievale S. O.	6	6	0
2008	137	975	13b	Jessievale S. O.	35	10	25
2008	138	975	2b	Jessievale S. O.	10	10	0
2008	139	978	21b	Jessievale S. O.	18	10	8
2008	140	979	23b	Jessievale S. O.	7	7	0
2003	36	980	38b	Jessievale S. O.	25	10	15
2003	70	981	5b	Jessievale S. O.	241	10	231
2008	141	983	14b	Jessievale S. O.	15	10	5
2003	71	983	2b	Jessievale S. O.	20	10	10
2008	142	988		Jessievale S. O.	45	10	35
2003	37	992	7b	Jessievale S. O.	65	10	55
2003	72	993	30b	Jessievale S. O.	456	10	446
2008	143	994	26b	Jessievale S. O.	38	10	28
2008	144	996	18b	Jessievale S. O.	45	10	35
2008	145	997	34b	Jessievale S. O.	10	10	0
2008	146	999	4b	Jessievale S. O.	19	10	9
					3418.54		2861

Appendix 1

Parent	Seed No	Weight	Date	Container	Location Origin	Remarks
896-202	M7733	5	01/08/1996	6	MONDI FORESTS	
896-204	M7735	5	01/08/1996	6	MONDI FORESTS	
896-205	M7736	5	01/08/1996	6	MONDI FORESTS	
896-206	M7737	5	01/08/1996	6	MONDI FORESTS	
896-207	M7738	5	01/08/1996	6	MONDI FORESTS	
896-208	M7739	5	01/08/1996	6	MONDI FORESTS	
896-209	M7740	5	01/08/1996	6	MONDI FORESTS	
896-210	M7741	5	01/08/1996	6	MONDI FORESTS	
896-211	M7742	5	01/08/1996	6	MONDI FORESTS	
892-201	M7732	5	01/08/1996	6	MONDI FORESTS	
896-212	M7743	5	01/08/1996	6	MONDI FORESTS	
896-213	M7744	5	01/08/1996	6	MONDI FORESTS	
896-214	M7745	5	01/08/1996	6	MONDI FORESTS	
896-215	M7746	5	01/08/1996	6	MONDI FORESTS	
896-216	M7747	5	01/08/1996	6	MONDI FORESTS	
896-217	M7748	5	01/08/1996	6	MONDI FORESTS	
896-218	M7749	5	01/08/1996	6	MONDI FORESTS	
896-219	M7750	5	01/08/1996	6	MONDI FORESTS	
896-220	M7751	5	01/08/1996	6	MONDI FORESTS	
896-221	M7752	5	01/08/1996	6	MONDI FORESTS	
896-222	M7753	5	01/08/1996	6	MONDI FORESTS	
896-223	M7754	5	01/08/1996	6	MONDI FORESTS	
896-224	M7755	5	01/08/1996	6	MONDI FORESTS	
896-225	M7756	5	01/08/1996	6	MONDI FORESTS	
896-226	M7757	5	01/08/1996	6	MONDI FORESTS	
896-227	M7758	5	01/08/1996	6	MONDI FORESTS	
896-230	M7761	5	01/08/1996	6	MONDI FORESTS	
896-231	M7762	5	01/08/1996	6	MONDI FORESTS	
896-232	M7763	5	01/08/1996	6	MONDI FORESTS	
896-233	M7764	5	01/08/1996	6	MONDI FORESTS	
896-234	M7765	5	01/08/1996	6	MONDI FORESTS	
896-235	M7766	5	01/08/1996	6	MONDI FORESTS	
896-235	M7767	5	01/08/1996	6	MONDI FORESTS	
896-237	M7768	5	01/08/1996	6	MONDI FORESTS	
896-238	M7769	5	01/08/1996	6	MONDI FORESTS	
896-239	M7770	5	01/08/1996	6	MONDI FORESTS	
896-240	M7771	5	01/08/1996	6	MONDI FORESTS	
896-229	M7760	5	01/08/1996	6	MONDI FORESTS	
896-228	M7759	5	01/08/1996	6	MONDI FORESTS	
896-203	M7734	5	01/08/1996	6	MONDI FORESTS	

Appendix 1 (cont.)

