Supplemental Material

Table 1. Total (mg/kg) and extractable (mg/l) mineral concentrations in the growing medium prior to plant growth, and an indication of the level compared to plant requirements.

Element	Total (mg/kg)	Extractable Mg/l	Extractant	Level compared to plant requirements	Reference
P	620 ± 22.98	20.8 ± 0.44	Olsen P	Index 2 - Adequate	AHDB 2020
K	2190 ± 99.77	111 ± 2.54	Ammonium nitrate	Index 1 - Low (but almost index 2 - Adequate)	AHDB 2020
Mg	2450 ± 118.1	167 ± 4.05	Ammonium nitrate	Index 3 - Optimal	AHDB 2020
Co	6.64 ± 0.2048	0.286 ± 0.00248	Mehlich III		
Cu	13.7 ± 0.865	3.90 ± 0.06372	Mehlich III	Medium	158 Irish Grassland soils mean ± s.e. 3.4 ± 2.1 (Brennan et al. 2008) Zbiral 2016
Fe	38900 ± 865.0	370 ± 0.8445	Mehlich III	Medium	Zbiral 2016
Mn	401 ± 22.34	27.3 ± 0.2041	Mehlich III	Low (almost medium)	Zbiral 2016
Mo	0.941 ± 0.0263	0.208 ± 0.01029	Mehlich III		
Se	0.344 ± 0.0153		Mehlich III	Low; 25 percentile of concentrations in England and Wales topsoils	Rawlins et al. 2011
S	255 ± 13.83	57.0 ± 1.040	Mehlich III		
Zn	64.3 ± 2.324	4.08 ± 0.08517	Mehlich III	Medium	158 Irish Grassland soils mean ± s.e. 5.0 ± 4.2 (Brennan et al. 2008) Zbiral 2016
CEC		Meq/100g 14.1 ± 0.395	Mehlich III Ammonium nitrate	Medium.	Hazelton and Murphy 2007.

Table S2. Summary of LMM analysis showing whether there is a statistically significant effect of plant type (wild/cultivated), botanical group (forb/grass/legume), and an interaction between type and botanical group, for the concentration of 9 elements in the plant biomass. The analysis was performed on a subset of the dataset, comprising only of species where both a wild and cultivated seed was available; see Table A for details.

	Plant type	**Botanical group**	**Type-botanical group interaction**
I	0.508	< 0.001	0.016
Cu	< 0.001	< 0.001	< 0.001
Co	0.278	< 0.001	0.002
Se	0.037	0.047	0.146
Mo	0.061	< 0.001	0.008
Zn	< 0.001	< 0.001	< 0.001
Mn	0.3111	< 0.001	0.360
Fe	0.572	< 0.001	0.242
S	0.444	< 0.001	0.044

Table S3. Concentrations (mg kg^{-1} DM) of elements in plant material for elements where plant type (wild/cultivated) significantly affected the concentration. The analysis was performed on a subset of the dataset, comprising only of species where both a wild and cultivated seed was available; see Table A for details. Values are means and confidence intervals for the plant type across replicates and different species. Where there was a significant ($P < 0.05$) interaction between botanical group (forb/grass/legume) and plant type, values for botanical group are presented separately. Letters show significant differences within an element.

Element	Botanical group	Cultivated	Confidence interval	Wild	Confidence interval
I	Forb	1.85 ^{a}	1.754 – 1.943	2.07 ^{a}	1.986 – 2.150
	Grass	0.814 ^{b}	0.7822 – 0.8466	0.629 ^{c}	0.6008 – 0.6590
	Legume	0.804 ^{b}	0.7772 – 0.8323	0.552 ^{c}	0.5288 – 0.5753
Cu	Forb	6.63 ^{c}	6.426 – 6.832	6.68 ^{c}	6.528 – 6.836
	Grass	6.61 ^{c}	6.452 – 6.760	5.80 ^{d}	5.614 – 5.978
	Legume	11.7 ^{a}	11.53 – 11.78	9.43 ^{b}	9.268 – 9.598
Co	Forb	0.126 ^{c}	0.1192 – 0.1323	0.162 ^{b}	0.1560 – 0.1689
	Grass	0.140 ^{c}	0.1346 – 0.1458	0.134 ^{c}	0.1274 – 0.1399
	Legume	0.207 ^{a}	0.2008 – 0.2142	0.160 ^{b}	0.1529 – 0.1665
Mo	Forb	1.44 ^{c}	1.360 – 1.528	1.64 ^{c}	1.570 – 1.711
	Grass	4.52 ^{ab}	4.333 – 4.7230	5.07 ^{a}	4.818 – 5.343
	Legume	4.75 ^{a}	4.585 – 4.916	3.49 ^{b}	3.332 – 3.656
Zn	Forb	18.0 ^{c}	17.22 – 18.79	16.5 ^{c}	15.98 – 17.08
	Grass	38.0 ^{b}	36.77 – 39.31	41.8 ^{b}	40.17 – 43.46
	Legume	54.3 ^{a}	52.87 – 55.82	35.2 ^{b}	34.00 – 36.52
S	Forb	2740 ^{b}	2637 – 2837	2300 ^{c}	2236 – 2369
	Grass	3440 ^{a}	3345 – 3545	3450 ^{a}	3338 – 3568
	Legume	2400 ^{bc}	2347 - 2464	2440 ^{bc}	2364 - 2514
		Mean	Confidence interval		
Se	Wild	0.135 ^{b}	0.1329 – 0.1373		
	Cultivated	0.121 ^{a}	0.1185 – 0.1231		

