Supplementary material

Table S1 Population locations

Ecotype	Latitude	Longitude	Population Code	Location	Variance Estimated	Mean Estimated
Dune	-27.39845	153.453808	D0	Stradbroke Island, Qld		X
	-28.783005	153.594018	D1	Lennox Head, NSW	X	X
	-28.331043	153.571228	D3	Cabarita Beach, NSW	X	X
	-30.31275	153.137762	D4	Coffs Harbour, NSW		X
Headland	-27.436047	153.545529	H0	Stradbroke Island, Qld		X
	-28.813117	153.605319	H1	Lennox Head, NSW	X	X
	-28.362519	153.574345	H2	Cabarita Beach, NSW	X	X
	-30.311827	153.145572	H5	Coffs Harbour, NSW		X
Tableland	-28.230508	153.135078	T1	O'Reilley's Rainforest Retreat, Qld	X	X
	-30.488289	152.409297	T5	New England National Park, NSW		X
	-28.293389	152.415917	T9	Near Queen Mary Falls, Qld	X	X
	-26.892234	151.619021	T13	Bunya Mountains, Qld		X
Woodland	-31.272984	149.070783	W1	Warrumbungles National Park, NSW		X
	-27.479946	152.824709	W2	Upper Brookfield, Qld	X	X
	-30.290056	150.149194	W3	Mt. Kaputar National Park, NSW		X
	-27.300911	152.28361	W4	Esk, Qld	X	X

Table S2 Numbers of sires, dams and phenotyped offspring for each ecotype and population used to estimate genetic variance in the second glasshouse experiment.

Ecotype	Population	# Sires	# Dams	# Phenotyped Offspring
Dune	D1	21	21	114
	D3	22	22	122
	Total	43	43	236
Headland	H1	23	23	151
	H2	21	20	121
	Total	44	43	272
Tableland	T1	20	22	114
	T9	17	17	108
	Total	37	39	222
Woodland	W2	21	23	118
	W4	17	15	86
	Total	38	38	204

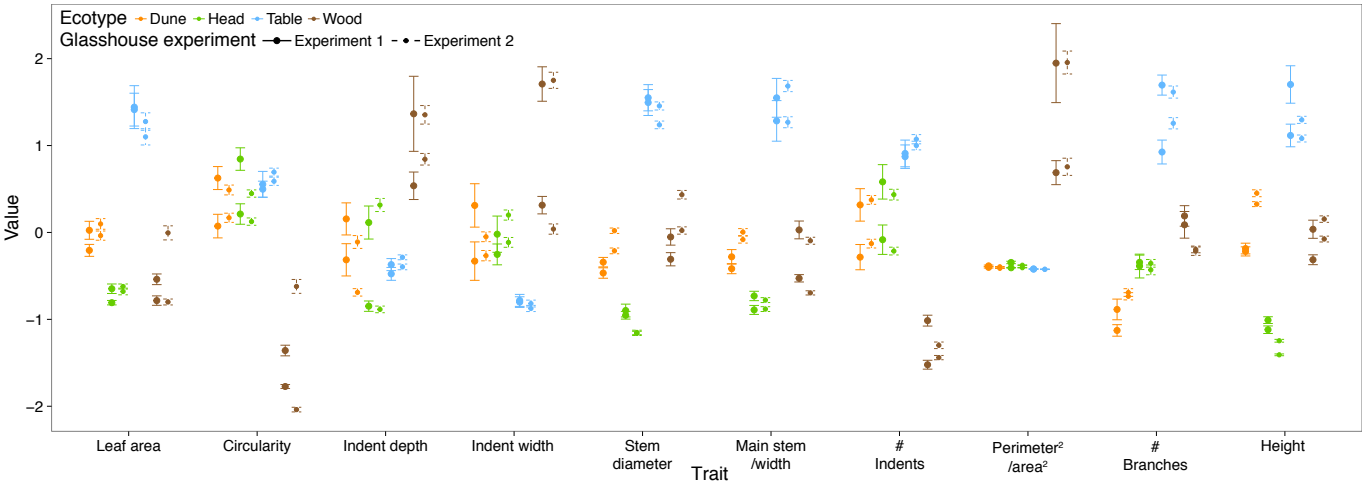

Figure S3 Mean and standard error estimates for all ten traits for the eight populations grown in both glasshouse experiments. Replicate populations within ecotype are represented by dots with the same colour. There were only minor differences in mean between glasshouse experiments.

