Table 1 Suppl. *Deschampsia caespitosa* leaf traits and soil properties for four different habitats. Means ± SDs (n = 10) for each habitat. Different superscript letters within each row indicate significant differences ($P \leq 0.05$; the Duncan test).

Traits	Parameters	Units	River floodplain (Rak)	Intermittent lake (Cerknica)	Alpine heath (Mount Komen)	Alpine foothills forest edge (Mount Komen)
Morphological	leaf thickness, thickest part	µm	427 ± 68^{a}	418 ± 62^{a}	514 ± 27^{b}	507 ± 48^{b}
	long prickle hair length	µm	39 ± 7^{b}	32 ± 3^{a}	56 ± 5^{d}	46 ± 7^{c}
	specific leaf area	$cm^2\ g^{-1}$	120.7 ± 30.8^{ab}	130.4 ± 20.0^{b}	100.5 ± 20.1^{a}	160.9 ± 20.2^{c}
Leaf upper surface	cuticle thickness	µm	4.3 ± 0.6^{a}	5.3 ± 0.3^{b}	6.8 ± 1.0^{c}	4.6 ± 1.0^{a}
	epidermis thickness	µm	10.8 ± 1.6^{b}	8.7 ± 0.9^{a}	13.8 ± 1.5^{c}	14.8 ± 2.6^{c}
	stomata density	mm^{-2}	254 ± 27^{bc}	279 ± 34^{c}	242 ± 32^{b}	193 ± 42^{a}
	stomata length	µm	33.8 ± 3.8^{a}	32.7 ± 2.7^{a}	37.0 ± 3.1^{b}	37.3 ± 2.7^{b}
	prickle hair density	mm^{-2}	342 ± 154^{b}	389 ± 126^{b}	123 ± 68^{a}	164 ± 54^{a}
	prickle hair length	µm	20.4 ± 4.8^{a}	23.6 ± 3.8^{a}	24.4 ± 3.9^{a}	21.5 ± 3.9^{a}
Leaf lower surface	cuticle thickness	µm	4.7 ± 0.5^{a}	6.1 ± 0.6^{b}	6.8 ± 1.0^{b}	4.5 ± 1.2^{a}
	epidermis thickness	µm	11.7 ± 1.1^{b}	9.6 ± 1.3^{a}	14.3 ± 0.8^{c}	14.2 ± 1.7^{c}
	stomata density	mm^{-2}	44 ± 19^{a}	41 ± 16^{a}	47 ± 8^{a}	50 ± 11^{a}
	stomata length	µm	33.4 ± 3.1^{b}	29.7 ± 3.1^{a}	35.4 ± 1.5^{b}	35.4 ± 3.9^{b}
	prickle hair density	mm^{-2}	184 ± 52^{a}	378 ± 66^{c}	169 ± 35^{a}	246 ± 52^{b}
	prickle hair length	µm	20.7 ± 2.1^{a}	21.4 ± 2.1^{a}	24.0 ± 2.5^{b}	20.5 ± 2.3^{a}
Biochemical	chlorophyll *a*	$\mu g\ cm^{-2}$	38 ± 8^{a}	41 ± 8^{a}	34 ± 10^{a}	60 ± 14^{b}
	chlorophyll *b*	$\mu g\ cm^{-2}$	20 ± 6^{b}	23 ± 7^{b}	15 ± 3^{a}	28 ± 6^{c}
	carotenoids	$\mu g\ cm^{-2}$	11 ± 3^{a}	11 ± 2^{a}	11 ± 3^{a}	16 ± 4^{b}
	anthocyanins	$a.u.\ cm^{-2}$	0.54 ± 0.19^{a}	0.55 ± 0.11^{a}	0.47 ± 0.10^{a}	0.71 ± 0.22^{b}
	UV-B-absorbing compounds	$a.u.\ cm^{-2}$	2.30 ± 0.52^{b}	2.23 ± 0.50^{b}	2.69 ± 0.74^{b}	1.55 ± 0.21^{a}
	UV-A-absorbing compounds	$a.u.\ cm^{-2}$	3.50 ± 1.00^{b}	3.13 ± 0.84^{b}	4.14 ± 1.52^{bc}	2.16 ± 0.42^{a}
Leaf element composition	Si	%(d.m.)	1.03 ± 0.28^{ab}	0.83 ± 0.37^{a}	1.27 ± 0.36^{bc}	1.53 ± 0.44^{c}
	P		0.14 ± 0.03^{c}	0.07 ± 0.01^{a}	0.07 ± 0.02^{a}	0.11 ± 0.02^{b}
	S		0.10 ± 0.03^{a}	0.12 ± 0.05^{ab}	0.11 ± 0.02^{a}	0.15 ± 0.03^{b}
	Cl		0.32 ± 0.20^{a}	0.32 ± 0.16^{a}	0.34 ± 0.06^{a}	0.25 ± 0.04^{a}
	K		1.00 ± 0.31^{a}	1.28 ± 0.46^{a}	1.98 ± 0.36^{b}	2.87 ± 0.34^{c}
	Ca		0.45 ± 0.11^{b}	0.41 ± 0.10^{b}	0.20 ± 0.03^{a}	0.55 ± 0.07^{c}
Soil element composition	total Si	%(d.m.)	6.56 ± 0.94^{a}	11.09 ± 2.42^{c}	4.94 ± 1.92^{a}	8.67 ± 1.64^{b}
	total S		0.04 ± 0.01^{a}	0.04 ± 0.01^{a}	0.05 ± 0.02^{b}	0.03 ± 0.01^{a}
	total Cl		0.03 ± 0.01^{ab}	0.03 ± 0.01^{a}	0.04 ± 0.02^{b}	0.04 ± 0.01^{b}
	total K		0.86 ± 0.13^{b}	0.43 ± 0.04^{a}	0.54 ± 0.25^{a}	1.09 ± 0.11^{c}
	total Ca		2.74 ± 1.42^{b}	3.16 ± 1.92^{b}	0.23 ± 0.07^{a}	3.65 ± 0.73^{b}
	$CaCl_2$-extractable Si	$mg\ kg^{-1}$(d.m.)	34.27 ± 2.68^{d}	12.46 ± 3.66^{b}	9.51 ± 2.81^{a}	19.02 ± 2.59^{c}