Table S4. Summary of LMM analysis showing whether there is a statistically significant effect of plant type (wild/cultivated), botanical group (forb/grass/legume), and an interaction between type and botanical group, for the mass of 9 elements in the plant biomass.

	Plant type	Botanical group	Type-botanical group interaction
I	0.576	<0.001	0.006
Cu	0.078	<0.001	0.038
Co	0.956	<0.001	0.010
Se	0.680	<0.001	0.108
Mo	0.157	<0.001	0.001
Zn	0.009	<0.001	0.050
Mn	0.188	<0.001	0.024

Fe	0.743	<0.001	0.148
S	0.722	<0.001	0.562

Table S5. Mass of elements in 10 plants. Values are means and confidence intervals for the botanical groups (grass/legume/forb) and plant type (wild/cultivated) across replicates and different species.

Element	Botanical group	Units	Cultivated	Confidence interval	Wild	Confidence interval
I	Forb	µg	12.1 ^{b}	11.26 – 12.91	16.9 ^{a}	15.76 – 18.07
	Grass		4.15 ^{c}	3.981 – 4.325	3.70 ^{c}	3.484 – 3.932
	Legume		3.46 ^{c}	3.298 – 3.640	2.01 ^{d}	1.880 – 2.152
Cu	Forb	µg	49.7 ^{b}	46.65 – 52.75	54.4 ^{ab}	51.38 – 57.48
	Grass		39.5 ^{c}	37.42 – 41.48	35.0 ^{c}	32.31 – 37.75
	Legume		60.0 ^{a}	57.65 – 62.41	49.3 ^{b}	46.48 – 52.20
Co	Forb	µg	0.968 ^{b}	0.8881 – 1.055	1.33 ^{a}	1.216 – 1.444
	Grass		0.760 ^{c}	0.7188 – 0.8040	0.796 ^{bc}	0.7376 – 0.8593
	Legume		0.953 ^{b}	0.8925 – 1.018	0.721 ^{c}	0.6641 – 0.7820
Mo	Forb	µg	10.4 ^{d}	9.641 – 11.32	13.4 ^{cd}	12.36 – 14.52
	Grass		28.8 ^{a}	27.36 – 30.40	31.7 ^{a}	29.51 – 34.04
	Legume		22.5 ^{b}	21.19 – 23.98	16.7 ^{c}	15.52 – 18.07
Zn	Forb	mg	0.145 ^{b}	0.1351 – 0.1553	0.135 ^{b}	0.1259 – 0.1447
	Grass		0.216 ^{a}	0.2072 – 0.2258	0.232 ^{a}	0.2181 – 0.2467
	Legume		0.250 ^{a}	0.2379 – 0.2634	0.156 ^{b}	0.1455 – 0.1668
Mn	Forb	mg	0.773 ^{c}	0.7202 – 0.8297	0.866 ^{bc}	0.8070 – 0.9296
	Grass		1.49 ^{b}	1.422 – 1.554	2.48 ^{a}	2.331 – 2.642
	Legume		0.540 ^{d}	0.5124 – 0.5691	0.410 ^{d}	0.3828 – 0.4393
			Mean	Confidence interval		
Se	Forb	µg	0.960 ^{a}	0.9280 – 0.9909		
	Grass		0.698 ^{b}	0.6803 – 0.7154		
	Legume		0.465 ^{c}	0.4517 – 0.4786		
Fe	Forb	mg	0.720 ^{a}	0.6824 – 0.7595		
	Grass		0.372 ^{b}	0.3565 – 0.3878		

	Legume		0.568 [a]	0.5415 – 0.5954
S	Forb	mg	19.7 [a]	19.02 – 20.45
	Grass		20.7 [a]	20.17 – 21.34
	Legume		10.3 [b]	9.955 – 10.62

Fig S1. Barchart showing masses of Co, Cu, I, Mn, Se and Zn in pasture species. Error bars show the confidence interval over the five replicates, as given by the LMM analysis. The P value shows the significance of the difference between species, within a plant type and botanical group.

