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Supplement of

Testing functional trait-based mechanisms underpinning plant responses to grazing and linkages to ecosystem functioning in grasslands

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Supplementary material

Appendix A

Table A1. Principal components analysis (PCA) of species-trait correlation matrix.

All variables were log10-transformed. Eigenvectors $>|0.40|$ are highlighted in bold.

Percents reflect the percent of total variance (i.e. the sum of the diagonal elements in

the correlation matrix) accounted for by each principal component.

	PC1	PC2	PC3
Eigenvalues	3.91	1.71	1.22
% of Variance	43.43	19.03	13.50
Cumulative % variance	43.43	62.46	75.96
Eigenvectors			
Plant height (PH)	0.211	0.420	-0.419
Plant individual biomass (PB)	0.497	0.004	-0.018
Stem-leaf biomass ratio (SLR)	0.067	0.661	-0.024
Stem biomass (SB)	0.466	0.198	0.005
Leaf biomass (LB)	0.472	-0.217	-0.009
Total leaf area (TLA)	0.432	-0.084	0.044
Leaf density (LD)	0.269	-0.192	0.494
Specific leaf area (SLA)	-0.052	0.424	0.199
Leaf N content (LNC)	-0.056	0.277	0.733

Table A2. Results of general linear model (GLM) analyses on the effects of grazing (G), field hold capacity (F), and their interactions on five plant functional traits. PH, plant height; PB, plant individual biomass; SLR, stem-leaf biomass ratio; SLA, specific leaf area; LNC, leaf nitrogen content.

Source	Functional traits	<i>df</i>	Mean Square	<i>F</i>	<i>P</i> -value
Grazing (G)	PH	1	6450.95	20.7968	0.0000
	PB	1	77.39	4.2059	0.0413
	SLR	1	0.65	0.1470	0.7017
	SLA	1	1568.03	1.0269	0.3119
	LNC	1	0.57	1.1152	0.2920
Field hold capacity (F)	PH	5	283.27	0.9132	0.4730
	PB	5	26.52	1.4412	0.2101
	SLR	5	28.19	6.4065	0.0000
	SLA	5	71381.48	46.7490	0.0000
	LNC	5	2.89	5.6848	0.0001
G×F	PH	5	1097.17	3.5371	0.0042
	PB	5	15.45	0.8397	0.5226
	SLR	5	1.18	0.2682	0.9302
	SLA	5	1545.74	1.0123	0.4109
	LNC	5	1.67	3.2917	0.0068

Table A3. Plant functional traits of three life forms across six grassland communities. AB, annuals and biennials; PF, perennial forbs; PG, perennial grasses; SLR, stem-leaf biomass ratio; SLA, specific leaf area. *P* values following one-way ANOVAs indicate differences in functional traits among three life forms. Different lowercases represent significant differences among life forms (LSD multiple-range tests, $P < 0.05$). The sample sizes are 20, 90 and 26 for AB, PF and PG, respectively across six grassland communities.

Life forms	Plant height (cm)	Individual biomass (g)	SLR ($\text{g} \cdot \text{g}^{-1}$)	SLA ($\text{cm}^2 \cdot \text{g}^{-1}$)	Leaf N content (%)	Palatability scores
AB	36.47ab	3.64	2.67a	154.78a	2.98a	0.1938b
PF	28.47b	2.45	0.91b	141.16ab	2.32b	0.3361b
PG	47.20a	4.32	2.51a	126.45b	2.33b	0.9231a
<i>P</i> value	<0.0001	NS	<0.0001	0.0745	0.0005	<0.0001