Table 2 Suppl. Soil characteristics of four habitats. Data are for composite samples from each of the four habitats (n = 10). NA - not available due to high proportions of organic matter. Cation exchange capacity was measured as mmol(charge) kg^{-1}.

Soil parameters	Units	River floodplain (Rak)	Intermittent lake (Cerknica)	Alpine heath (Mount Komen)	Alpine foothills forest edge (Mount Komen)
Sand	%	18.9	47.7	NA	54.4
Silt	%	54.3	45.1	NA	36.9
Clay	%	26.8	7.2	NA	8.7
Texture class		silt loam	loam	NA	sandy loam
pH in $CaCl_2$		6.9	6.9	4.1	7.0
Available phosphorus	mg kg^{-1}	45	6	75	28
Available potassium	mg kg^{-1}	210	118	830	217
Electrical conductivity	µS cm^{-1}	300	170	150	110
Carbonates	%	8.7	16.9	1.6	16.9
Carbon	%	7.0	5.7	23.0	5.0
Nitrogen	%	0.64	0.45	1.32	0.20
C/N ratio		10.9	12.7	17.4	25.0
Organic matter	%	11.8	6.6	42.9	9.1
Total carbon	%	8.02	7.71	23.20	6.99
Cation exchange capacity	$mmol_c$ kg^{-1}	398.2	256.8	577.1	161.9
Ca^{2+}	mmolc kg^{-1}	401.4	192.9	38.9	152.7
Mg^{2+}	mmolc kg^{-1}	52.5	42.2	13.5	5 1.0
K^+	mmolc kg^{-1}	4.8	2.5	18.3	4.9
Na^+	mmolc kg^{-1}	1.1	0.8	1.7	0.7
Total exchangeable bases	mmolc kg^{-1}	459.8	238.4	72.4	209.3
Base saturation	%	100	93	13	100

Table 3 Suppl. Relative leaf reflectance and transmittance data for the *Deschampsia caespitosa* leaves from four habitats. Means ± SDs (n = 10). Different letters within each row indicate significant differences ($P \leq 0.05$; the Duncan test).

