

1 **Supporting information**

2 **Title:** Using co-occurrence information and trait composition to understand individual plant performance in grassland
3 communities

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16 **Tables**

17 **Table S1:** Differences in trait values between the different scenarios. F and p refer to an ANOVA. Est. = estimated trait value for the different
 18 scenarios. Small letters refer to statistically significant differences among scenarios according to a Tukey post-hoc test.

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Trait	Trait description	F	P	Est. Beals	Tukey	Est. Dissim	Tukey	Est. Random	Tukey	Est. Sim	Tukey
Specific leaf area (SLA)	Leaf area per dry mass [m ² /kg]	1.76	0.15	20.36	a	20.45	a	20.44	a	21.06	a
Leaf dry matter content (LDMC)	Leaf dry mass per leaf fresh mass [mg/g]	42.98	0.00	248.18	b	223.52	d	264.06	a	235.10	c
Height	[m]	39.67	0.00	0.51	b	0.65	a	0.52	b	0.49	b
Leaf anatomy 01	leaf succulent	12.21	0.00	0.00	b	0.02	a	0.00	b	0.00	b
Leaf anatomy 02	scleromorphic	546.29	0.00	0.19	c	0.85	a	0.47	b	0.06	d
Leaf anatomy 03	mesomorphic	588.85	0.00	0.94	b	0.31	d	0.81	c	1.00	a
Leaf anatomy 04	hygromorphic	33.66	0.00	0.12	a	0.03	c	0.07	b	0.00	d
Leaf anatomy 05	helomorphic	10.10	0.00	0.05	b	0.02	c	0.04	cb	0.08	a
Leaf persistence 01	green before summer	16.82	0.00	0.00	b	0.04	a	0.03	a	0.00	b
Leaf persistence 02	green in summer	24.11	0.00	0.33	b	0.38	b	0.52	a	0.32	b
Leaf persistence 03	green in winter	50.56	0.00	0.00	c	0.10	a	0.03	b	0.00	c
Leaf persistence 04	evergreen	48.98	0.00	0.67	a	0.48	b	0.42	b	0.68	a
Leaf distribution 01	leaves distributed regularly	51.51	0.00	0.40	b	0.19	c	0.33	b	0.51	a
Leaf distribution 02	rosette	22.92	0.00	0.10	a	0.01	b	0.08	a	0.03	b
Leaf distribution 03	semi-rosette	64.55	0.00	0.50	c	0.80	a	0.59	b	0.46	c
Physical defense	Presence of hooks, spines, thorns, stinging hairs	148.05	0.00	0.01	b	0.22	a	0.02	b	0.00	b
Vegetative reproduction	Presence of stolons, rhizome, bulb, etc.	411.47	0.00	0.99	a	0.38	c	0.72	b	0.96	a

20 **Table S2:** Trait values of the 130 species transplanted into subplots and information on which of the four tested Scenarios the species were planted
 21 (B = Beals, D = Dissim, R = Random, S = Sim). The survival rate (Surv.) is the percentage of individuals alive at end of the experiment compared
 22 to the amount of individuals transplanted at the start. As an example of growth rate, RGR h4-5 is given. RGRh4-5 is the species mean across all
 23 individuals' RGR height in the winter time interval (4-5) [cm cm⁻¹ week⁻¹]. NA (= not available) values for RGR height indicate that no individual
 24 of that species survived until the 5th monitoring interval. Trait values for each species include: L.A. = Leaf anatomy (categories 1 – 6); L.P. = Leaf
 25 persistence (categories 1 – 4); L.D. = Leaf distribution (categories 1 – 3); Veg. R. = Vegetative reproduction, and Phys. D. = Physical defense. For
 26 an explanation of trait categories, see SI Table S1.

Species	Freq.	Scen.	RGRh4-5	Surv.	SLA	LDMC	Height	L.A.1	L.A.2	L.A.3	L.A.4	L.A.5	L.A.6	L.P.1	L.P.2	L.P.3	L.P.4	L.D.1	L.D.2	L.D.3	Phys. D.	Veg. R.
<i>Achillea millefolium</i>	50	B,R	0.0033	0.78	11.86	274.50	0.45	0	1	1	0	0	0	0	0	0	1	0	0	1	0	1
<i>Agrimonia eupatoria</i>	6	B,R	-0.0143	0.50	13.15	383.12	0.38	0	0	1	0	0	0	0	1	0	0	0	0	1	0	1
<i>Allium scorodoprasum</i>	30	D,R	NA	0.00	11.57	255.09	0.56	0	0	1	0	0	0	1	0	0	0	0	0	1	0	1
<i>Allium vineale</i>	16	D,R	NA	1.00	17.61	137.75	0.30	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1
<i>Alopecurus pratensis</i>	30	B,R	0.0142	0.17	16.82	355.17	0.70	0	0	1	0	0	0	0	1	0	0	1	0	0	0	1
<i>Angelica sylvestris</i>	6	R	NA	0.00	16.54	221.31	1.15	0	0	1	0	1	0	0	1	0	0	0	0	1	0	0
<i>Anthoxanthum odoratum</i>	56	B	0.0102	0.82	21.08	262.12	0.22	0	0	1	0	0	0	0	0	0	1	1	0	0	0	1
<i>Anthyllis vulneraria</i>	16	B,S	0.0223	0.19	13.58	227.61	0.32	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0
<i>Armeria maritima</i>	6	R	-0.0122	0.00	15.89	247.83	0.27	0	1	0	0	0	0	0	0	0	1	0	1	0	0	0
<i>Arrhenatherum elatius</i>	46	B,R,S	0.0201	0.33	23.92	313.30	1.03	0	0	1	0	0	0	0	1	0	0	1	0	0	0	1
<i>Artemisia campestris</i>	8	R	NA	0.00	17.15	255.77	0.45	0	1	1	0	0	0	0	1	0	0	1	0	0	0	0
<i>Artemisia vulgaris</i>	12	D,R	0.0093	0.42	39.75	142.72	1.55	0	1	1	0	0	0	0	1	0	0	1	0	0	0	0
<i>Asperula cynanchica</i>	8	R	-0.0343	0.00	15.88	325.06	0.17	0	1	0	0	0	0	0	1	0	0	1	0	0	0	1
<i>Astragalus glycyphyllos</i>	12	S	-0.0135	0.33	32.51	184.27	1.00	0	0	1	0	0	0	0	1	0	0	1	0	0	0	1
<i>Bellis perennis</i>	52	B,R	0.0027	0.46	29.71	180.71	0.10	0	0	1	1	0	0	0	0	0	1	0	1	0	0	1
<i>Betonica officinalis</i>	14	R	0.0268	0.43	24.90	360.45	0.65	0	0	1	0	0	0	0	1	0	0	1	0	0	0	1

