

Supplementary material

Resemblance matrices used in Mantel and Partial Mantel tests conducted in this study. 1) Euclidean distance matrices of the seed removal rates, constituted of pairwise distances in seed removal rate between regions (inter-regional scale), populations (inter-population scale) or plants (inter-individual scale). Only above diagonal is shown.

	Geographical region			
	Cazorla	Mágina	Peña Negra	Caurel
Cazorla	0	0.069	0.103	0.051
Mágina		0	0.034	0.017
Peña Negra			0	0.051
Caurel				0

	Population									
	MTBJ	PM	BY	CAL	RH	RHB	LIN	TOR	CRU-1	CRU-2
MTBJ	0	0.0591	0.0599	0.0853	0.0349	0.0190	0.0943	0.0632	0.0376	0.0262
PM		0	0.1191	0.1445	0.0941	0.0401	0.1535	0.0041	0.0215	0.0854
BY			0	0.0254	0.0249	0.0789	0.0344	0.1232	0.0976	0.0336
CAL				0	0.0504	0.1044	0.0090	0.1486	0.1235	0.0591
RH					0	0.0539	0.0594	0.0982	0.0726	0.0087
RHB						0	0.1134	0.0442	0.0186	0.0453
LIN							0	0.1576	0.1320	0.0681
TOR								0	0.0256	0.0895
CRU-1									0	0.0639
CRU-2										0

Mágina: Matabejid (MTBJ), Puerto de la Mata (PM); Cazorla: B° de la Yedra (BY), Calvario (CAL), Roblehondo (RH), Roblehondo Bosque (RHB), Linarejos (LIN); Peña Negra: B° del Toril (TOR); Caurel: Las Cruces-1 (CRU-1), Las Cruces-2 (CRU-2).