Table S4 Posterior mean **G** matrices for each ecotype. Genetic correlations are presented below the diagonal.

Traits	1 Height	2 Stem Length / Width	3 # Branches	4 Stem Diameter	5 Leaf Area	6 Perimeter^2 / Area^2	7 Circularity	8 # Indents	9 Indent Width	10 Indent Depth

Dune

	1	2	3	4	5	6	7	8	9	10
1	0.294	0.096	0.060	0.067	0.013	-0.019	0.007	0.019	-0.021	-0.012
2	0.40	0.196	0.049	0.011	0.013	0.009	0.001	0.009	-0.016	0.005
3	0.18	0.18	0.366	0.005	0.001	-0.056	0.014	0.014	0.020	-0.024
4	0.20	0.04	0.01	0.399	0.001	-0.009	0.013	0.003	0.008	-0.005
5	0.10	0.12	0.01	0.01	0.058	-0.007	0.005	0.019	-0.023	0.005
6	-0.10	0.06	-0.26	-0.04	-0.08	0.126	-0.009	-0.026	-0.010	0.040
7	0.05	0.01	0.09	0.08	0.08	-0.10	0.060	0.019	-0.019	-0.008
8	0.08	0.05	0.05	0.01	0.18	-0.16	0.17	0.203	-0.126	-0.067
9	-0.09	-0.08	0.07	0.03	-0.22	-0.06	-0.17	-0.63	0.197	0.027
10	-0.07	0.04	-0.13	-0.03	0.07	0.38	-0.11	-0.50	0.21	0.088

Headland

	1	2	3	4	5	6	7	8	9	10
1	0.421	0.155	-0.110	0.286	0.294	-0.054	0.062	-0.121	-0.015	0.122
2	0.28	0.737	0.171	0.398	0.493	-0.064	0.062	-0.181	0.013	0.178
3	-0.19	0.23	0.768	-0.068	-0.127	-0.003	-0.021	0.092	-0.027	-0.047
4	0.49	0.51	-0.09	0.822	0.585	-0.059	0.107	-0.242	-0.018	0.233
5	0.45	0.57	-0.14	0.64	1.003	-0.097	0.112	-0.310	0.019	0.276
6	-0.31	-0.28	-0.01	-0.24	-0.36	0.071	-0.020	0.020	-0.009	-0.010
7	0.33	0.25	-0.08	0.41	0.39	-0.26	0.083	-0.024	-0.019	0.038
8	-0.40	-0.45	0.22	-0.57	-0.66	0.16	-0.18	0.219	-0.063	-0.123
9	-0.06	0.04	-0.08	-0.05	0.05	-0.08	-0.17	-0.34	0.158	-0.003
10	0.45	0.49	-0.13	0.61	0.66	-0.09	0.31	-0.63	-0.02	0.176

Tableland

	1	2	3	4	5	6	7	8	9	10
1	0.298	0.149	0.024	0.205	0.012	-0.029	0.011	0.005	0.005	0.027
2	0.45	0.360	0.021	0.163	0.068	-0.027	0.076	-0.025	-0.006	0.106
3	0.09	0.07	0.227	0.019	-0.018	0.004	-0.029	-0.008	0.033	-0.074
4	0.43	0.31	0.05	0.771	-0.029	-0.031	-0.025	0.065	-0.018	-0.045
5	0.05	0.24	-0.08	-0.07	0.216	-0.029	0.106	-0.035	-0.101	0.161
6	-0.18	-0.16	0.03	-0.12	-0.22	0.083	-0.020	-0.015	-0.002	0.001
7	0.04	0.25	-0.12	-0.06	0.46	-0.14	0.250	-0.033	-0.066	0.185
8	0.02	-0.10	-0.04	0.18	-0.18	-0.13	-0.16	0.167	-0.069	-0.132
9	0.02	-0.02	0.13	-0.04	-0.40	-0.01	-0.24	-0.31	0.294	-0.080
10	0.07	0.25	-0.22	-0.07	0.49	0.00	0.53	-0.46	-0.21	0.496

