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Supplement of

The hidden ecological resource of andic soils in mountain ecosystems: evidence from Italy

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Table S1. Supplementary Material. Main features of the site description concerning the 35 soils.

Soil N.	Location	Soil classification *	Land use	Elevation	Slope **	Aspect
1	Orobie Alps	Haplic Phaeozem	chestnut	535	40	N
2	Penna Mountain	Epidystric Aluandic Andosol	beach	1400	50	N
3	Orocco Mountain	Epidystric Cambisol	grassland	1070	30	N
4	Notte Mountain	Haplic Epidystric Cambisol	chestnut	720	23	W
5	Battifollo	Haplic Epidystric Cambisol	chestnut	820	27	N
6	Spigolino Mountain	Epidystric Cambisol	grassland	1625	15	S
7	Abetone	Epidystric Cambisol	beach	850	28	N
8	Abetone	Haplic Epidystric Cambisol	chestnut	850	28	N
9	Pratone Mountain	Epidystric Cambisol	beach	1010	50	N
10	Garfagnana	Haplic Epidystric Cambisol	chestnut	220	30	S
11	Versilia	Epidystric Chromic Cambisol	chestnut	375	50	N
12	Versilia	Epidystric Hyperferralic Cambisol	chestnut	610	50	N
13	Simoncello Mountain	Endoeutric Cambisol	oak	990	20	S
14	Aretini Mountains	Epidystric Humic Cambisol	chestnut	950	20	W
15	Nerone Mountain	Haplic Phaeozem	grassland	1370	40	S
16	Subasio Mountain	Calcaric Epileptic Phaeozem	grassland	1160	15	W
17	Sibillini Mountains	Haplic Phaeozem	grassland	1490	40	E
18	Terminillo Mountain	Andic Cambisol	grassland	1900	50	S
19	Simbruini Mountains	Epidystric Cambisol	beach	1480	15	N
20	Pizzalto Mountain	Eutric Cambisol	oak	1360	12	N
21	Umbra Forest	Eutric Cambisol	oak	260	4	N
22	Umbra Forest	Mollic Silandic Andosol	beach	755	50	N
23	Greco Mountain	Mollic Silandic Andosol	grassland	1425	35	E
24	Umbra Forest	Eutrosilic Silandic Andosol	grassland	600	0	0
25	¹ Matese Mountain	Mollic Silandic Andosol	beach	1410	36	SE
26	² Matese Mountain	Silandic Andosol	beach	1150	19	N
27	Maggiore Mountain	Silandic Andosol	oak	790	15	SE
28	Cervinara Mountain	Eutrosilic Silandic Andosol	chestnut	825	50	NE
29	Picentini Mountains	Mollic Silandic Andosol	beach	1390	45	NO
30	Amalfitana Cost Range	Endoleptic Silandic Andosol	oak	275	50	E
31	Lucano Apenine	Haplic Phaeozem	beach	1360	43	SE
32	Cervati Mountain	Mollic Silandic Andosol	beach	1655	25	S
33	Chianello Mountain	Eutrosilic Silandic Andosol	chestnut	890	20	N
34	Macomer	Endoleptic Phaeozem	oak	685	0	
35	Aspromonte Massif	Silandic Andosol	beach	970	9	SE

* = following IUSS Working Group WRB, 2015; ** slope % has been measured at each soil site (generally 10m²) then it can strongly differ from the slope of the landscape (typically < 21%). Abbrev. ¹ISCRIC, 2005; ²Frezzotti and Narcisi, 1996

Table S2. Supplementary Material. Main analytical features of the 35 soils.