<i>Brachypodium pinnatum</i>	6	R,S	-0.0036	0.67	15.04	474.77	0.55	0	1	1	0	0	0	0	0	1	0	0	1	0	0	0	1	
<i>Briza media</i>	60	B,D,R	0.0044	0.64	29.56	320.63	0.35	0	1	1	0	0	0	0	0	0	1	0	0	1	0	0	1	
<i>Bromus erectus</i>	12	R	0.0044	0.67	13.04	342.88	0.60	0	1	1	0	0	0	0	0	0	1	0	0	1	0	0	1	
<i>Campanula patula</i>	10	D,R	-0.0113	0.10	38.22	179.75	0.45	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	
<i>Campanula rotundifolia</i>	4	B	0.0284	0.75	21.12	405.83	0.20	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	1	
<i>Carex flacca</i>	8	R	-0.0105	0.25	10.71	514.33	0.40	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	1	
<i>Carlina vulgaris</i>	26	D	-0.0233	0.12	12.34	312.85	0.37	0	1	0	0	0	0	0	0	0	1	0	0	1	1	0	0	
<i>Carum carvi</i>	2	R	0.0185	0.50	19.14	248.72	0.55	0	0	1	0	0	0	0	1	0	0	0	0	0	1	0	0	
<i>Centaurea jacea</i>	42	B,R	0.0179	0.60	10.60	255.55	0.82	0	1	1	0	0	0	0	1	0	0	0	0	0	1	0	0	1
<i>Centaurea nigra</i>	18	S	0.0261	0.50	14.81	300.81	0.45	0	0	1	0	0	0	0	1	0	0	0	0	0	1	0	0	1
<i>Centaurea scabiosa</i>	28	B,D,R	0.0056	0.50	30.07	140.55	0.85	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	0	1
<i>Centaurea stoebe</i>	72	D,R	-0.0016	0.22	18.28	198.45	0.85	0	1	0	0	0	0	0	0	0	1	0	0	1	0	0	0	
<i>Cerastium holosteoides</i>	18	B,S	0.0133	0.36	23.35	250.92	0.27	0	0	1	0	0	0	0	0	0	1	1	0	0	0	0	0	1
<i>Cichorium intybus</i>	50	D,R	0.0216	0.40	22.73	174.86	0.62	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	0	1
<i>Cirsium acaule</i>	8	D,R	-0.0135	0.50	8.72	222.50	0.14	0	1	1	0	0	0	0	1	0	0	0	0	0	1	1	0	1
<i>Cirsium arvense</i>	4	B	-0.0354	0.25	12.03	203.27	0.90	0	1	1	0	0	0	0	1	0	0	1	0	0	1	0	0	1
<i>Crepis biennis</i>	6	R	0.0309	0.17	23.02	170.46	0.85	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0
<i>Crepis tectorum</i>	22	D	0.0003	0.00	26.31	144.09	0.35	0	0	1	0	0	0	0	0	1	0	0	0	1	0	0	0	0
<i>Cynosurus cristatus</i>	8	B,R	0.0139	0.75	23.00	302.62	0.40	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	1
<i>Daucus carota</i>	4	R	-0.0055	0.50	15.11	262.57	0.55	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0
<i>Dianthus carthusianorum</i>	36	D,R	0.0263	0.36	16.44	207.73	0.30	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0
<i>Dipsacus fullonum</i>	98	D	0.0043	0.21	17.16	209.34	1.35	0	1	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0
<i>Echium vulgare</i>	6	D	-0.0269	0.17	30.73	113.18	0.56	0	1	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0
<i>Erigeron acris</i>	20	D,R	-0.0039	0.00	18.11	251.09	0.35	0	1	1	0	0	0	0	0	1	0	0	0	1	0	0	0	0
<i>Euphorbia esula</i>	42	R,S	NA	0.00	30.42	263.27	0.45	0	0	1	0	0	0	0	1	0	0	1	0	0	0	0	0	1
<i>Festuca arundinacea</i>	8	R	0.0037	0.50	20.27	382.86	1.20	0	1	1	0	0	0	0	1	0	0	1	0	0	0	0	0	1
<i>Festuca guestfalica</i>	2	R	-0.0130	1.00	9.62	501.39	0.30	0	1	0	0	0	0	0	0	0	1	0	0	1	0	0	0	1
<i>Festuca nigrescens</i>	6	R	NA	0.00	10.21	365.90	0.47	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	1
<i>Festuca ovina</i>	14	D,R	0.0060	0.71	14.01	301.00	0.26	0	1	0	0	0	0	0	0	0	1	0	0	1	0	0	0	1
<i>Festuca pratensis</i>	24	B,R	-0.0023	0.77	18.17	329.28	0.70	0	0	1	0	0	0	0	0	0	1	1	0	0	0	0	0	1

<i>Festuca rubra</i>	16	B	0.0085	0.79	10.21	365.90	0.51	0	0	1	0	0	0	0	0	0	1	0	0	1	0	1
<i>Filipendula ulmaria</i>	10	B,R	-0.0065	0.60	41.20	194.00	1.00	0	0	1	0	0	0	0	1	0	0	0	0	1	0	1
<i>Galium mollugo</i>	10	R,S	-0.0081	0.17	29.62	231.33	0.51	0	0	1	0	0	0	0	1	0	0	1	0	0	0	1
<i>Galium pumilum</i>	10	R	-0.0153	0.50	25.95	447.06	0.20	0	0	1	0	0	0	0	1	0	0	1	0	0	0	1
<i>Geranium pratense</i>	2	R	0.0251	1.00	14.47	266.40	0.40	0	0	1	1	0	0	0	1	0	0	0	0	1	0	1
<i>Geranium pusillum</i>	6	R	NA	0.00	25.48	205.14	0.22	0	0	1	0	0	0	0	0	1	0	0	0	1	0	0
<i>Geranium pyrenaicum</i>	2	R	0.0386	0.50	24.65	183.62	0.47	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0
<i>Geranium sylvaticum</i>	2	R	-0.0171	1.00	18.31	247.53	0.40	0	0	1	1	0	0	0	1	0	0	0	0	1	0	1
<i>Geum rivale</i>	12	R	0.0109	0.67	25.29	221.98	0.50	0	0	1	0	0	0	0	1	0	0	0	0	1	0	1
<i>Geum urbanum</i>	12	R	-0.0059	0.83	14.15	312.29	0.75	0	0	1	1	0	0	0	0	0	1	0	0	1	0	1
<i>Helianthemum nummularium</i>	6	B,R	0.0112	0.33	15.19	252.92	0.15	0	1	0	0	0	0	0	0	0	1	1	0	0	0	1
<i>Helichrysum arenarium</i>	4	R	0.0000	0.00	18.17	265.53	0.20	0	1	0	0	0	0	0	1	0	0	0	0	1	0	1
<i>Helictotrichon pubescens</i>	8	R	0.0015	0.50	12.60	354.92	0.65	0	0	1	0	0	0	0	1	0	0	0	0	1	0	1
<i>Hieracium pilosella</i>	26	B,R,S	0.0170	0.50	14.18	295.25	0.17	0	0	1	0	0	0	0	0	0	1	0	1	0	0	1
<i>Holcus lanatus</i>	82	B,R,S	0.0155	0.83	28.19	267.25	0.65	0	0	1	0	0	0	0	0	0	1	1	0	0	0	1
<i>Hypericum perforatum</i>	14	B,R	-0.0003	0.64	18.23	366.68	0.56	0	1	1	0	0	0	0	1	0	0	1	0	0	0	1
<i>Hypochaeris radicata</i>	4	R	-0.0054	1.00	33.85	97.53	0.37	0	0	1	0	0	0	0	0	0	1	0	1	0	0	1
<i>Jasione montana</i>	6	R	0.0280	0.00	17.27	253.09	0.27	0	1	1	0	0	0	0	0	0	1	0	0	1	0	1
<i>Knautia arvensis</i>	14	B,R	0.0088	0.50	21.52	176.14	0.55	0	0	1	0	0	0	0	1	0	0	0	0	1	0	1
<i>Koeleria pyramidata</i>	4	R	-0.0065	1.00	13.71	325.52	0.65	0	1	1	0	0	0	0	1	0	0	0	0	1	0	1
<i>Lathyrus pratensis</i>	10	B	-0.0039	0.30	29.84	289.71	0.65	0	0	1	0	0	0	0	1	0	0	1	0	0	0	1
<i>Leontodon autumnalis</i>	16	B,R,S	-0.0005	0.50	26.07	171.37	0.30	0	0	1	0	0	0	0	0	0	1	0	1	0	0	1
<i>Leontodon hispidus</i>	12	B,R,S	0.0157	0.50	14.97	285.42	0.28	0	0	1	0	0	0	0	1	0	0	0	1	0	0	1
<i>Leucanthemum vulgare</i>	6	R	0.0476	0.50	22.67	138.10	0.50	0	1	1	0	0	0	0	0	0	1	0	0	1	0	1
<i>Linum austriacum</i>	18	R,S	0.0083	0.33	17.84	247.85	0.45	0	1	1	0	0	0	0	1	0	0	1	0	0	0	1
<i>Lolium perenne</i>	28	B,S	0.0084	0.44	18.86	251.79	0.35	0	0	1	0	0	0	0	0	0	1	0	0	1	0	1
<i>Lotus corniculatus</i>	72	B,R,S	-0.0041	0.56	20.03	252.42	0.22	0	0	1	0	0	0	0	1	0	0	1	0	0	0	1
<i>Luzula campestris</i>	30	B,R,S	0.0195	0.62	20.01	227.85	0.15	0	1	1	0	0	0	0	1	0	0	0	0	1	0	1
<i>Malva alcea</i>	4	R	-0.0175	0.25	23.12	214.01	0.82	0	0	1	0	0	0	0	1	0	0	0	0	1	0	0
<i>Medicago falcata</i>	4	S	0.0199	0.50	20.67	360.59	0.35	0	1	1	0	0	0	0	1	0	0	1	0	0	0	1