Woodland

	1	2	3	4	5	6	7	8	9	10
1	0.173	0.029	-0.011	0.015	0.014	0.00	0.001	-0.027	0.017	0.00
2	0.21	0.106	0.015	0.017	-0.009	0.024	-0.006	-0.025	0.036	0.004
3	-0.05	0.09	0.278	0.008	-0.031	-0.027	-0.009	0.061	-0.010	-0.026
4	0.10	0.14	0.04	0.135	0.017	-0.037	0.017	0.022	-0.019	-0.022
5	0.12	-0.10	-0.20	0.16	0.084	-0.028	0.037	-0.013	-0.022	-0.012
6	0.00	0.18	-0.13	-0.25	-0.24	0.162	-0.016	-0.072	0.035	0.033
7	0.01	-0.06	-0.06	0.15	0.41	-0.13	0.095	-0.034	-0.048	-0.018
8	-0.13	-0.15	0.22	0.12	-0.09	-0.34	-0.21	0.269	-0.053	-0.045
9	0.11	0.28	-0.05	-0.13	-0.20	0.22	-0.40	-0.26	0.151	0.034
10	0.00	0.04	-0.16	-0.20	-0.14	0.27	-0.19	-0.28	0.29	0.094

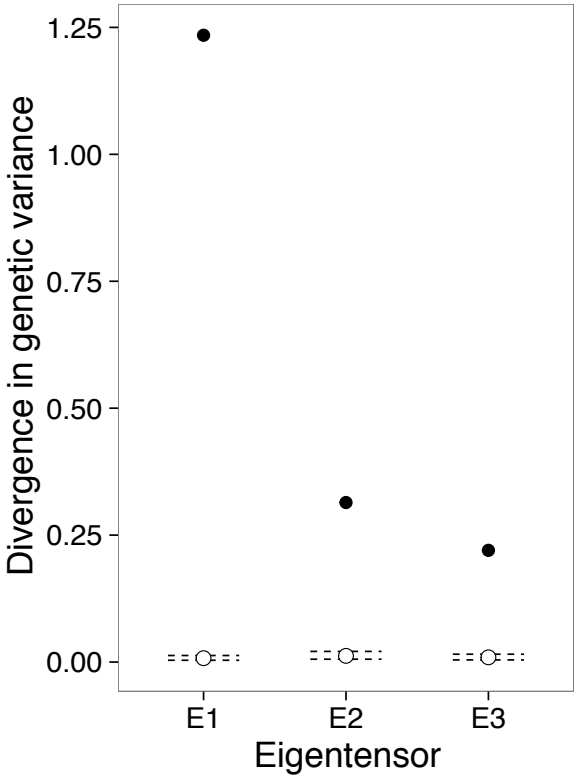

Figure S5 Significant variation explained by the covariance tensor on **G**. Unfilled circles represent the tensor conducted on the randomised **G** matrices, with dashed lines showing the 95% HPD intervals. Observed eigenvalues of **S** (filled circles) were higher than the random distribution, suggesting that all three eigentensors explained more divergence in genetic variation than expected by sampling error.