Plants

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
1	0	0.0546	0.0016	0.0477	0.0626	0.0666	0.0166	0.0753	0.0044	0.0229	0.0044	0.0158	0.0466	0.0044	0.0926	0.0516	0.0278	0.1896	0.2456	0.1408	0.1331	0.1396	0.1076	0.0436	0.0216	0.0158	0.0136	0.1136	0.0656	0.0756	
2	0	0	0.053	0.0069	0.008	0.012	0.038	0.0207	0.059	0.0317	0.059	0.0388	0.008	0.059	0.038	0.003	0.027	0.135	0.191	0.086	0.0785	0.085	0.053	0.011	0.033	0.039	0.041	0.059	0.011	0.021	
3	0	0	0	0.0461	0.061	0.065	0.015	0.0737	0.006	0.0213	0.006	0.0142	0.045	0.006	0.091	0.05	0.026	0.188	0.244	0.139	0.1315	0.138	0.106	0.042	0.02	0.014	0.012	0.112	0.064	0.074	
4	0	0	0	0	0.0149	0.0189	0.0311	0.0276	0.0521	0.0248	0.0521	0.0319	0.0011	0.0521	0.0449	0.0039	0.0201	0.1419	0.1979	0.0929	0.0854	0.0919	0.0599	0.0041	0.0261	0.0321	0.0341	0.0659	0.0179	0.0279	
5	0	0	0	0	0	0.004	0.046	0.0127	0.067	0.0397	0.067	0.0468	0.016	0.067	0.03	0.011	0.035	0.127	0.183	0.078	0.0705	0.077	0.045	0.019	0.041	0.047	0.049	0.051	0.003	0.013	
6	0	0	0	0	0	0	0.05	0.0087	0.071	0.0437	0.071	0.0508	0.02	0.071	0.026	0.015	0.039	0.123	0.179	0.074	0.0665	0.073	0.091	0.023	0.045	0.051	0.053	0.047	0.001	0.009	
7	0	0	0	0	0	0	0	0.0587	0.021	0.0063	0.021	0.0008	0.03	0.021	0.076	0.035	0.011	0.173	0.229	0.124	0.1165	0.123	0.091	0.027	0.005	0.001	0.003	0.097	0.049	0.059	
8	0	0	0	0	0	0	0	0	0.0797	0.0524	0.0797	0.0595	0.0287	0.0797	0.0173	0.0237	0.0477	0.1143	0.1703	0.0653	0.0578	0.0643	0.0323	0.0317	0.0537	0.0597	0.0617	0.0383	0.0097	0.0003	
9	0	0	0	0	0	0	0	0	0	0.0273	0	0.0202	0.051	0	0.097	0.056	0.032	0.194	0.25	0.145	0.1375	0.144	0.112	0.048	0.026	0.02	0.018	0.118	0.07	0.08	
10	0	0	0	0	0	0	0	0	0	0	0.0273	0.0071	0.0237	0.0273	0.0697	0.0287	0.0047	0.1667	0.2227	0.1177	0.1102	0.1167	0.0847	0.0207	0.0013	0.0073	0.0093	0.0907	0.0427	0.0527	
11	0	0	0	0	0	0	0	0	0	0	0	0.0202	0.051	0	0.097	0.056	0.032	0.194	0.25	0.145	0.1375	0.144	0.112	0.048	0.026	0.02	0.018	0.118	0.07	0.08	
12	0	0	0	0	0	0	0	0	0	0	0	0	0.0308	0.0202	0.0768	0.0358	0.0118	0.1738	0.2298	0.1248	0.1173	0.1238	0.0918	0.0278	0.0058	0.0002	0.0022	0.0978	0.0498	0.0598	
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.051	0.046	0.005	0.143	0.199	0.094	0.0865	0.093	0.061	0.003	0.025	0.031	0.033	0.067	0.019	0.029	
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.097	0.056	0.032	0.194	0.25	0.145	0.1375	0.144	0.112	0.048	0.026	0.02	0.018	0.118	0.07	0.08	
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.041	0.065	0.097	0.153	0.048	0.0405	0.047	0.015	0.049	0.071	0.077	0.079	0.021	0.027	0.017	
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.024	0.138	0.194	0.089	0.0815	0.088	0.056	0.008	0.03	0.036	0.038	0.062	0.014	0.024	
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.162	0.218	0.113	0.1055	0.112	0.08	0.016	0.006	0.012	0.014	0.086	0.038	0.048	
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.056	0.049	0.0565	0.05	0.082	0.1446	0.168	0.174	0.176	0.076	0.124	0.114	
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.105	0.1125	0.106	0.138	0.202	0.224	0.23	0.232	0.132	0.18	0.17	
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0075	0.001	0.033	0.097	0.119	0.125	0.127	0.027	0.075	0.065	
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0065	0.0255	0.0895	0.1115	0.1175	0.1195	0.0195	0.0675	0.0575	
22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.096	0.118	0.124	0.126	0.026	0.074	0.064	
23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.064	0.086	0.092	0.094	0.006	0.042	0.032	
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.022	0.028	0.03	0.07	0.022	0.032
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.006	0.008	0.044	0.054	
26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.002	0.098	0.05	0.06
27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0.052	0.062
28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.048	0.038	
29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.01	
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

2) Dissimilarity matrices of the specific composition assemblage, which were composed of pairwise dissimilarity coefficients (1-PS) among regions (inter-regional scale), populations (inter-population scale) or plants (inter-individual). Only above diagonal is shown.

	Geographical region			
	Cazorla	Mágina	Peña Negra	Caurel
Cazorla	0	0.0234	0.961	0.9102
Mágina		0	0.846	0.741
Peña Negra			0	0.712
Caurel				0

	Population									
	MTBJ	PM	BY	CAL	RH	RHB	LIN	TOR	CRU-1	CRU-2
MTBJ	0	0.9443	0.5548	0.2135	0.6134	0.875	0.252	1	1	1
PM		0	0.875	0.9383	0.9368	0.875	0.875	1	0.8846	1
BY			0	0.4111	0.6214	0.7212	0.4616	1	1	1
CAL				0	0.5751	0.875	0.2456	1	1	1
RH					0	0.8224	0.4	1	1	1
RHB						0	0.6635	1	1	1
LIN							0	1	1	1
TOR								0	0.9103	1
CRU-1									0	0.2051
CRU-2										0