Soil N.	Horizon sequence	Soil Depth	Colour A horizon (dry)	Colour B horizon (dry)	Org. C * g kg ⁻¹	Al _o +0.5Fe _o * %	Al _o +0.5Fe _o % (max value)	P retention * %
1	A, Bw	70	10YR 3/2	10YR 4/4	16.26	1.42	1.42	21.84
2	A1, A2, B/A, Bw1, Bw2	110+	10YR 2/2	10YR 4/4	64.37	2.88	3.21	94.96
3**	A, Bw1, Bw2, B/C	65+	7.5YR 4/2	10YR 4/4	24.39	0.91	1.00	38.64
4	A, Bw1, Bw2, Bw3	75+	10YR 2/2	7.5YR 4/6	17.55	0.66	0.71	40.37
5**	A, Bw1, Bw2, Bt	75+	7.5YR 3/2	5YR 4/6	9.44	0.38	0.43	36.79
6**	OA, A, Bw, B/C	60+	10YR 2/1	7.5YR 4/6	45.05	1.40	1.54	59.19
7**	A, Bw1, Bw2, Bw3, Bw4	90	5YR 3/1	7.5YR 4/6	26.70	1.07	1.25	60.60
8	A, Bw1, Bw2, Bw3, Bw4	90+	5YR 3/1	7.5YR 4/6	26.70	1.07	1.25	60.63
9	A/B, Bw1, Bw2, Bw3	70+	10YR 3/2	10YR 4/4	12.67	0.95	1.10	45.14
10**	A, Bw	50+	10YR 3/2	10YR 4/4	31.24	0.80	0.87	NA
11	OA, Bw1, Bw2	150+	10YR 2/1	7.5YR 4/6	13.22	0.79	1.03	38.69
12	OA, Bw1, Bw2, 2CB	90+	10YR 2/1	2.5 YR 5/4	23.92	0.78	0.90	20.09
13	A, Bw1, Bw2, C/B	70+	10YR 3/2	7.5YR 5/4	6.96	0.52	0.77	27.19
14	A, B/A, Bw	70+	10YR 3/3	10YR 4/6	28.59	1.35	1.39	58.08
15**	A, Bw1, Bw2, C/B	90+	10YR 3/2	10YR 3/3	33.62	0.97	1.07	39.51
16**	A1, A2	27	7.5YR 2.5/2	7.5YR 2.5/2	75.89	0.90	0.92	47.81
17**	A1, A2, Ab, Bwb	75+	10YR 2/2	7.5YR 2.4/3	57.11	1.45	1.68	60.44
18**	A1, A2, Bw	90	10YR 2/1	10YR 3/3	65.28	2.01	2.47	75.08
19**	A, Bw1, Bw2, Bt	110+	7.5YR 3/1	7.5YR 4/3	25.56	1.56	1.80	75.08
20	AB, Bw	60+	10YR 3/2	10YR 3/2	35.46	1.00	1.03	48.22
21	A, Bw1, Bw2	60+	5YR 3/3	7.5YR 4/4	44.68	0.75	0.80	NA
22	A1, A2, AB, Bt	95+	10YR 3/2	10YR 4/4	22.99	1.63	3.17	NA
23	A1, A2, Ab, ABb	110	7.5YR 3/2	10YR 4/3	102.56	2.83	3.59	81.57
24	A, Ab, 2Ab, 2Bt	85+	7.5YR 3/1	7.5YR 4/3	40.75	1.51	2.07	NA
25	A, Bw	150+	7.5YR 2/2	10YR 4/6	79.20	5.28	5.60	99.00
26	A1, A2, Bw1, Bw2, BC1, BC2	110+	NA	NA	25.10	5.50	6.25	98.89
27	A, Bw1, Bw2	160+	10YR 2/2	7.5YR 3/3	25.20	3.45	4.57	102.00
28	A, Bw1, Bw2, Ab, Bwb1, Bwb2, Bwb3	170+	NA	NA	21.00	7.37	5.96	83.32
29	A, Bw	90+	10YR 2/2	7.5YR 3/3	42.30	4.44	5.26	105.00
30	A, Bw1, Bw2, Bw3	70	10YR 2/2	10YR 3/4	21.52	4.58	5.47	71.67
31	A, Bw	70+	10YR 3/2	10YR 4/4	49.50	1.19	1.43	68.00
32	A, Bw	85+	10YR 2/1	7.5YR 3/3	74.00	2.70	3.13	102.00
33	A1, A2, Bw1, Bw2, Bw3	108+	7.5YR 2.5/1	7.5YR 4/3	47.19	2.98	6.27	NA
34	A1, A2, Bw	70	10YR 2/1	10YR 2/2	71.57	0.39	0.48	58.28
35	A1, A2, Bw	140+	10YR 2/2	10YR 4/6	25.00	1.20	2.21	64.00

* Mean data weighted for soil depth, ** sampled for soil hydrology