<i>Medicago lupulina</i>	12	R,S	0.0213	0.08	24.20	319.07	0.37	0	0	1	0	0	0	0	0	0	1	1	0	0	0	1	
<i>Medicago x varia</i>	6	R	0.0046	0.83	24.56	239.90	0.55	0	0	1	0	0	0	0	0	0	1	1	0	0	0	1	
<i>Melilotus officinalis</i>	14	R	-0.0353	0.00	17.33	218.30	0.65	0	1	1	0	0	0	0	1	0	0	1	0	0	0	0	
<i>Oenothera biennis</i>	4	D	NA	0.00	15.93	238.30	1.00	0	1	1	0	0	0	0	0	0	1	0	0	1	0	1	
<i>Ononis spinosa</i>	10	D,R	-0.0405	0.50	15.91	333.94	0.45	0	0	1	0	0	0	0	1	0	0	1	0	0	1	1	
<i>Origanum vulgare</i>	10	R,S	-0.0116	0.60	13.24	358.58	0.40	0	1	1	0	0	0	0	1	0	0	1	0	0	0	1	
<i>Pastinaca sativa</i>	28	D,R	0.0146	0.27	18.12	221.48	0.94	0	1	1	0	0	0	0	1	0	0	0	0	0	1	0	0
<i>Petrorhagia prolifera</i>	22	D	NA	0.00	17.96	268.57	0.30	0	1	0	0	0	0	0	0	1	0	0	0	0	1	0	0
<i>Peucedanum officinale</i>	4	R	NA	0.00	13.06	303.40	1.30	0	1	1	0	0	0	0	1	0	0	0	0	0	1	0	1
<i>Phleum phleoides</i>	10	D,R	0.0277	0.40	17.90	319.28	0.45	0	1	0	0	0	0	0	0	0	1	0	0	1	0	1	
<i>Picris hieracioides</i>	20	R,S	0.0101	0.35	21.00	327.09	0.61	0	1	1	0	0	0	0	1	0	0	0	0	0	1	0	1
<i>Pimpinella major</i>	6	S	0.0174	0.67	17.93	233.00	0.60	0	0	1	0	0	0	0	1	0	0	0	0	0	1	0	0
<i>Pimpinella saxifraga</i>	8	B,R	-0.0169	0.25	12.00	364.91	0.32	0	1	1	0	0	0	0	1	0	0	0	0	0	1	0	0
<i>Plantago lanceolata</i>	12	B	0.0470	0.70	17.61	204.11	0.30	0	1	1	0	0	0	0	1	0	0	0	0	1	0	0	1
<i>Plantago major</i>	8	D,R	NA	0.00	15.38	201.99	0.21	0	1	1	0	0	0	0	1	0	0	0	0	1	0	0	1
<i>Plantago media</i>	6	R	0.0019	0.67	15.85	183.22	0.27	0	1	1	0	0	0	0	1	0	0	0	0	1	0	0	1
<i>Poa angustifolia</i>	4	R	-0.0075	0.25	13.37	427.66	0.60	0	1	1	0	0	0	0	0	0	1	0	0	0	1	0	1
<i>Poa pratensis</i>	4	B	-0.0011	0.75	12.04	374.79	0.55	0	0	1	0	0	0	0	0	0	1	1	0	0	0	0	1
<i>Potentilla argentea</i>	74	D,R	0.0018	0.39	19.10	281.85	0.34	0	1	0	0	0	0	0	1	0	0	1	0	0	0	0	0
<i>Prunella vulgaris</i>	56	B,R,S	0.0096	0.68	23.29	222.56	0.17	0	0	1	0	0	0	0	0	0	1	1	0	0	0	0	1
<i>Pseudolysimachion spicatum</i>	22	D,R	0.0167	0.50	41.11	128.24	0.27	0	1	0	0	0	0	0	0	0	1	1	0	0	0	0	1
<i>Ranunculus acris</i>	76	B,R,S	0.0131	0.61	14.50	256.95	0.75	0	0	1	0	0	0	0	1	0	0	0	0	0	1	0	1
<i>Ranunculus bulbosus</i>	2	R	0.0246	0.00	21.46	190.57	0.25	0	0	1	0	0	0	1	0	0	0	0	0	0	1	0	1
<i>Ranunculus repens</i>	40	B,R	0.0270	0.66	20.58	186.01	0.27	0	0	0	1	1	0	0	0	0	1	0	0	1	0	0	1
<i>Rumex acetosa</i>	126	B,R,S	0.0355	0.76	23.10	116.20	0.52	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	1
<i>Rumex crispus</i>	4	R,S	0.0399	0.75	15.36	199.38	0.90	0	0	1	0	1	0	0	0	0	1	0	0	1	0	0	0
<i>Rumex obtusifolius</i>	16	D,R	0.0161	0.63	23.98	160.04	0.85	0	0	1	1	0	0	0	0	0	1	0	0	1	0	0	0
<i>Rumex thyrsoiflorus</i>	12	R,S	0.0285	0.67	18.36	208.54	0.75	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0
<i>Salvia pratensis</i>	26	D,R	0.0190	0.35	20.38	186.37	0.45	0	1	1	0	0	0	0	1	0	0	0	0	0	1	0	1
<i>Sanguisorba minor</i>	8	B,R	-0.0008	0.25	13.63	307.29	0.32	0	1	1	0	0	0	0	0	0	1	0	0	1	0	0	0

