

Table S1. Soil physical parameters of macroaggregate (MaAS) and microaggregate (MiAS) stability used in the correlation matrix. Data shows mean values, adopted from Horel et al. [50].

sample	MaAS (%)	MiAS (%)
C 0	15.7279	47.1120
C W6	23.5113	61.3192
C W10	23.5367	59.6377
C W12	25.6526	51.3233
BC 0.5 W6	25.9040	65.6007
BC 0.5 W10	26.3997	59.1188
BC 0.5 W12	33.2212	55.9332
BC 2.5 W6	36.3585	67.8382
BC 2.5 W10	37.1881	62.1682
BC 2.5 W12	27.7261	64.3142
BC 5.0 W6	42.4178	70.4790
BC 5.0 W10	35.7294	66.0666
BC 5.0 W12	31.8999	62.9477

Table S2. Soil physical parameters used for the correlation matrices. U is the ratio of the 10% and 60% finer soil particle sizes (d10/d60), Ksat is the saturated hydraulic conductivity. Data shows mean values, adopted from Makó et al. [2].

Sample	U	K _{sat} (cm day ⁻¹)	Aggregate size distribution (%)				Bulk density (g cm ⁻³)
			1 - 2 mm (%)	0.5 - 1 mm (%)	0.25 - 0.5 mm (%)	<0.25 mm (%)	
C 0	11.806	12.1685	33.1562	23.8119	8.5623	34.4696	1.3743
C W6	9.0649	86.0461	14.1672	28.6543	15.9168	41.2617	1.2295
C W10	7.4669	100.366	25.2284	30.4210	19.6982	24.6525	1.2085
C W12	11.073	7.1520	32.9631	26.9389	8.2558	31.8423	1.3599
BC 0.5 W6	8.8650	72.2339	11.0343	30.5297	16.2712	42.1648	1.2459
BC 0.5 W10	8.9133	61.2811	18.4684	29.0204	17.0860	35.4252	1.2498
BC 0.5 W12	8.5882	80.6056	22.3505	30.2319	17.0962	30.3214	1.2446
BC 2.5 W6	8.7876	102.814	14.2273	31.7846	17.0389	36.9492	1.1961
BC 2.5 W10	7.1106	112.518	17.2920	31.4328	23.4466	27.8287	1.1618
BC 2.5 W12	8.7043	68.3472	22.2834	31.9792	15.6394	30.0981	1.1789
BC 5.0 W6	9.2361	74.4360	12.9786	31.8100	15.0732	40.1383	1.1410
BC 5.0 W10	5.7144	194.693	25.9755	34.1882	21.8641	17.9723	1.0557
BC 5.0 W12	6.6090	104.685	21.7152	32.8430	22.5458	22.8960	1.1213

Table S3. Soil physical parameter of geometric mean diameter (GMD) of soil aggregates. Data shows mean values. Unpublished data.

Sample	GMD (mm)
C 0	0.4796
C W6	0.3538
C W10	0.5010
C W12	0.5031
BC 0.5 W6	0.3398
BC 0.5 W10	0.4014
BC 0.5 W12	0.4518

BC 2.5 W6	0.3794
BC 2.5 W10	0.4365
BC 2.5 W12	0.4580
BC 5.0 W6	0.3601
BC 5.0 W10	0.5592
BC 5.0 W12	0.4948

Table S4. Soil chemical parameters used in the correlation matrix. SOC represents soil organic carbon content. Data shows mean values, adopted from Horel et al. [6].

Sample	pH	CaCO ₃ (%)	Total N (%)	NH ₄ ⁺ (mg kg ⁻¹)	NO ₃ ⁻ (mg kg ⁻¹)	K ₂ O (mg kg ⁻¹)	P ₂ O ₅ (mg kg ⁻¹)	SOC (%)
C 0	7.9733	10.4053	0.1364	5.8433	8.760	443.138	977.869	1.6093
C W6	8.1000	9.4458	0.1524	11.5947	4.185	417.611	1493.166	1.7303
C W10	8.2400	8.3918	0.1612	9.3703	2.961	248.547	1055.406	1.7861
C W12	8.1467	9.6170	0.1471	4.8101	3.397	286.490	1206.033	1.8492
BC 0.5 W6	8.0500	8.7566	0.1489	10.2600	3.003	445.706	1498.356	2.3540
BC 0.5 W10	8.1400	8.9243	0.1349	7.2571	2.252	356.122	1428.862	2.0771
BC 0.5 W12	8.2067	9.2095	0.1506	4.3376	2.502	338.251	1432.770	2.0538
BC 2.5 W6	8.0100	8.4323	0.1559	12.3315	3.705	586.492	1449.140	2.5468
BC 2.5 W10	8.0800	9.4133	0.1454	8.2581	2.252	437.985	1480.030	2.4024
BC 2.5 W12	8.1633	8.6390	0.1588	5.0049	2.002	401.101	1463.488	2.1160
BC 5.0 W6	8.0700	8.0675	0.1734	9.3207	3.279	733.449	1484.787	3.1010
BC 5.0 W10	8.1650	9.4948	0.1734	8.0348	2.936	599.212	1433.798	3.0888
BC 5.0 W12	8.0667	8.9922	0.1775	4.7837	2.907	548.179	1429.423	2.7694

Table S5. Soil physico-chemical and biological parameters used in the current study. Values represent means.

Sample	SSA _{AW_ads} (m ² g ⁻¹)	SSA _{AW_des} (m ² g ⁻¹)	hy ₁	SSA _{N2} (m ² g ⁻¹)	M (%)	A (%)	Gl_1mm (mg g ⁻¹)	Gl_2mm (mg g ⁻¹)
C 0	35.15651	43.09998	1.2486	16.1450	0	0	2.28	2.28
C W6	37.19673	45.05142	1.2507	16.0833	24.095	5.75	2.327468	2.323104
C W10	35.83036	43.60578	1.2764	18.0050	73.82	54.83	2.339366	2.326484
C W12	35.04826	43.64617	1.3070	17.5667	65.87	50.323	2.099269	2.110524
BC 0.5 W6	36.16023	44.12976	1.3322	16.0750	17.335	6.185	2.26162	2.298839
BC 0.5 W10	36.8570	44.64154	1.4831	17.2270	62.72	46.9	2.266574	2.273225
BC 0.5 W12	37.3909	45.23394	1.4687	18.2370	67.22	46.71	2.32161	2.313045
BC 2.5 W6	36.3198	44.66594	1.4615	17.2050	2.25	0.925	2.19685	2.263317
BC 2.5 W10	36.4842	44.48934	1.4430	16.8800	49.31	39.1	2.202632	2.214014
BC 2.5 W12	37.3207	45.6281	1.4562	19.2930	62.305	37.445	2.133311	2.174736
BC 5.0 W6	37.6475	46.03806	1.4954	17.1200	19.315	6.38	1.86976	2.001051
BC 5.0 W10	37.2024	45.72463	1.5132	16.6130	63.91	44.12	2.040786	1.993829
BC 5.0 W12	38.5939	47.44278	1.4810	19.0930	74.38	52.76	2.078288	1.945335