Parameter	Wavelength	River floodplain (Rak)	Intermittent lake (Cerknica)	Alpine heath (Mount Komen)	Alpine foothills forest edge (Mount Komen)
Reflectance	UV-B	5.2 ± 0.3^{c}	4.9 ± 0.8^{bc}	4.3 ± 0.3^{a}	4.6 ± 0.5^{ab}
	UV-A	4.3 ± 0.3^{c}	3.8 ± 0.5^{b}	3.3 ± 0.2^{a}	4.0 ± 0.3^{bc}
	violet	4.6 ± 0.4^{b}	4.3 ± 0.6^{b}	3.6 ± 0.3^{a}	3.8 ± 0.3^{a}
	blue	5.0 ± 0.4^{c}	4.7 ± 0.7^{bc}	4.3 ± 0.5^{ab}	3.9 ± 0.3^{a}
	green	11.7 ± 1.3^{c}	10.4 ± 1.2^{b}	12.1 ± 1.3^{c}	7.4 ± 0.9^{a}
	yellow	9.5 ± 1.2^{bc}	8.5 ± 1.0^{b}	10.1 ± 1.2^{c}	5.8 ± 0.7^{a}
	red	6.4 ± 0.6^{b}	6.0 ± 0.7^{b}	6.5 ± 0.7^{b}	4.5 ± 0.4^{a}
	near infrared	33.0 ± 1.9^{a}	34.2 ± 2.5^{a}	36.2 ± 1.4^{b}	33.7 ± 1.0^{a}
Transmittance	UV-B	0.9 ± 2.0^{a}	0.0 ± 0.1^{a}	0.0 ± 0.1^{a}	0.1 ± 0.1^{a}
	UV-A	1.1 ± 2.1^{a}	0.3 ± 0.2^{a}	0.3 ± 0.2^{a}	0.7 ± 0.3^{a}
	violet	5.1 ± 3.0^{a}	4.8 ± 1.6^{a}	6.7 ± 2.0^{a}	6.1 ± 2.3^{a}
	blue	7.0 ± 3.3^{a}	6.7 ± 2.0^{a}	10.1 ± 2.7^{b}	7.7 ± 2.6^{ab}
	green	17.7 ± 4.9^{a}	15.7 ± 3.2^{a}	23.0 ± 4.7^{b}	16.7 ± 3.3^{a}
	yellow	16.1 ± 4.8^{a}	14.1 ± 3.2^{a}	21.4 ± 4.8^{b}	14.9 ± 3.3^{a}
	red	11.8 ± 4.0^{a}	10.0 ± 2.5^{a}	15.1 ± 3.7^{b}	10.8 ± 2.8^{a}
	near infrared	59.6 ± 3.9^{ab}	55.7 ± 4.2^{a}	60.8 ± 6.0^{b}	60.0 ± 3.0^{b}