<i>Saponaria officinalis</i>	6	R	0.0173	0.67	20.09	363.46	0.55	0	0	1	0	0	0	0	1	0	0	1	0	0	0	1
<i>Scabiosa columbaria</i>	18	B,R	-0.0073	0.33	16.00	217.36	0.45	0	1	1	0	0	0	0	0	0	1	0	0	1	0	0
<i>Scirpus sylvaticus</i>	52	S	-0.0068	0.25	21.60	267.20	0.65	0	0	1	0	1	0	0	0	0	1	0	0	1	0	1
<i>Sedum maximum</i>	12	D	0.0475	0.17	17.74	172.98	0.55	1	0	0	0	0	0	0	1	0	0	1	0	0	0	1
<i>Senecio jacobaea</i>	56	R,S	-0.0008	0.64	13.40	258.00	0.51	0	0	1	0	0	0	0	0	0	1	0	0	1	0	1
<i>Silaum silaus</i>	2	S	0.0017	1.00	13.93	293.66	0.65	0	1	1	0	0	0	0	1	0	0	0	0	1	0	1
<i>Silene dioica</i>	4	R	0.0117	0.50	37.11	133.14	0.60	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0
<i>Silene flos-cuculi</i>	64	B,R,S	0.0358	0.63	20.07	186.34	0.55	0	0	1	0	0	0	0	0	0	1	0	0	1	0	1
<i>Silene latifolia</i>	66	R,S	0.0191	0.39	19.93	170.90	0.64	0	0	1	0	0	0	0	0	0	1	1	0	0	0	1
<i>Silene otites</i>	30	D,R	0.0050	0.30	15.41	263.07	0.40	0	1	0	0	0	0	0	0	0	1	0	0	1	0	1
<i>Silene vulgaris</i>	4	R	-0.0114	0.50	22.70	202.72	0.35	0	1	1	0	0	0	0	0	0	1	1	0	0	0	0
<i>Symphytum officinale</i>	6	R	0.0171	0.33	16.73	117.82	0.75	0	0	0	1	1	0	0	1	0	0	0	0	1	1	0
<i>Tanacetum vulgare</i>	2	R	0.0163	0.00	17.25	262.16	0.90	0	1	0	0	0	0	0	1	0	0	1	0	0	0	1
<i>Thymus pulegioides</i>	12	R,S	-0.0066	0.25	17.05	355.82	0.25	0	1	0	0	0	0	0	0	0	1	1	0	0	0	1
<i>Torilis japonica</i>	10	R	0.0016	0.10	22.45	399.73	0.75	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0
<i>Tragopogon pratensis</i>	6	R	0.0145	0.33	34.42	203.53	0.38	0	0	1	0	0	0	0	1	0	0	0	0	1	0	0
<i>Trifolium dubium</i>	10	D,R	NA	0.00	35.00	236.22	0.17	0	0	1	0	0	0	0	0	1	0	1	0	0	0	0
<i>Trifolium montanum</i>	2	R	NA	0.00	21.65	281.33	0.27	0	1	1	0	0	0	0	1	0	0	0	0	1	0	0
<i>Trisetum flavescens</i>	50	B,R,S	0.0092	0.58	25.05	312.49	0.55	0	0	1	0	0	0	0	0	0	1	1	0	0	0	1
<i>Valeriana officinalis</i>	18	D,R	0.0098	0.44	30.56	122.96	1.15	0	0	0	1	1	0	0	1	0	0	0	0	1	0	1
<i>Veronica teucrium</i>	4	R	-0.0229	0.50	20.34	238.47	0.60	0	1	1	0	0	0	0	1	0	0	1	0	0	0	1
<i>Vicia cracca</i>	18	B,R	0.0051	0.11	20.81	298.67	0.75	0	0	1	0	0	0	0	1	0	0	1	0	0	0	1
<i>Vicia sepium</i>	4	S	0.0360	1.00	23.41	236.04	0.45	0	0	1	0	0	0	0	0	0	1	1	0	0	0	1
<i>Vicia villosa</i>	4	D,R	0.0237	0.00	42.45	234.87	0.35	0	0	1	0	0	0	0	0	1	0	1	0	0	0	0

28 **Table S3:** Number of included plots for calculating the mean of climatic variables.

	Air temperature	Soil temperature	Relative air humidity	Soil moisture
Veg. Period 2012	n = 48	n = 41	n = 46	n = 49
Winter 2012/2013	n = 51	n = 50	n = 51	n = 53
Veg. Period 2013	n = 52	n = 50	n = 52	n = 52

29

30 **Table S4:** Variance partitioning of RGR for all variables at all time intervals (1 - 4 = vegetation period 2012; 4 - 5 = winter 2012/2013; 5 - 7 =
31 vegetation period 2013), and aboveground biomass, LDMC and SLA at the final harvest in September 2013), exclusively explained by plot (a),
32 scenario (b), species (c) traits (d), and jointly by two (e, f, g, h, i, j) or three of these factors (k, l, m, n) or all of them (o), as well as residual variance
33 (p). For an illustration of variance components a to p see Fig. 1. All components add up to 1. p. proj. area = plant projection area. Traits included
34 Multi-trait FD, SLA FD/CWM, LDMC FD/CWM and Height FD /CWM.

	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	Plot	Scenario	Species	Trait
RGR height 1 - 4 ~ Multi-trait FD	0.126	0	0.375	0	0	0.042	0	0.001	0	0.001	0	0.003	0.008	0.004	0	0.452	0.123	0.051	0.422	0.012
RGR height 1 - 4 ~ SLA FD	0.127	0	0.375	0	0	0.049	0	0	0	0.001	0	0.003	0.001	0	0	0.452	0.123	0.051	0.422	0.001
RGR height 1 - 4 ~ LDMC FD	0.128	0	0.376	0	0	0.048	0	0	0	0	0	0.002	0.001	0.002	0	0.452	0.123	0.051	0.422	0.003
RGR height 1 - 4 ~ Height FD	0.109	0	0.376	0	0	0.049	0	0.017	0	0	0	0	0.001	0	0.005	0.452	0.123	0.051	0.422	0.018
RGR height 1 - 4 ~ SLA CWM	0.127	0	0.375	0	0	0.049	0	0	0	0	0	0.002	0	0.001	0	0.452	0.123	0.051	0.422	0.003
RGR height 1 - 4 ~ LDMC CWM	0.127	0	0.376	0	0	0.05	0	0	0	0	0	0.002	0	0	0	0.452	0.123	0.051	0.422	0
RGR height 1 - 4 ~ Height CWM	0.125	0	0.376	0	0	0.05	0	0.002	0	0	0	0.001	0	0	0	0.452	0.123	0.051	0.422	0
RGR p. proj. area 1 - 4 ~ Multi-trait FD	0.126	0.001	0.199	0.005	0	0	0.01	0	0	0.004	0	0.001	0.001	0	0	0.665	0.127	0	0.209	0
RGR p. proj. area 1 - 4 ~ SLA FD	0.122	0	0.2	0.001	0	0	0.009	0	0	0.003	0	0	0	0	0	0.669	0.127	0	0.209	0
RGR p. proj. area 1 - 4 ~ LDMC FD	0.123	0.001	0.2	0.002	0	0	0.008	0	0	0.003	0	0	0	0	0	0.668	0.127	0	0.209	0
RGR p. proj. area 1 - 4 ~ Height FD	0.098	0	0.203	0	0	0	0.012	0.024	0	0	0	0	0	0	0.001	0.67	0.127	0	0.209	0.018
RGR p. proj. area 1 - 4 ~ SLA CWM	0.122	0	0.203	0	0	0	0.001	0	0	0	0	0	0	0.005	0	0.67	0.127	0	0.209	0.004
RGR p. proj. area 1 - 4 ~ LDMC CWM	0.122	0.001	0.202	0.002	0	0	0	0	0	0.001	0	0	0	0.006	0	0.667	0.127	0	0.209	0.008
RGR p. proj. area 1 - 4 ~ Height CWM	0.109	0	0.202	0	0	0	0.008	0.012	0	0.001	0	0	0	0	0	0.669	0.127	0	0.209	0.013
RGR leaf length 1 - 4 ~ Multi-trait FD	0.129	0.004	0.205	0.002	0	0.002	0.003	0	0	0.001	0.001	0.004	0.002	0	0	0.656	0.13	0.008	0.213	0
RGR leaf length 1 - 4 ~ SLA FD	0.126	0.003	0.205	0	0	0.004	0.003	0	0	0	0	0.002	0	0	0	0.658	0.13	0.008	0.213	0
RGR leaf length 1 - 4 ~ LDMC FD	0.126	0.004	0.205	0	0	0.004	0.001	0.001	0	0	0	0.002	0	0.001	0	0.658	0.13	0.008	0.213	0.003
RGR leaf length 1 - 4 ~ Height FD	0.105	0.003	0.206	0.001	0	0.003	0.004	0.022	0	0	0	0	0	0	0.002	0.657	0.13	0.008	0.213	0.021
RGR leaf length 1 - 4 ~ SLA CWM	0.129	0.003	0.206	0.002	0	0.003	0.002	0	0	0	0	0.002	0	0	0	0.656	0.13	0.008	0.213	0
RGR leaf length 1 - 4 ~ LDMC CWM	0.126	0.003	0.206	0	0	0.004	0	0.001	0	0	0	0.002	0	0.002	0	0.658	0.13	0.008	0.213	0.003