802-83		10	19/09/2002	21	ex cpt1227/28 Kaingaroa	Seedlot WN78/018
802-84		10	19/09/2002	21	ex cpt1227/28 Kaingaroa	Seedlot WN78/018
802-85		10	19/09/2002	21	ex cpt1227/28 Kaingaroa	Seedlot WN78/018
802-86		10	19/09/2002	21	ex cpt1227/28 Kaingaroa	Seedlot WN78/018
802-87		10	19/09/2002	21	ex cpt1227/28 Kaingaroa	Seedlot WN78/018
802-88		10	19/09/2002	21	ex cpt1227/28 Kaingaroa	Seedlot WN78/018
802-89		10	19/09/2002	21	ex cpt1227/28 Kaingaroa	Seedlot WN78/018
802-90		10	19/09/2002	21	ex cpt1227/28 Kaingaroa	Seedlot WN78/018
802-91		10	19/09/2002	21	ex cpt1227/28 Kaingaroa	Seedlot WN78/018
802-92		10	19/09/2002	21	ex cpt1227/28 Kaingaroa	Seedlot WN78/018
802-93		10	19/09/2002	21	ex cpt1227/28 Kaingaroa	Seedlot WN78/018
802-46		10	19/09/2002	21	ex cpt1227/28 Kaingaroa	Seedlot WN78/018
802-47		10	19/09/2002	21	ex cpt1227/28 Kaingaroa	Seedlot WN78/018
802-49		10	19/09/2002	21	ex cpt1227/28 Kaingaroa	Seedlot WN78/018
802-50		10	19/09/2002	21	ex cpt1227/28 Kaingaroa	Seedlot WN78/018
802-51		10	19/09/2002	21	ex cpt1227/28 Kaingaroa	Seedlot WN78/018
802-52		10	19/09/2002	21	ex cpt1227/28 Kaingaroa	Seedlot WN78/018
802-53		10	19/09/2002	21	ex cpt1227/28 Kaingaroa	Seedlot WN78/018
891-003		5.06		103	Atiamuri	Cpts 682,691
891-027		13.066		103	Atiamuri	Cpts 682,691
891-025		11.896		103	Atiamuri	Cpts 682,691
891-023		19.3		103	Atiamuri	Cpts 682,691
891-013		4.43		103	Atiamuri	Cpts 682,691
891-008		0.771		103	Atiamuri	Cpts 682,691
891-007		22.4		103	Atiamuri	Cpts 682,691
891-006		0.857		103	Atiamuri	Cpts 682,691
891-030		23.5	01/12/1997	103	Kaingaroa	Cpt 1207
891-053		49	01/12/1997	103	Kaingaroa	Cpt 1207
891-051		2.089	01/12/1997	103	Kaingaroa	Cpt 1207
891-038		13.4	01/12/1997	103	Kaingaroa	Cpt 1207
891-035		0.88	01/12/1997	103	Kaingaroa	Cpt 1207
891-033		30	01/12/1997	103	Kaingaroa	Cpt 1207
891-031		0.755	01/12/1997	103	Kaingaroa	Cpt 1207
891-029/2		57.4	01/12/1997	103	Kaingaroa	Cpt 1207
891-29/1		57.7	01/12/1997	103	Kaingaroa	Cpt 1207
891-092		5.3	01/12/1997	103	Kaingaroa	Cpt 1207
891-091		0.871	01/12/1997	103	Kaingaroa	Cpt 1207
891-090		3.663	01/12/1997	103	Kaingaroa	Cpt 1207
891-086		6.4	01/12/1997	103	Kaingaroa	Cpt 1207
891-080		26.2	01/12/1997	103	Kaingaroa	Cpt 1207
891-079		1.58	01/12/1997	103	Kaingaroa	Cpt 1207
891-073		7.2	01/12/1997	103	Kaingaroa	Cpt 1207
891-069		16.9	01/12/1997	103	Kaingaroa	Cpt 1207
891-067		11.3	01/12/1997	103	Kaingaroa	Cpt 1207
891-064		0.434	01/12/1997	103	Kaingaroa	Cpt 1207
891-047		79.4	01/12/1997	103	Kaingaroa	Cpt 1207

Appendix 1 (cont.)

