

Appendix A: Detailed morphological comparison of *Ebenus pinnata* plants from different climate stages. Values are expressed as Mean \pm SD (upper line) and Min-Max (lower line). Explanatory R values of PC1 and PC2 of Figure 1 are shown in bold. See Table 2 for trait full names and measure units. Mean values with different capital letters are statistically different (Unequal N HSD Test, $\alpha = 0.05$), with A<B<C. Lowercase letters a and b compare the polar (P) against the equatorial (E) axis of pollen grains (t-Test for dependent samples, $\alpha < 0.001$); with a<b. See abbreviation full names at the foot of the table¹.

No	Trait Code	R1	R2	Humid	Sub-humid	Semi-arid
1	DBP	0.45	-0.25	0.73 \pm 0.19 B 0.31-1.19	0.73 \pm 0.33 B 0.11-1.98	0.55 \pm 0.25 A 0.23-1.4
2	LLS	0.78	0.06	68.22 \pm 18.38 B 34.8-101.2	89.28 \pm 28.93 C 41.7-165.7	44.41 \pm 19.79 A 19.5-80.5
3	NS	0.20	-0.60	9.55 \pm 6.52 B 2-27	4.65 \pm 2.47 A 1-10	3.11 \pm 2.41 A 1-11
4	DLS	0.43	-0.42	4.19 \pm 1.12 B 2.1-7.2	3.75 \pm 1.01 AB 0.9-6.1	3.16 \pm 1.11 A 1.9-5.6
5	LIN	0.66	0.12	5.27 \pm 1.04 B 3.4-7.3	6.53 \pm 1.57 C 3.5-9.9	4.36 \pm 1.58 A 1.7-7.4
6	NI	0.50	-0.40	57.57 \pm 28.25 B 23-123	47.89 \pm 32.23 B 9-165	17.89 \pm 23.80 A 2-98
7	LS1	0.65	0.14	10.98 \pm 1.67 A 6.5-15.2	13.60 \pm 2.74 B 7.2-19.3	10.10 \pm 2.71 A 6-17.1
8	WS	0.54	-0.16	4.22 \pm 0.75 B 2.9-6.5	4.41 \pm 0.74 B 2.9-6.8	3.64 \pm 1.00 A 2.1-5.7
9	LL	0.75	-0.08	10.01 \pm 2.06 B 6.3-16.2	10.85 \pm 2.60 B 5.3-17.2	6.91 \pm 1.93 A 3.7-12.5
10	WL	0.64	-0.09	5.19 \pm 0.80 B 3.6-6.5	5.55 \pm 0.88 B 3.7-7.4	4.64 \pm 0.66 A 3.3-6.1
11	LP	0.71	0.00	4.56 \pm 1.21 B 1.8-7.5	5.23 \pm 1.61 B 2.4-9.4	2.96 \pm 0.98 A 1.6-5.3
12	NPL	0.42	-0.13	4.73 \pm 0.50 B 3-5	4.78 \pm 0.50 B 3-6	4.11 \pm 0.97 A 3-6
13	LNLP	-0.20	-0.26	2.80 \pm 0.55 B 2-4	2.45 \pm 0.50 A 2-3	2.81 \pm 0.68 B 2-4
14	HNLP	0.42	-0.27	4.98 \pm 0.15 B 4-5	4.91 \pm 0.35 B 4-6	4.52 \pm 0.89 A 3-6
15	LLB	0.67	-0.00	2.45 \pm 0.33 B 1.6-3.1	2.66 \pm 0.35 C 2-3.2	2.15 \pm 0.36 A 1.5-3.2
16	WLB	0.18	-0.60	7.77 \pm 1.51 B 4.8-11.5	6.14 \pm 1.21 A 4.1-8.8	6.18 \pm 1.46 A 3.4-9.3
17	LIP	0.53	-0.33	22.00 \pm 3.17 B 16.9-30.9	21.29 \pm 3.56 B 14.2-29.1	18.20 \pm 3.94 A 12.2-27.2
18	HI	0.38	-0.50	5.21 \pm 1.41 B 2.8-8.6	4.40 \pm 0.75 A 2.7-5.8	3.88 \pm 1.61 A 1.6-8
19	DI	0.30	-0.18	2.44 \pm 0.31 A 3.2-1.9	2.40 \pm 0.25 A 2.8-1.7	2.30 \pm 0.31 A 1.7-3
20	LNF	0.08	0.31	11.84 \pm 8.05 A 2-47	16.64 \pm 7.17 B 3-34	13.56 \pm 9.89 AB 2-35
21	HNF	0.06	-0.11	56.43 \pm 11.83 C 29-75	49.44 \pm 9.47 B 22-67	33.93 \pm 17.42 A 14-70
22	LFB	-0.06	0.30	8.15 \pm 0.62 A 7-9.5	8.60 \pm 0.89 B 7.1-10.1	8.46 \pm 1.04 AB 5.5-10
23	WFB	0.11	-0.26	3.29 \pm 0.32 A 2.5-4.1	3.25 \pm 0.18 A 2.9-3.9	3.19 \pm 0.43 A 2.3-4