RGR leaf length 1 - 4 ~ Height CWM	0.114	0.003	0.206	0	0	0.004	0.001	0.012	0	0	0	0	0.001	0.001	0.658	0.13	0.008	0.213	0.015
RGR leaf number 1 - 4 ~ Multi-trait FD	0.043	0.002	0.202	0	0	0.009	0.014	0	0	0	0	0	0	0	0.731	0.057	0.01	0.224	0
RGR leaf number 1 - 4 ~ SLA FD	0.044	0.002	0.202	0	0	0.009	0.014	0	0	0	0	0	0	0	0.731	0.057	0.01	0.224	0
RGR leaf number 1 - 4 ~ LDMC FD	0.044	0.002	0.202	0	0	0.009	0.014	0	0	0	0	0	0	0	0.731	0.057	0.01	0.224	0
RGR leaf number 1 - 4 ~ Height FD	0.044	0.002	0.202	0	0	0.009	0.014	0	0	0	0	0	0	0	0.731	0.057	0.01	0.224	0
RGR leaf number 1 - 4 ~ SLA CWM	0.044	0.001	0.203	0.002	0	0.008	0.015	0	0	0	0	0	0	0	0.729	0.057	0.01	0.224	0
RGR leaf number 1 - 4 ~ LDMC CWM	0.043	0.001	0.202	0	0	0.009	0.015	0.001	0	0	0	0	0	0	0.73	0.057	0.01	0.224	0
RGR leaf number 1 - 4 ~ Height CWM	0.043	0.002	0.202	0	0	0.009	0.015	0	0	0	0	0	0	0	0.731	0.057	0.01	0.224	0
RGR height 4 - 5 ~ Multi-trait FD	0.351	0.002	0.145	0	0.001	0.033	0	0.006	0	0	0	0	0	0	0.479	0.342	0.022	0.163	0.003
RGR height 4 - 5 ~ SLA FD	0.353	0.001	0.146	0	0.001	0.033	0	0.003	0	0	0	0	0	0	0.479	0.342	0.022	0.163	0.003
RGR height 4 - 5 ~ LDMC FD	0.348	0.001	0.145	0	0	0.033	0	0.008	0	0.001	0.001	0	0	0	0.479	0.342	0.022	0.163	0.007
RGR height 4 - 5 ~ Height FD	0.334	0.001	0.146	0.001	0.001	0.033	0	0.022	0	0	0	0	0.003	0.002	0.477	0.342	0.022	0.163	0.027
RGR height 4 - 5 ~ SLA CWM	0.359	0.001	0.146	0.002	0.001	0.033	0	0	0	0	0	0	0	0	0.477	0.342	0.022	0.163	0
RGR height 4 - 5 ~ LDMC CWM	0.352	0.002	0.146	0	0.001	0.033	0	0.005	0	0	0	0	0	0.001	0.478	0.342	0.022	0.163	0.004
RGR height 4 - 5 ~ Height CWM	0.352	0.001	0.146	0	0.001	0.032	0	0.004	0	0	0	0	0.001	0	0.479	0.342	0.022	0.163	0.006
RGR p. proj. area 4 - 5 ~ Multi-trait FD	0.204	0	0.135	0.001	0.001	0.049	0.012	0.001	0	0	0	0	0	0	0.61	0.206	0.038	0.185	0
RGR p. proj. area 4 - 5 ~ SLA FD	0.206	0	0.136	0.001	0	0.049	0.01	0	0	0	0	0	0.002	0	0.61	0.206	0.038	0.185	0
RGR p. proj. area 4 - 5 ~ LDMC FD	0.205	0	0.135	0.003	0	0.05	0.011	0	0	0	0	0	0.001	0	0.608	0.206	0.038	0.185	0.002
RGR p. proj. area 4 - 5 ~ Height FD	0.204	0	0.135	0.003	0.001	0.051	0.01	0.001	0	0	0	0	0.003	0.003	0.607	0.206	0.038	0.185	0.007
RGR p. proj. area 4 - 5 ~ SLA CWM	0.203	0	0.136	0.004	0	0.049	0.014	0.001	0	0	0	0	0	0	0.607	0.206	0.038	0.185	0.001
RGR p. proj. area 4 - 5 ~ LDMC CWM	0.199	0	0.135	0	0.001	0.049	0.015	0.005	0	0	0	0	0	0.001	0.611	0.206	0.038	0.185	0.002
RGR p. proj. area 4 - 5 ~ Height CWM	0.203	0	0.135	0	0.001	0.049	0.011	0.001	0	0	0	0	0.002	0.001	0.611	0.206	0.038	0.185	0.003
RGR leaf length 4 - 5 ~ Multi-trait FD	0.27	0	0.106	0	0	0.025	0.032	0.005	0	0	0	0	0.006	0	0.565	0.305	0.016	0.161	0.009
RGR leaf length 4 - 5 ~ SLA FD	0.273	0	0.106	0	0	0.025	0.035	0.003	0	0	0	0	0.003	0	0.566	0.305	0.016	0.161	0.005
RGR leaf length 4 - 5 ~ LDMC FD	0.266	0	0.105	0	0	0.025	0.025	0.009	0	0	0	0	0.012	0	0.565	0.305	0.016	0.161	0.022
RGR leaf length 4 - 5 ~ Height FD	0.265	0	0.106	0.001	0	0.026	0.033	0.011	0	0	0	0	0.004	0.003	0.564	0.305	0.016	0.161	0.018
RGR leaf length 4 - 5 ~ SLA CWM	0.278	0	0.107	0.002	0	0.025	0.035	0	0	0	0	0	0.003	0	0.563	0.305	0.016	0.161	0.001
RGR leaf length 4 - 5 ~ LDMC CWM	0.274	0	0.106	0	0	0.025	0.039	0.002	0	0	0	0	0	0	0.565	0.305	0.016	0.161	0
RGR leaf length 4 - 5 ~ Height CWM	0.272	0	0.106	0	0	0.025	0.031	0.004	0	0	0	0	0.006	0.002	0.566	0.305	0.016	0.161	0.011
RGR leaf number 4 - 5 ~ Multi-trait FD	0.091	0	0.202	0	0.001	0.019	0.049	0.001	0	0	0	0	0.004	0.001	0.642	0.139	0.012	0.266	0.005