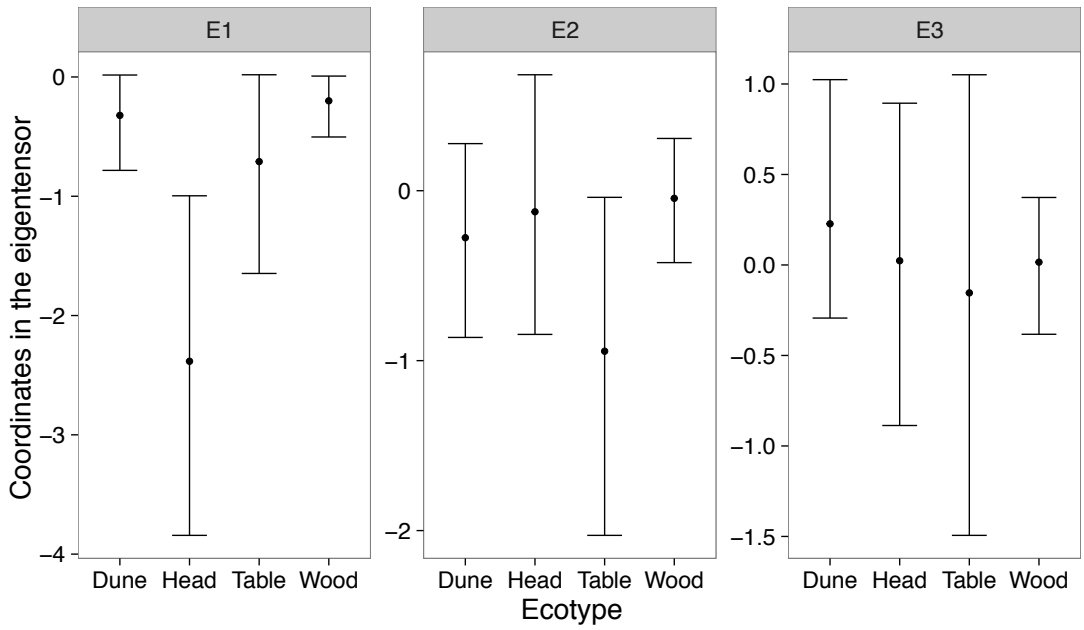

Figure S6 Coordinates of each ecotype **G** in the space of the eigentensor.
Only the first eigentensor detected significant differences between ecotypes. Error bars are 95% HPD intervals.