24	LC1	0.45	0.84	12.72±0.94 A 10.5-14.5	13.21±0.90 B 11.5-14.8	13.38±1.06 B 10.5-16
25	LC2	0.49	0.83	8.21±0.44 A 7-9.2	8.05±0.24 A 7.4-8.5	7.98±0.70 A 7-9.2
26	TLW	-0.68	0.26	1.79±0.08 A 1.7-1.9	3.54±0.13 C 3.3-3.7	2.40±0.07 B 2.3-2.5
27	WWB	0.02	0.89	1.37±0.09 A 1.2-1.5	2.45±0.07 C 1-1.3	1.67±0.05 B 1.6-1.7
28	WBW	0.22	0.21	1.10±0.10 A 1-1.3	1.14±0.06 A 2.3-2.6	1.39±0.04 B 1.3-1.4
29	WMW	0.62	-0.45	0.43±0.05 A 0.4-0.5	0.89±0.07 C 0.7-1	0.83±0.07 B 0.7-0.9
30	TWK	-0.90	-0.01	4.21±0.23 B 3.7-4.6	3.62±0.10 A 3.5-3.8	4.99±0.09 C 4.8-5.1
31	LWPK	-0.86	0.11	3.47±0.26 B 2.8-3.9	3.12±0.08 A 3-3.3	4.14±0.08 C 4-4.3
32	TLK	-0.79	-0.30	6.36±0.36 B 5.7-6.9	5.94±0.11 A 5.7-6.1	6.99±0.08 C 6.9-7.1
33	TLS	-0.40	0.70	6.65±0.45 B 5.3-7.5	6.30±0.23 A 6-6.8	8.04±0.08 C 7.9-8.2
34	LSB	0.08	0.83	5.13±0.47 B 3.8-5.6	4.49±0.12 A 4.4-4.9	6.06±0.05 C 6-6.1
35	WSB	-0.86	0.19	4.67±0.36 B 3.8-5.1	3.36±0.16 A 3.2-3.7	6.04±0.10 C 5.9-6.2
36	LSP	-0.70	0.45	1.72±0.47 A 0.7-2.7	1.81±0.16 A 1.6-2.2	2.02±0.10 B 1.8-2.2
37	LCM	-0.14	0.24	13.19±0.48 A 11.9-14	14.50±0.89 B 13.1-16.1	15.26±0.18 C 15-15.7
38	LCT	-0.88	-0.29	2.80±0.14 A 2.5-3.1	3.29±0.12 C 3.1-3.5	3.19±0.12 B 3-3.3
39	LHCT	-0.88	-0.20	3.27±0.05 A 3.2-3.3	3.28±0.07 A 3.2-3.4	3.29±0.03 A 3.2-3.3
40	LPM	-0.83	-0.25	5.09±0.09 A 4.9-5.3	5.08±0.11 A 4.9-5.3	5.99±0.10 B 5.8-6.1
41	WPM	-0.91	0.02	3.04±0.10 A 2.8-3.3	3.15±0.13 B 2.9-3.4	3.46±0.07 C 3.3-3.5
42	LS2	-0.88	-0.24	2.35±0.07 B 2.2-2.5	2.19±0.10 A 2.1-2.4	3.00±0.08 C 2.9-3.1
43	WS	-0.90	-0.34	2.05±0.05 A 2-2.1	2.02±0.05 A 1.9-2.1	2.34±0.05 B 2.3-2.4
44	LR	-0.30	0.38	2.14±0.05 B 2.1-2.2	2.02±0.07 A 1.9-2.1	2.25±0.05 C 2.2-2.3
49	P	NA	NA	17.95±1.10 Ab 15.18-20.39	19.47±1.27 Bb 16.00-23.26	18.43±1.08 Ab 16.27-20.35
50	E	NA	NA	12.80±1.18 Aa 10.25-14.90	13.03±0.99 Aa 11.27-15.51	12.84±1.37 Aa 10.40-15.46
51	P/E	NA	NA	1.41±0.10 A 1.19-1.69	1.50±0.11 B 1.28-1.79	1.45±0.15 AB 1.13-1.77
52	PxE	NA	NA	230.56±31.60 A 167.25-295.02	254.31±30.81 B 182.24-322.85	237.16±32.74 A 175.70-305.05
53	PF	NA	NA	94.04±2.64 A 89.64-98.71	95.01±2.02 A 89.01-98.07	94.97±2.11 A 91.97-97.85

¹ SD: Standard deviation; PC1 and PC2: Principal Components (axes) 1 and 2; R1 and R2: Pearson's coefficient of correlation with PC1 and PC2, respectively; NA: Not attributed. See Table 2 for trait code full names and measure units.