

Table S4: BPCA analysis (in duplicate) of all soil samples (average \pm standard deviation; SD < 15% for BPCAs; n.d., not detectable) and L* value.

Id	Site	Sample type	BPCA-C	Σ B3CA-C	Σ B4CA-C	Σ B5CA-C	Σ B6CA-C	Colour [L*]	
			[g kg ⁻¹ soil]	[g kg ⁻¹ soil]	[g kg ⁻¹ soil]	[g kg ⁻¹ soil]	[g kg ⁻¹ soil]		
1	Kleingräfendorf	pit filling	118.1 \pm 4.9	3.8 \pm 0.1	22.6 \pm 1.0	40.6 \pm 1.6	51.1 \pm 2.1	50.0	
2	Kleingräfendorf	adjacent subsoil	46.5 \pm 4.1	1.3 \pm 0.1	20.4 \pm 2.2	11.5 \pm 0.8	13.3 \pm 1.1	64.2	
3	Kleingräfendorf	recent topsoil	60.9 \pm 1.0	2.4 \pm 0.1	12.6 \pm 0.2	20.1 \pm 0.2	25.8 \pm 0.5	45.2	
4	Kleingräfendorf	pit filling	124.6 \pm 10.3	3.4 \pm 0.2	22.7 \pm 1.3	48.9 \pm 3.8	49.7 \pm 5.0	53.4	
5	Kleingräfendorf	adjacent subsoil	24.3 \pm 1.2	0.8 \pm 0.0	11.5 \pm 0.3	5.8 \pm 0.4	6.2 \pm 0.5	63.0	
6	Jügendorf	adjacent subsoil	30.4 \pm 2.5	1.2 \pm 0.1	14.0 \pm 1.2	6.6 \pm 0.5	8.5 \pm 0.7	64.5	
7	Jügendorf	pit filling	110.3 \pm 12.7	5.3 \pm 0.8	22.9 \pm 2.5	37.9 \pm 4.9	44.1 \pm 4.5	50.1	
8	Jügendorf	recent topsoil	32.9 \pm 3.5	1.6 \pm 0.2	9.9 \pm 0.5	11.2 \pm 0.5	10.2 \pm 4.7	53.5	
9	Jügendorf	pit filling	68.9 \pm 0.2	2.4 \pm 0.0	15.6 \pm 0.1	23.3 \pm 0.1	27.6 \pm 0.1	56.8	
10	Jügendorf	adjacent subsoil	104.7 \pm 0.9	3.9 \pm 0.0	22.1 \pm 0.2	36.2 \pm 0.4	42.5 \pm 0.3	48.5	
11	Jügendorf	recent topsoil	77.3 \pm 0.1	3.0 \pm 0.1	15.7 \pm 0.1	26.2 \pm 0.0	32.4 \pm 0.1	48.8	
12	Jügendorf	pit filling	114.9 \pm 10.9	4.0 \pm 1.2	22.6 \pm 0.1	42.5 \pm 8.1	45.7 \pm 3.8	46.4	
13	Jügendorf	adjacent subsoil	n.d.	n.d.	n.d.	n.d.	n.d.	63.5	
14	Jügendorf	recent topsoil	77.0 \pm 3.9	2.2 \pm 0.1	14.9 \pm 0.4	29.9 \pm 1.4	30.0 \pm 2.0	46.8	
15	Oechlitz	settlement pit	68.6 \pm 3.5	2.7 \pm 0.1	13.8 \pm 0.6	23.5 \pm 1.3	28.6 \pm 1.5	53.1	
16	Oechlitz	pit filling	109.9 \pm 1.7	3.3 \pm 0.2	22.2 \pm 1.1	44.3 \pm 0.8	40.1 \pm 0.4	52.9	
17	Oechlitz	adjacent subsoil	29.7 \pm 1.4	2.2 \pm 0.2	13.6 \pm 0.1	7.6 \pm 0.7	6.3 \pm 0.4	61.9	
18	Oechlitz	recent topsoil	111.2 \pm 2.0	3.9 \pm 0.0	22.4 \pm 0.0	38.6 \pm 0.8	46.3 \pm 1.2	46.4	
19	Prießnitz	recent topsoil	33.9 \pm 1.3	1.2 \pm 0.1	8.4 \pm 0.2	11.2 \pm 0.6	13.2 \pm 0.5	57.6	
20	Prießnitz	pit filling	100.5 \pm 23.2	4.9 \pm 0.1	26.5 \pm 0.1	36.9 \pm 2.1	32.3 \pm 21.1	55.2	
21	Prießnitz	adjacent subsoil	55.9 \pm 0.0	2.8 \pm 0.0	19.7 \pm 0.0	21.3 \pm 0.0	12.1 \pm 0.0	64.4	
22	Prießnitz	pit filling	138.4 \pm 12.0	5.9 \pm 0.7	30.5 \pm 3.1	48.0 \pm 6.7	54.1 \pm 1.5	50.4	
23	Prießnitz	adjacent subsoil	10.2 \pm 0.2	0.6 \pm 0.0	5.0 \pm 0.1	2.2 \pm 0.0	2.5 \pm 0.1	63.8	