Table S7 Full covariance tensor analysis of ecotype **G.**

				Architecture				Leaf Morphology					
Eigen-tensor	α (Proportion)	Eigen-vector	λ (Proportion)	Height	Stem Length / Width	# Branches	Stem Diameter	Leaf Area	Perimeter^2 / Area^2	Circularity	# Indents	Indent Width	Indent Depth
Tensor 1	1.23 (0.38)	$\boldsymbol{e}_{1,1}$	-0.95 (0.61)	-0.24	-0.44	0.04	-0.50	-0.62	0.07	-0.08	0.22	-0.01	-0.21
		$\boldsymbol{e}_{1,2}$	-0.27 (0.17)	0.24	-0.50	-0.82	0.07	0.12	-0.02	0.02	-0.06	0.04	0.01
		$\boldsymbol{e}_{1,3}$	-0.08 (0.05)	0.47	-0.15	0.18	0.53	-0.58	0.05	0.14	-0.01	-0.22	0.21
		$\boldsymbol{e}_{1,4}$	0.08 (0.05)	0.02	-0.02	-0.01	0.25	0.15	-0.41	-0.10	0.72	-0.28	-0.37
		$\boldsymbol{e}_{1,5}$	-0.06 (0.04)	0.09	-0.70	0.52	0.03	0.46	0.12	-0.04	-0.03	0.00	0.05
		$\boldsymbol{e}_{1,6}$	-0.04 (0.02)	0.76	0.15	0.09	-0.59	0.08	-0.17	0.04	0.08	-0.02	0.02
		$\boldsymbol{e}_{1,7}$	0.03 (0.02)	-0.24	-0.11	0.02	-0.16	0.02	-0.56	0.50	-0.30	-0.47	0.17
		$\boldsymbol{e}_{1,8}$	0.02 (0.01)	0.02	-0.11	0.10	0.11	-0.15	-0.68	-0.30	-0.17	0.59	0.07
		$\boldsymbol{e}_{1,9}$	0.02 (0.01)	0.14	0.01	0.07	0.11	-0.03	0.00	0.09	-0.47	-0.02	-0.86
		$\boldsymbol{e}_{1,10}$	0 (0)	0.01	0.02	-0.04	-0.05	-0.01	-0.06	-0.78	-0.29	-0.54	0.08
Tensor 2	0.31 (0.10)	$\boldsymbol{e}_{2,1}$	-0.78 (0.36)	-0.34	-0.20	-0.05	-0.87	0.17	0.02	0.08	-0.14	-0.01	0.19
		$\boldsymbol{e}_{2,2}$	-0.41 (0.19)	0.19	0.30	-0.02	0.08	0.08	-0.04	0.46	-0.01	-0.30	0.75
		$\boldsymbol{e}_{2,3}$	0.39 (0.18)	0.14	-0.05	-0.82	0.13	0.41	0.04	-0.02	-0.32	0.13	-0.03
		$\boldsymbol{e}_{2,4}$	0.21 (0.1)	0.11	-0.32	-0.48	-0.11	-0.72	0.07	0.10	0.27	-0.18	0.05
		$\boldsymbol{e}_{2,5}$	-0.13 (0.06)	0.64	0.48	-0.01	-0.43	-0.13	-0.09	0.06	0.02	0.31	-0.21
		$\boldsymbol{e}_{2,6}$	-0.09 (0.04)	0.17	0.14	-0.06	-0.15	0.25	0.09	-0.25	0.17	-0.83	-0.28
		$\boldsymbol{e}_{2,7}$	-0.05 (0.02)	0.28	-0.14	0.08	-0.04	-0.11	-0.07	-0.78	-0.21	0.02	0.48
		$\boldsymbol{e}_{2,8}$	0.04 (0.02)	0.05	-0.19	-0.10	-0.02	0.31	-0.63	-0.06	0.66	0.13	0.09
		$\boldsymbol{e}_{2,9}$	0.03 (0.01)	-0.10	0.21	-0.09	-0.02	0.16	0.69	-0.20	0.55	0.25	0.19
		$\boldsymbol{e}_{2,10}$	-0.01 (0)	0.54	-0.65	0.27	-0.01	0.25	0.31	0.25	0.01	0.03	-0.03
Tensor 3	0.22 (0.07)	$\boldsymbol{e}_{3,1}$	-0.74 (0.36)	-0.04	-0.18	0.13	0.02	-0.46	0.02	-0.34	0.32	0.10	-0.72
		$\boldsymbol{e}_{3,2}$	0.58 (0.28)	-0.48	-0.49	-0.58	-0.43	-0.04	0.10	-0.03	-0.06	0.02	0.04
		$\boldsymbol{e}_{3,3}$	0.2 (0.1)	-0.58	0.05	0.71	-0.37	0.11	-0.01	-0.01	-0.05	0.04	0.07
		$\boldsymbol{e}_{3,4}$	-0.19 (0.09)	0.07	0.08	-0.02	0.01	-0.04	0.11	-0.31	-0.54	0.76	0.01
		$\boldsymbol{e}_{3,5}$	0.11 (0.05)	0.39	0.43	-0.10	-0.78	0.01	0.09	-0.12	0.09	-0.07	-0.09
		$\boldsymbol{e}_{3,6}$	-0.1 (0.05)	-0.04	-0.01	-0.08	0.06	0.81	-0.05	-0.15	-0.12	-0.09	-0.52
		$\boldsymbol{e}_{3,7}$	0.07 (0.03)	0.52	-0.73	0.32	-0.22	0.13	-0.14	0.04	-0.03	0.06	0.09
		$\boldsymbol{e}_{3,8}$	-0.06 (0.03)	0.01	-0.06	0.03	0.10	0.03	0.09	-0.85	-0.01	-0.36	0.36
		$\boldsymbol{e}_{3,9}$	-0.03 (0.01)	0.05	-0.04	0.09	-0.02	-0.28	0.18	0.13	-0.73	-0.51	-0.25
		$\boldsymbol{e}_{3,10}$	0.01 (0)	-0.06	0.09	-0.10	-0.07	-0.13	-0.95	-0.11	-0.18	-0.05	-0.02