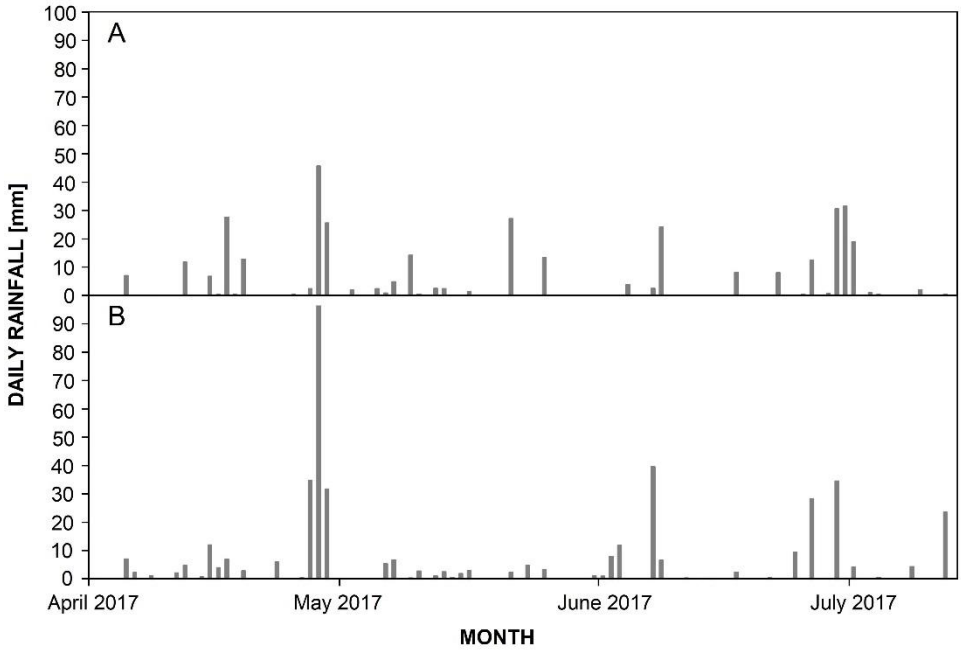

Fig. 1 Suppl. Daily rainfall for the Cerknica (*A*) and Bele Vode (*B*) meteorological stations. The data for the 24-h rainfall (recorded daily at 07:00; www.meteo.si) were from two meteorological stations close to four chosen sampling locations: the Cerknica meteorological station close to the first two habitats (45°47'44.54" N, 14°21'49.46" E; 576 m a.s.l.) and the Bele Vode meteorological station, close to the second two habitats (46°25'18.17" N, 14°56'35.59" E; 965 m a.s.l.). The total rainfall from 1 April, 2017, to 13 July, 2017, was 357.9 mm at Cerknica, and 423.9 mm at Bele Vode.

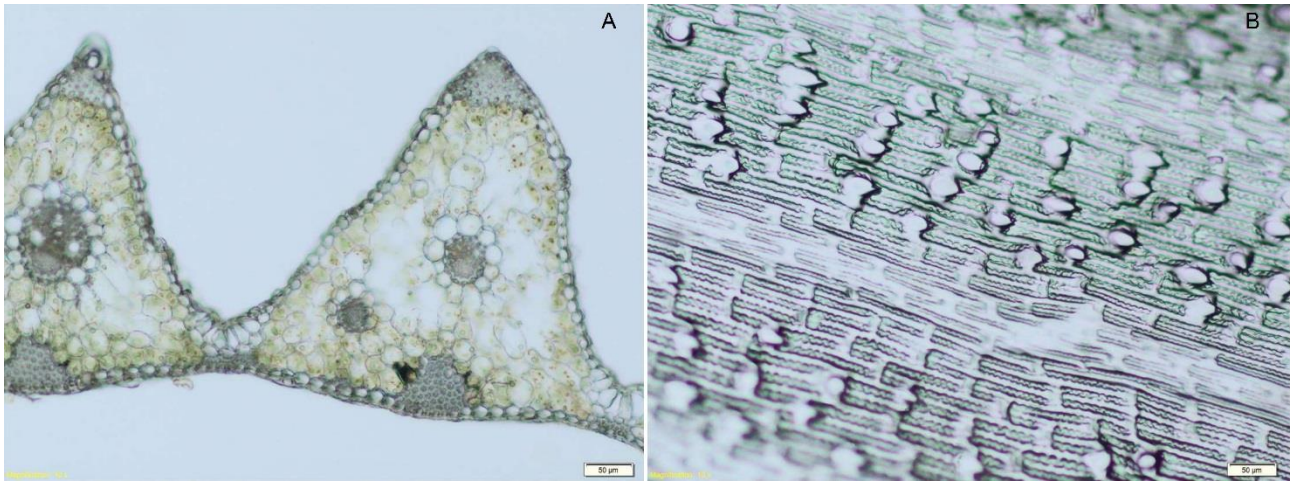

Fig. 2 Suppl. The cross-section of a *Deschampsia caespitosa* leaf with silicified cuticle and prickle hairs (*A*), and a leaf epidermal print with visible phytoliths and prickle hairs (*B*).