24	Merzenich	recent topsoil	37.5 \pm 0.2	1.2 \pm 0.0	7.4 \pm 0.0	13.4 \pm 0.1	15.5 \pm 0.1	54.1	
25	Merzenich	adjacent subsoil	25.8 \pm 2.6	1.3 \pm 0.4	12.4 \pm 1.9	6.0 \pm 0.2	6.1 \pm 0.2	61.2	
26	Merzenich	pit filling	182.3 \pm 0.7	7.3 \pm 0.0	42.7 \pm 0.1	69.1 \pm 0.3	63.2 \pm 0.3	51.1	
27	Merzenich	pit filling	153.8 \pm 16.6	7.3 \pm 1.1	51.4 \pm 6.4	46.0 \pm 4.8	49.2 \pm 4.3	56.6	
28	Merzenich	pit filling	148.0 \pm 57.9	11.1 \pm 0.8	44.5 \pm 4.0	53.7 \pm 16.4	38.7 \pm 36.6	53.3	
29	Merzenich	pit filling	141.3 \pm 3.4	7.0 \pm 0.2	33.5 \pm 0.9	49.0 \pm 1.2	51.8 \pm 1.2	52.0	
30	Merzenich	pit filling	127.4 \pm 5.6	5.8 \pm 0.3	28.7 \pm 1.0	43.3 \pm 2.2	49.7 \pm 2.1	51.7	
31	Merzenich	adjacent subsoil	10.1 \pm 0.1	0.2 \pm 0.3	4.8 \pm 0.1	2.5 \pm 0.0	2.6 \pm 0.1	58.2	
32	Merzenich	adjacent subsoil	n.d.	n.d.	n.d.	n.d.	n.d.	56.9	
33	Merzenich	adjacent subsoil	n.d.	n.d.	n.d.	n.d.	n.d.	57.0	
34	Merzenich	adjacent subsoil	96.5 \pm 1.5	3.0 \pm 0.1	31.5 \pm 1.1	32.9 \pm 0.8	29.1 \pm 0.5	56.8	
35	Merzenich	adjacent subsoil	88.9 \pm 0.7	2.7 \pm 0.2	25.0 \pm 2.2	32.3 \pm 0.5	28.9 \pm 2.3	56.4	
36	Merzenich	pit filling	222.1 \pm 8.8	10.2 \pm 0.2	51.4 \pm 1.9	89.4 \pm 3.3	71.2 \pm 3.5	54.1	
37	Merzenich	pit filling	191.3 \pm 13.4	6.5 \pm 0.2	39.7 \pm 2.2	74.3 \pm 5.4	70.8 \pm 5.6	53.6	
38	Merzenich	adjacent subsoil	n.d.	n.d.	n.d.	n.d.	n.d.	54.1	
39	Merzenich	pit filling	224.4 \pm 10.9	9.8 \pm 0.8	50.6 \pm 3.3	89.9 \pm 5.1	74.2 \pm 1.7	53.2	
40	Merzenich	adjacent subsoil	n.d.	n.d.	n.d.	n.d.	n.d.	57.1	
41	Merzenich	adjacent subsoil	n.d.	n.d.	n.d.	n.d.	n.d.	47.0	
42	Merzenich	pit filling	44.7 \pm 4.3	1.7 \pm 0.1	21.8 \pm 2.3	9.7 \pm 0.8	11.5 \pm 1.0	57.9	
43	Merzenich	pit filling	64.3 \pm 0.4	2.4 \pm 0.2	24.2 \pm 0.5	17.6 \pm 0.4	20.1 \pm 0.3	56.4	
44	Merzenich	adjacent subsoil	7.5 \pm 0.3	0.2 \pm 0.0	3.2 \pm 0.2	1.8 \pm 0.1	2.2 \pm 0.1	61.1	
45	Pulheim	recent topsoil	53.9 \pm 0.3	2.1 \pm 0.4	11.6 \pm 0.1	15.2 \pm 0.1	24.9 \pm 0.3	56.4	
46	Pulheim	adjacent subsoil	95.6 \pm 0.8	2.8 \pm 0.1	24.6 \pm 0.6	37.2 \pm 1.3	31.0 \pm 2.7	57.0	
47	Pulheim	pit filling	126.0 \pm 3.0	4.8 \pm 0.2	42.5 \pm 3.2	35.3 \pm 0.3	43.3 \pm 0.1	56.9	
48	Pulheim	adjacent subsoil	101.9 \pm 0.2	2.8 \pm 0.1	26.5 \pm 0.2	37.5 \pm 0.2	35.1 \pm 0.4	56.8	
49	Pulheim	pit filling	143.2 \pm 8.7	5.2 \pm 0.2	30.6 \pm 0.5	57.2 \pm 2.2	50.2 \pm 7.2	52.4	
50	Düren Arnoldsweiler	below humic zone	n.d.	n.d.	n.d.	n.d.	n.d.	68.9	
51	Düren Arnoldsweiler	humic zone	100.1 \pm 4.1	3.7 \pm 0.1	37.0 \pm 1.0	29.0 \pm 1.0	30.4 \pm 2.0	62.2	