RGR leaf number 4 - 5 ~ SLA FD	0.087	0	0.201	0	0.001	0.019	0.046	0.005	0	0	0	0	0.007	0	0.642	0.139	0.012	0.266	0.011	
RGR leaf number 4 - 5 ~ LDMC FD	0.089	0	0.201	0	0.001	0.019	0.048	0.003	0	0	0	0	0.005	0.001	0.642	0.139	0.012	0.266	0.008	
RGR leaf number 4 - 5 ~ Height FD	0.093	0	0.202	0.002	0.001	0.02	0.053	0	0	0	0	0	0	0	0.64	0.139	0.012	0.266	0.001	
RGR leaf number 4 - 5 ~ SLA CWM	0.09	0	0.202	0	0.001	0.019	0.054	0.002	0	0	0	0	0	0	0.642	0.139	0.012	0.266	0.001	
RGR leaf number 4 - 5 ~ LDMC CWM	0.089	0	0.202	0	0.001	0.019	0.053	0.003	0	0	0	0	0	0	0.642	0.139	0.012	0.266	0.003	
RGR leaf number 4 - 5 ~ Height CWM	0.091	0	0.202	0	0.001	0.019	0.051	0.001	0	0	0	0	0.002	0	0.642	0.139	0.012	0.266	0.001	
RGR height 5 - 7 ~ Multi-trait FD	0.375	0.002	0.16	0	0.004	0.016	0.017	0.016	0	0	0	0	0	0	0.423	0.4	0.012	0.182	0.01	
RGR height 5 - 7 ~ SLA FD	0.379	0.002	0.159	0	0.004	0.016	0.01	0.011	0	0.001	0	0	0.001	0.005	0	0.422	0.4	0.012	0.182	0.017
RGR height 5 - 7 ~ LDMC FD	0.36	0.002	0.16	0	0.002	0.016	0.014	0.031	0	0	0.002	0	0	0.001	0	0.422	0.4	0.012	0.182	0.029
RGR height 5 - 7 ~ Height FD	0.388	0.002	0.16	0	0.004	0.016	0.013	0.003	0	0	0	0	0.003	0	0.422	0.4	0.012	0.182	0.005	
RGR height 5 - 7 ~ SLA CWM	0.387	0.002	0.16	0	0.004	0.016	0.012	0.003	0	0	0	0	0.003	0	0.422	0.4	0.012	0.182	0.005	
RGR height 5 - 7 ~ LDMC CWM	0.391	0.002	0.16	0	0.004	0.016	0.015	0	0	0	0	0	0	0.001	0.423	0.4	0.012	0.182	0.001	
RGR height 5 - 7 ~ Height CWM	0.39	0.002	0.159	0	0.003	0.017	0.014	0.001	0	0	0	0	0.002	0.001	0.422	0.4	0.012	0.182	0.004	
RGR p. proj. area 5 - 7 ~ Multi-trait FD	0.181	0	0.159	0.001	0.001	0.003	0	0.007	0	0	0	0	0.002	0.001	0.656	0.183	0	0.155	0.01	
RGR p. proj. area 5 - 7 ~ SLA FD	0.177	0	0.157	0	0.001	0.002	0	0.011	0	0.002	0	0	0.007	0	0.657	0.183	0	0.155	0.019	
RGR p. proj. area 5 - 7 ~ LDMC FD	0.176	0	0.159	0	0	0.002	0	0.012	0	0	0.001	0	0	0.004	0	0.658	0.183	0	0.155	0.015
RGR p. proj. area 5 - 7 ~ Height FD	0.187	0	0.159	0	0.001	0.002	0	0.001	0	0	0	0	0.001	0	0.658	0.183	0	0.155	0.001	
RGR p. proj. area 5 - 7 ~ SLA CWM	0.183	0	0.159	0	0.001	0.002	0	0.005	0	0	0	0	0.006	0	0.658	0.183	0	0.155	0.01	
RGR p. proj. area 5 - 7 ~ LDMC CWM	0.189	0	0.158	0.001	0.001	0.002	0	0	0	0.001	0	0	0	0	0.657	0.183	0	0.155	0	
RGR p. proj. area 5 - 7 ~ Height CWM	0.184	0	0.158	0	0.001	0.002	0	0.004	0	0.001	0	0	0.003	0	0.658	0.183	0	0.155	0.007	
RGR leaf length 5 - 7 ~ Multi-trait FD	0.312	0	0.097	0.004	0	0.001	0.043	0	0	0	0.005	0.001	0.008	0	0.533	0.365	0.003	0.152	0.01	
RGR leaf length 5 - 7 ~ SLA FD	0.289	0	0.095	0.004	0	0.002	0.038	0.023	0	0.002	0	0.001	0	0.013	0.001	0.533	0.365	0.003	0.152	0.043
RGR leaf length 5 - 7 ~ LDMC FD	0.295	0	0.098	0.001	0	0.002	0.029	0.017	0	0	0.004	0	0.022	0	0.536	0.365	0.003	0.152	0.038	
RGR leaf length 5 - 7 ~ Height FD	0.311	0	0.097	0	0	0.002	0.049	0.001	0	0	0.002	0	0.003	0	0.538	0.365	0.003	0.152	0.003	
RGR leaf length 5 - 7 ~ SLA CWM	0.307	0	0.097	0	0	0.003	0.041	0.005	0	0	0.003	0	0.01	0	0.537	0.365	0.003	0.152	0.014	
RGR leaf length 5 - 7 ~ LDMC CWM	0.313	0	0.096	0	0	0.003	0.051	0	0	0.001	0	0.002	0	0.001	0	0.537	0.365	0.003	0.152	0
RGR leaf length 5 - 7 ~ Height CWM	0.32	0	0.094	0.007	0	0.002	0.052	0	0	0.003	0	0.002	0	0	0	0.53	0.365	0.003	0.152	0.002
RGR leaf number 5 - 7 ~ Multi-trait FD	0.079	0	0.193	0	0	0.007	0.014	0.004	0	0	0	0	0	0	0.711	0.092	0.002	0.209	0.001	
RGR leaf number 5 - 7 ~ SLA FD	0.08	0	0.188	0	0	0.007	0.008	0.003	0	0.005	0	0	0.004	0	0.711	0.092	0.002	0.209	0.011	
RGR leaf number 5 - 7 ~ LDMC FD	0.083	0	0.193	0	0	0.007	0.011	0	0	0	0	0	0.001	0	0.711	0.092	0.002	0.209	0	