891-601		14.27	01/12/2001	103	Rauna Rd, Kinleith	Seed could be too immature
891-602		15.22	01/12/2001	103	Rauna Rd, Kinleith	Seed could be too immature
891-31		0.8	01/11/1997	103	Rauna Rd, Kinleith	
891-612		12.1	01/11/2001	103	Rauna Rd, Kinleith	
891-6		0.9	01/12/1997	103	Rauna Rd, Kinleith	
891-612		12.1	01/12/2001	103	Rauna Rd, Kinleith	
891-611		45.33	01/12/2001	103	Rauna Rd, Kinleith	
891-23		19.3	01/12/1997	103	Rauna Rd, Kinleith	
891-8		0.78	01/12/1997	103	Rauna Rd, Kinleith	
891-3		5.1	01/12/1997	103	Rauna Rd, Kinleith	
891-13		4.4	01/12/1997	103	Rauna Rd, Kinleith	
891-23		19.3	01/12/1997	103	Rauna Rd, Kinleith	
891-608		45.59	01/12/2001	103	Rauna Rd, Kinleith	
891-604		15	01/12/2001	103	Rauna Rd, Kinleith	
891-27		13.1	01/12/1997	103	Rauna Rd, Kinleith	
891-25		11.9	01/12/1997	103	Rauna Rd, Kinleith	
891-7		22.4	01/12/1997	103	Rauna Rd, Kinleith	
891.061		15.7	01/09/2005	106	Cambridge, NZ	Waerenga clonal seed orchard
891.075		27.1	01/09/2005	106	Forest Research Inst. NZ	Waerenga clonal seed orchard
891.065		17.6	01/09/2005	106	Lake Mangamahoe, NZ	Waerenga clonal seed orchard
891.027		29.5	01/09/2005	106	Natal	Waerenga clonal seed orchard
891.035	4	15	01/09/2005	106	Natal	Waerenga clonal seed orchard
891.035	8	31.3	01/09/2005	106	Natal	Waerenga clonal seed orchard
891.050	9	21	01/09/2005	106	NATAL	Waerenga clonal seed orchard
891.050	18	12.6	01/09/2005	106	Natal	Waerenga clonal seed orchard
891.033		31.6	01/09/2005	106	Ngahinapouri, NZ	Waerenga clonal seed orchard
891.042		10.5	01/09/2005	106	Oakura, NZ	Waerenga clonal seed orchard
893.044		20.1	01/09/2005	106	Oakura, NZ	Waerenga clonal seed orchard
891.079		18.6	01/09/2005	106	Oakura, NZ	Waerenga clonal seed orchard
891.039		13.3	01/09/2005	106	Oberon	Waerenga clonal seed orchard
891.043		18.6	01/09/2005	106	Oberon	Waerenga clonal seed orchard
891.003		13.5	01/09/2005	106	Robertson	Waerenga clonal seed orchard
891.024		18	01/09/2005	106	Robertson	Waerenga clonal seed orchard
891.093		25.6	01/09/2005	106	Robertson	Waerenga clonal seed orchard
891.068		19.7	01/09/2005	106	Rossi	Waerenga clonal seed orchard
891.078		18.1	01/09/2005	106	Rossi	Waerenga clonal seed orchard
891.087		12.8	01/09/2005	106	Rossi	Waerenga clonal seed orchard
891.022		15.7	01/09/2005	106	Stewarts Brook	Waerenga clonal seed orchard
891.064		24.8	01/09/2005	106	Tallaganda	Waerenga clonal seed orchard
891.072		8.5	01/09/2005	106	Tallaganda	Waerenga clonal seed orchard
891.090		11.7	01/09/2005	106	Tikitere, NZ	Waerenga clonal seed orchard
891.045		13.5	01/09/2005	106	Waimana, NZ	Waerenga clonal seed orchard
891.023		8.2	01/09/2005	106	Yetholme	Waerenga clonal seed orchard

Appendix 1. (cont.)

2004-508		8.8	30/06/2003	140		Kakariki rd FR237
2004-518		11.6	30/06/2003	140		Kakariki rd FR237
2004-519		12	30/06/2003	140		Kakariki rd FR237
2004-558		10.6	30/06/2003	140		Kakariki rd FR237
2004-559		10.4	30/06/2003	140		Kakariki rd FR237
2004-568		11.2	30/06/2003	140		Kakariki rd FR237
2004-573		13.4	30/06/2003	140		Kakariki rd FR237
2004-579		12.4	30/06/2003	140		Kakariki rd FR237
2004-585		6.8	30/06/2003	140		Kakariki rd FR237
2004-587		12	30/06/2003	140		Kakariki rd FR237
2004-589		9	30/06/2003	140		Kakariki rd FR237
2004-590		11.2	30/06/2003	140		Kakariki rd FR237
2004-597		10	30/06/2003	140		Kakariki rd FR237
2004-598		9	30/06/2003	140		Kakariki rd FR237
2004-599		12	30/06/2003	140		Kakariki rd FR237
2004-603		11.2	30/06/2003	140		Kakariki rd FR237
2004-611		14	30/06/2003	140		Kakariki rd FR237
2004-616		11.6	30/06/2003	140		Kakariki rd FR237
2004-631		11.8	30/06/2003	140		Kakariki rd FR237
2004-665		14.2	30/06/2003	140		Kakariki rd FR237
2004-671		10.6	30/06/2003	140		Kakariki rd FR237
2004-673		7.8	30/06/2003	140		Kakariki rd FR237
2004-683		11.8	30/06/2003	140		Kakariki rd FR237
2004-685		8.6	30/06/2003	140		Kakariki rd FR237
2004-686		12	30/06/2003	140		Kakariki rd FR237
2004-688		12.8	30/06/2003	140		Kakariki rd FR237
2004-692		9.8	30/06/2003	140		Kakariki rd FR237
2004-704		10.2	30/06/2003	140		Kakariki rd FR237
2004-715		11.2	30/06/2003	140		Kakariki rd FR237
2004-721		11.4	30/06/2003	140		Kakariki rd FR237