Mágina: Matabejid (MTBJ), Puerto de la Mata (PM); Cazorla: B° de la Yedra (BY), Calvario (CAL), Roblehondo (RH), Roblehondo Bosque (RHB), Linarejos (LIN); Peña Negra: B° del Toril (TOR); Caurel: Las Cruces-1 (CRU-1), Las Cruces-2 (CRU-2).

Plants

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30		
1	0	0.8889	0.7778	0.8175	0.8889	0.6616	0.8434	0.8889	0.2222	0.8889	1	0.8889	0.8889	1	0.8889	0.8889	0.8333	0.8889	0.8889	0.8889	0.8889	0.8889	0.8889	0.8333	0.7778	0.7778	0.8889	0.8889	0.7778	0.7778		
2	0	0.8333	0.1429	0.1429	0.125	0.5909	0.7727	0.3	1	0	1	0.6875	0	1	0.4	0	0.4444	0	0.5	0.3226	0.0833	0.1538	0.1538	0.5	0.6897	0.8333	0.4	0	0.1429	0.625		
3	0	0.6905	0	0.6905	0.7083	0.5833	0.4091	0.7333	1	0.8333	0.6667	0.5208	0.8333	1	0.8333	0.8333	0.6667	0.8333	0.8333	0.8011	0.8333	0.8333	0.8333	0.4444	0.3276	0.5	0.8333	0.8333	0.6905	0.5		
4	0	0	0	0	0.0714	0.5195	0.6558	0.3	1	0.1429	0.9286	0.6161	0.1429	1	0.4	0.1429	0.3889	0.1429	0.5	0.2903	0.1429	0.1538	0.1538	0.373	0.5468	0.7619	0.4	0.1429	0.0714	0.5536		
5	0	0	0	0	0	0.4659	0.6477	0.3	1	0.125	0.875	0.5625	0.125	1	0.4	0.125	0.4444	0.125	0.5	0.2903	0.125	0.1538	0.1538	0.375	0.5647	0.8333	0.4	0.125	0.1429	0.625		
6	0	0	0	0	0	0	0.4773	0.5909	0.7727	0.5909	0.75	0.4375	0.5909	1	0.5909	0.5909	0.5455	0.5909	0.5909	0.4809	0.5909	0.5909	0.5909	0.3409	0.4397	0.7879	0.5909	0.5909	0.5909	0.625		
7	0	0	0	0	0	0	0	0	0	0.7727	0.4545	0.3977	0.7727	0.9091	0.7727	0.7727	0.5455	0.7727	0.6818	0.6041	0.7727	0.6958	0.6958	0.2828	0.1755	0.6515	0.7727	0.7727	0.7273	0.6364		
8	0	0	0	0	0	0	0	0	0	0.3	1	0.625	0.3	0.8	0.4	0.3	0.1444	0.3	0.3	0.1935	0.3	0.2231	0.2231	0.5	0.6552	0.6333	0.4	0.3	0.3	0.5		
9	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
10	0	0	0	0	0	0	0	0	0	0	1	0.6875	0	1	0.4	0	0.4444	0	0.5	0.3226	0.0833	0.1538	0.1538	0.5	0.6897	0.8333	0.4	0	0.1429	0.625		
11	0	0	0	0	0	0	0	0	0	0	0	0.6875	1	1	1	1	1	1	1	0.9677	1	1	1	0.5556	0.4828	1	1	1	1	1		
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.6875	0.6875	0.625	0.6875	0.625	0.5927	0.625	0.5625	0.5625	0.375	0.3772	0.7708	0.4375	0.6875	0.6875	0.625		
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4444	0	0.5	0.871	1	0.9231	0.9231	0.5	0.6897	0.8333	0.4	0	0.1429	0.625		
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.7778	1	0.5	0.4	0.4	0.4	0.4	1	1	0.6667	1	1	1	0.875		
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4	0.4444	0.4	0.5	0.4	0.4	0.4	0.5	0.5	0.6897	0.8333	0.4	0.4	0.4	0.625		
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4444	0	0.5	0.3226	0.0833	0.1538	0.1538	0.5	0.6897	0.8333	0.4	0	0.1429	0.625		
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4444	0.2778	0.2599	0.4444	0.3675	0.3675	0.4444	0.5996	0.5	0.4444	0.4444	0.3889	0.4444		
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.5	0.3226	0.0833	0.1538	0.1538	0.5	0.6897	0.8333	0.4	0	0.1429	0.625		
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.371	0.5	0.4231	0.4231	0.5	0.6897	0.5	0.5	0.5	0.5	0.5		
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3226	0.2457	0.2457	0.4677	0.6574	0.5753	0.4	0.3226	0.3226	0.5		
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0769	0.0769	0.5	0.6897	0.8333	0.4	0.0833	0.1429	0.625		
22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1538	0.1538	
23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1538	0.1538	
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1538	0.1538	
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4444	0.5694	
26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.6954	0.5517	
27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.8333	0.6905	
28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4	0.625	
29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1429	0.625	
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4821	0