RGR leaf number 5 - 7 ~ Height FD	0.083	0	0.193	0	0	0.007	0.012	0	0	0	0	0	0	0	0.711	0.092	0.002	0.209	0	
RGR leaf number 5 - 7 ~ SLA CWM	0.08	0	0.189	0	0	0.006	0.013	0.003	0	0.003	0	0	0.001	0	0.711	0.092	0.002	0.209	0.006	
RGR leaf number 5 - 7 ~ LDMC CWM	0.083	0	0.191	0	0	0.007	0.014	0	0	0.002	0	0	0	0	0.711	0.092	0.002	0.209	0	
RGR leaf number 5 - 7 ~ Height CWM	0.079	0	0.193	0	0	0.007	0.013	0.003	0	0	0	0	0	0	0.711	0.092	0.002	0.209	0.002	
Biomass ~ Multi-trait FD	0.101	0	0.222	0.001	0	0.002	0.053	0.02	0	0	0	0	0.008	0.001	0.593	0.184	0.002	0.285	0.03	
Biomass ~ SLA FD	0.12	0	0.22	0	0	0.001	0.057	0.001	0	0.002	0	0	0.004	0.001	0.595	0.184	0.002	0.285	0.008	
Biomass ~ LDMC FD	0.098	0	0.222	0	0	0.001	0.052	0.023	0	0	0.001	0.001	0	0.009	0	0.595	0.184	0.002	0.285	0.032
Biomass ~ Height FD	0.121	0	0.223	0	0	0.001	0.058	0	0	0	0	0	0.003	0	0.594	0.184	0.002	0.285	0.003	
Biomass ~ SLA CWM	0.091	0	0.222	0	0.001	0.001	0.026	0.03	0	0	0	0	0.035	0.001	0.595	0.184	0.002	0.285	0.065	
Biomass ~ LDMC CWM	0.11	0	0.22	0	0.001	0.001	0.031	0.011	0	0.002	0	0	0.029	0.001	0.594	0.184	0.002	0.285	0.043	
Biomass ~ Height CWM	0.102	0	0.222	0.002	0	0.001	0.053	0.02	0	0	0.002	0	0.008	0	0.592	0.184	0.002	0.285	0.029	
LDMC ~ Multi-trait FD	0.134	0.002	0.298	0	0	0.016	0.043	0	0	0.001	0	0.014	0	0	0.004	0.492	0.192	0.032	0.373	0.004
LDMC ~ SLA FD	0.13	0.002	0.298	0.001	0	0.015	0.04	0.004	0	0.001	0	0.017	0	0.003	0.001	0.491	0.192	0.032	0.373	0.008
LDMC ~ LDMC FD	0.128	0.002	0.3	0	0	0.014	0.035	0.006	0	0	0	0.015	0	0.008	0.002	0.492	0.192	0.032	0.373	0.015
LDMC ~ Height FD	0.132	0.002	0.299	0	0	0.014	0.045	0.002	0	0	0	0.018	0.001	0	0	0.492	0.192	0.032	0.373	0
LDMC ~ SLA CWM	0.131	0.002	0.299	0	0	0.014	0.034	0.003	0	0	0	0.016	0	0.009	0.001	0.493	0.192	0.032	0.373	0.011
LDMC ~ LDMC CWM	0.13	0.002	0.298	0	0	0.013	0.042	0.004	0	0.001	0	0.015	0.001	0.001	0.002	0.492	0.192	0.032	0.373	0.008
LDMC ~ Height CWM	0.134	0.002	0.299	0	0	0.014	0.041	0	0	0	0	0.018	0	0.002	0	0.493	0.192	0.032	0.373	0
SLA ~ Multi-trait FD	0.19	0	0.224	0	0	0.023	0.008	0.001	0	0	0	0.023	0.001	0.007	0.003	0.522	0.231	0.048	0.289	0.012
SLA ~ SLA FD	0.181	0	0.224	0	0	0.024	0.018	0.01	0	0	0	0.027	0	0	0	0.522	0.231	0.048	0.289	0.005
SLA ~ LDMC FD	0.186	0	0.225	0	0	0.024	0.005	0.006	0	0	0	0.024	0	0.01	0.002	0.522	0.231	0.048	0.289	0.017
SLA ~ Height FD	0.193	0	0.225	0.003	0	0.024	0.015	0	0	0	0	0.026	0.001	0	0	0.519	0.231	0.048	0.289	0
SLA ~ SLA CWM	0.187	0	0.224	0	0	0.024	0	0.004	0	0	0	0.025	0	0.021	0.001	0.522	0.231	0.048	0.289	0.025
SLA ~ LDMC CWM	0.187	0	0.224	0	0	0.024	0.005	0.004	0	0	0	0.02	0	0.01	0.006	0.522	0.231	0.048	0.289	0.019
SLA ~ Height CWM	0.198	0	0.224	0.006	0	0.026	0.012	0	0	0	0	0.026	0	0.003	0	0.516	0.231	0.048	0.289	0.001

36 **Table S5:** Final models and their relative proportion of variances explained by the random factors
 37 Exploratory, plot (nested in Exploratory), subplot (nested in plot) and species identity (crossed with the other random factors) as well as residual
 38 variance. p. proj. area = plant projection area.
 39

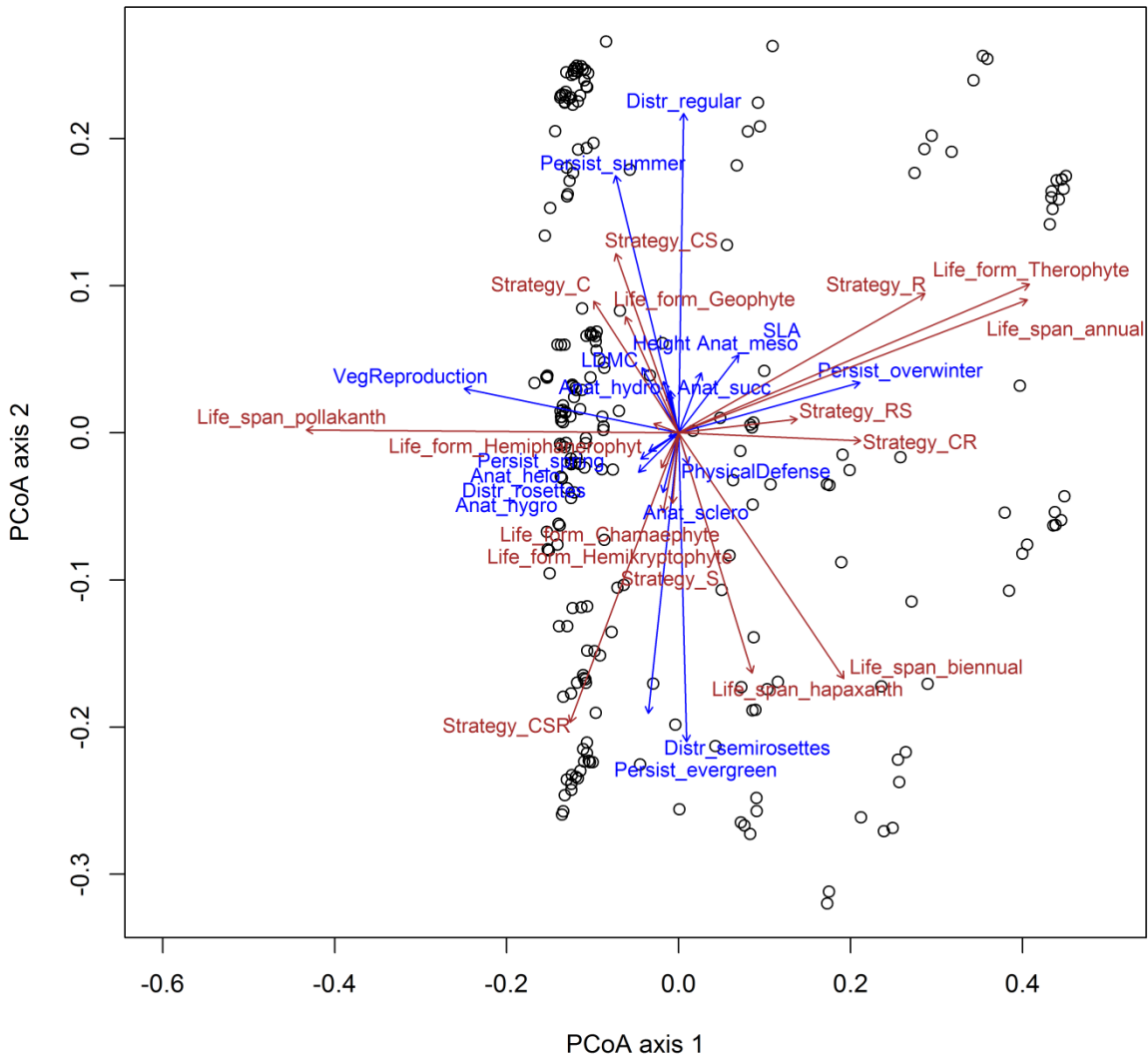
Responses	Predictors	Variance of random factors %				
		Explo	Plot	Subplot	Species	Residuals
Veg. period 2012						
RGR height	Multi-trait FD	0.066	0.098	0.031	0.340	0.466
RGR p. proj. area	Multi-trait FD	0.011	0.113	0.036	0.254	0.586
RGR leaf length	Height FD + Scen	0.028	0.090	0.019	0.241	0.622
RGR leaf number	SLA FD * Scen	0.006	0.047	0.009	0.257	0.681
Winter 2012/2013						
RGR height	LUI + Height FD * Scen + Height CWM * Scen	0.285	0.163	0.039	0.120	0.393
RGR p. proj. area	LUI + Height FD * Scen + SLA CWM + LDMC CWM + Height CWM	0.123	0.124	0.021	0.191	0.541
RGR leaf length	LUI + Height FD * Scen + Height CWM * Scen	0.245	0.126	0.042	0.107	0.481
RGR leaf number	LUI + Height FD + SLA CWM * Scen	0.029	0.077	0.000	0.326	0.567
Veg. period 2013						
RGR height	LUI	0.375	0.135	0.019	0.150	0.322
RGR p. proj. area	SLA FD	0.127	0.102	0.005	0.160	0.605
RGR leaf length	SLA FD + Height CWM	0.331	0.130	0.002	0.093	0.443
RGR leaf number	Multi-trait FD + SLA FD	0.017	0.058	0.022	0.251	0.652
Harvest 2013						
Biomass	LUI + Multi-trait FD * Scen + LDMC FD * Scen + SLA CWM * Scen	0.000	0.097	0.001	0.286	0.617
SLA	Height CWM + LDMC CWM * Scen	0.102	0.173	0.001	0.209	0.514
LDMC	SLA FD + LDMC FD + SLA CWM * Scen + LDMC CWM * Scen	0.000	0.148	0.009	0.383	0.460

41 **Table S6:** Final models that were improved with respect to AIC by adding climate variables: soil moisture (SM) and relative air humidity (rH).
 42 These models were only calculated for plots, for which climate data were available (for number of plots see SI Table S3). In all cases, the predictors
 43 remained significant after the climate variable had been added.

44

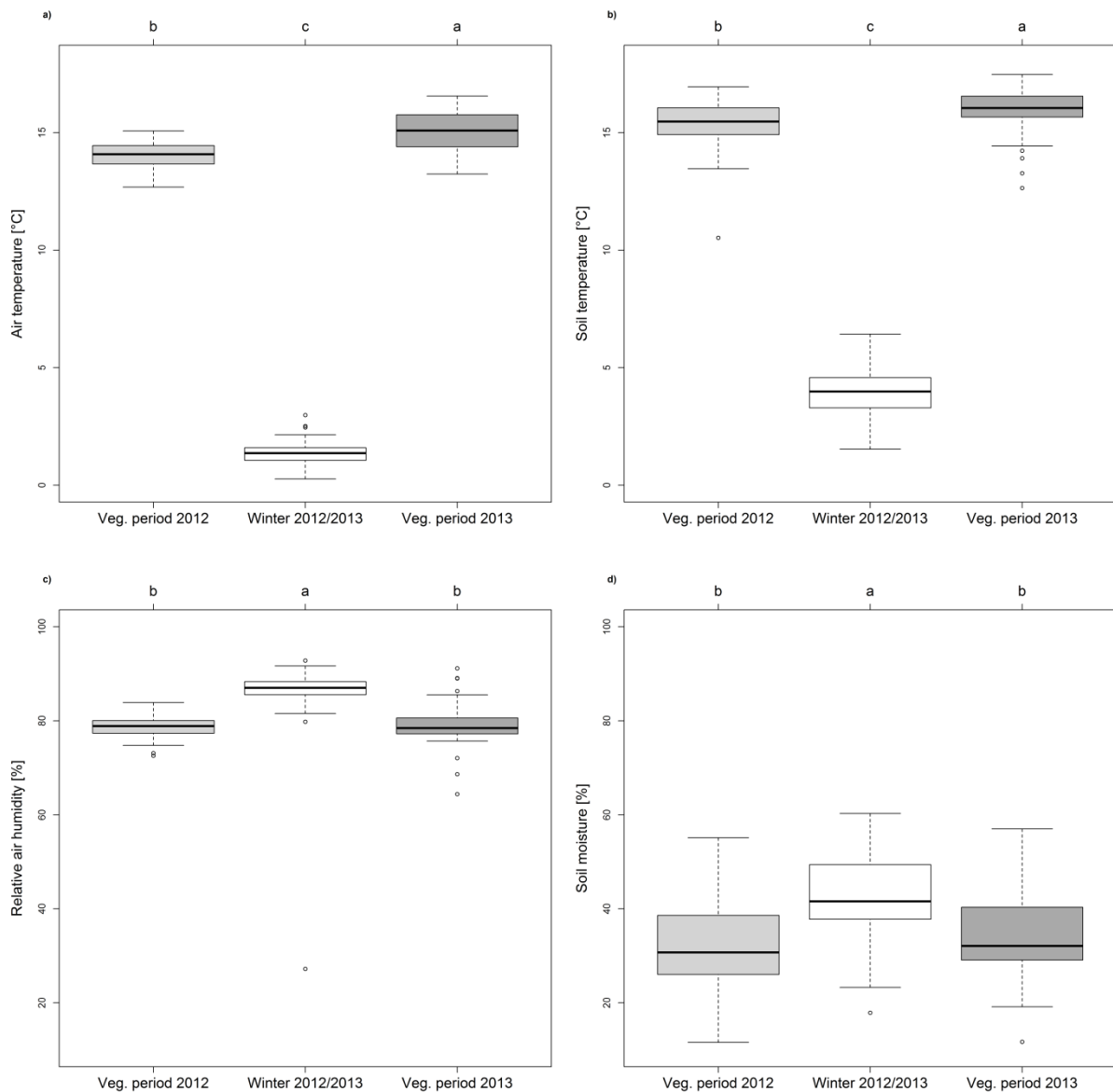
Responses	Predictors	Added c. variable	AIC without c. variable	AIC with c. variable	Estimate c. variable	P-value c. variable
Winter 2012/2013						
RGR height	LUI + Height FD * Scen + Height CWM * Scen	SM	3340.5	3334.6	-0.0206	0.0050
RGR p. proj. area	LUI + Height FD * Scen + SLA CWM + LDMC CWM + Height CWM	SM	3724.4	3712.4	-0.0232	0.0002
RGR leaf length	LUI + Height FD * Scen + Height CWM * Scen	SM	3551.3	3543	-0.0210	0.0014
RGR leaf number	LUI + Height FD + SLA CWM * Scen	SM	3781.1	3765.3	-0.0208	0.0000
Veg. period 2013						
RGR height	LUI	SM	2529.3	2525.7	0.0157	0.0183
RGR p. proj. Area	SLA FD	SM	2943.6	2941.5	0.0123	0.0431
RGR leaf length	SLA FD + Height CWM	SM	2614.6	2609.4	0.0177	0.0074
Harvest 2013						
SLA	Height CWM + LDMC CWM * Scen	SM	2634.3	2620	0.0274	0.0001
LDMC	SLA FD + LDMC FD + SLA CWM * Scen + LDMC CWM * Scen	rH	2616	2613.1	0.0284	0.0296

45



47

48 **Figure S1:** Principal coordinate analysis (PCoA) on multi-trait distances based on 11 traits
 49 (SLA, LDMC, height, anatomy, persistence, leaf distribution, vegetative reproduction,
 50 physical defense, life span, life form, strategy type) and all species, either planted as
 51 phytometers or resident species (n= 227). Traits included in the multi-trait distance used for
 52 selecting species in the different scenarios (see SI Table S1) are shown in blue, further traits
 53 are shown in brown. Trait correlations with the first and second PCoA axes were derived from
 54 a post-hoc regression. The further axes are captured by traits included in our multi-trait
 55 measure (3rd axis: leaf distribution, 4th axis leaf anatomy).



56

57 **Figure S2:** Mean climate data during the time of our experiment. Air temperature a) and
 58 relative air humidity c) were measured at two meters above ground level; soil temperature b)
 59 and soil moisture d) were measured at 10 cm below-ground. All climate data were measured
 60 at 10 minutes intervals by data loggers installed near the experimental plots and then
 61 aggregated to monthly mean values. Here, we present mean values aggregated to the three
 62 investigated time spans (vegetation period 2012, winter 2012/2013 and vegetation period
 63 2013) in our study plots (n= 54). Small letters refer to statistically significant differences
 64 according to a post-hoc Tukey test. Due to logger failure, in some plots the climate data were

65 not complete and plot number differed among time periods for the different variables (see SI
66 Table S3).

67