3) Dissimilarity matrices of the functional guild assemblage, constituted of pairwise dissimilarity coefficients (1-PS) in the composition of the three guilds of interactive behavior among regions (inter-regional), populations (inter-population) or plants (inter-individual). Only above diagonal is shown.

	Geographical region			
	Cazorla	Mágina	Peña Negra	Caurel
Cazorla	0	0.191	0.389	0.235
Mágina		0	0.283	0.395
Peña Negra			0	0.625
Caurel				0

	Population									
	MTBJ	PM	BY	CAL	RH	RHB	LIN	TOR	CRU-1	CRU-2
MTBJ	0	0.456	0.275	0.141	0.171	0.567	0.171	0.523	0.202	0.275
PM		0	0.180	0.482	0.585	0.165	0.428	0.143	0.321	0.732
BY			0	0.180	0.404	0.291	0.247	0.247	0.148	0.551
CAL				0	0.585	0.165	0.428	0.143	0.329	0.732
RH					0	0.696	0.157	0.652	0.256	0.146
RHB						0	0.539	0.045	0.44	0.843
LIN							0	0.495	0.099	0.304
TOR								0	0.395	0.799
CRU-1									0	0.403
CRU-2										0

Mágina: Matabejid (MTBJ), Puerto de la Mata (PM); Cazorla: B° de la Yedra (BY), Calvario (CAL), Roblehondo (RH), Roblehondo Bosque (RHB), Linarejos (LIN); Peña Negra: B° del Toril (TOR); Caurel: Las Cruces-1 (CRU-1), Las Cruces-2 (CRU-2).

4) Geographic distance matrix among study populations. Only above diagonal is shown.

	MTBJ	PM	BY	CAL	Population		LIN	TOR	CRU-1	CRU-2
					RH	RHB				
MTBJ	0	15	87.7	74.7	77.7	76.7	67.7	331	699	701
PM		0	65.7	59.7	62.7	61.7	52.7	316	684	686
BY			0	6	3	4	14	269	639	640
CAL				0	3	2	8	275	639	640
RH					0	1	10	278	636	637
RHB						0	9	279	635	636
LIN							0	289	645	646
TOR								0	370	371
CRU-1									0	2
CRU-2										0

Mágina: Matabejid (MTBJ), Puerto de la Mata (PM); Cazorla: B° de la Yedra (BY), Calvario (CAL), Roblehondo (RH), Roblehondo Bosque (RHB), Linarejos (LIN); Peña Negra: B° del Toril (TOR); Caurel: Las Cruces-1 (CRU-1), Las Cruces-2 (CRU-2).