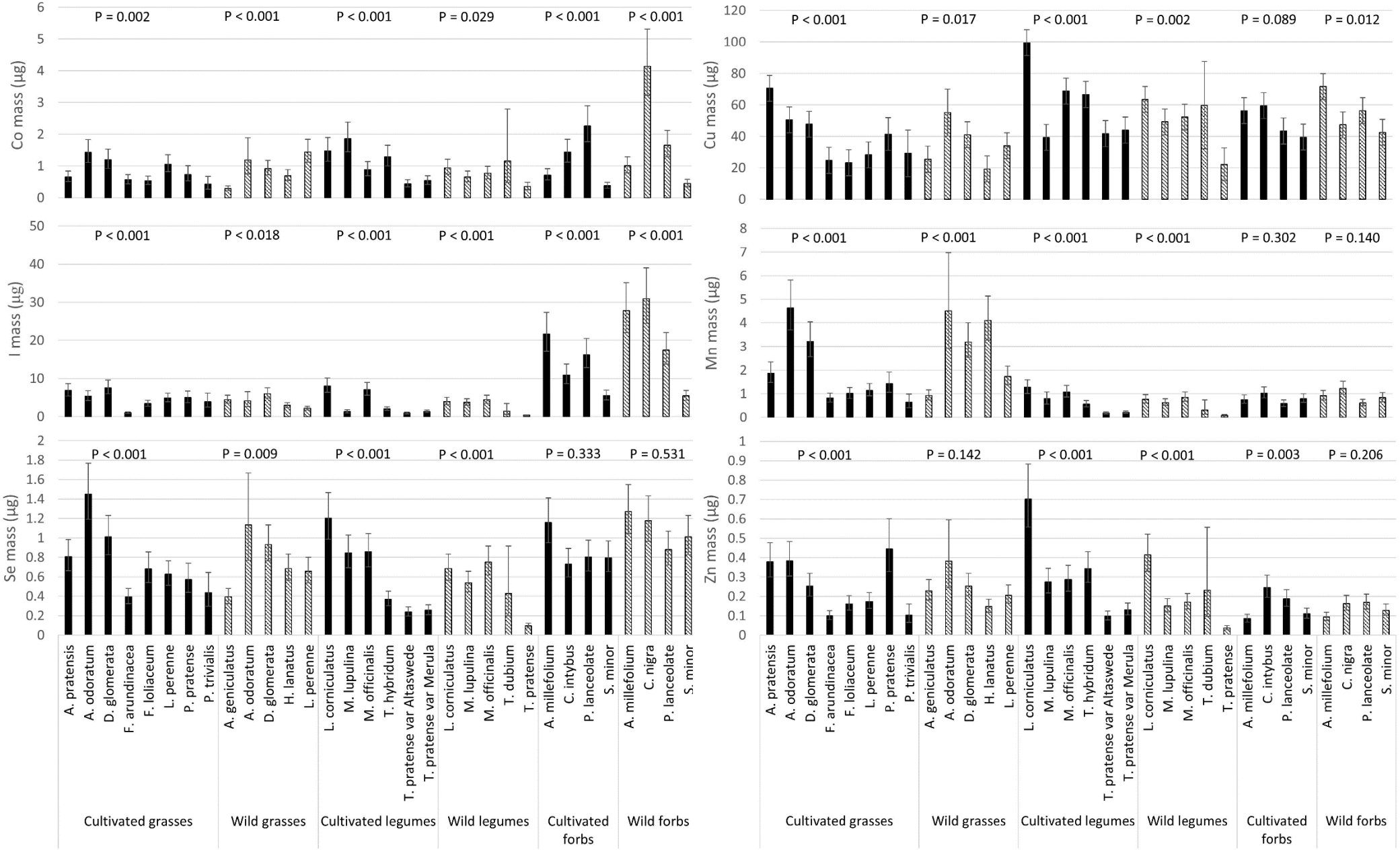
Co mass (µg)
P = 0.002
P < 0.001
P < 0.001
P = 0.029
P < 0.001
P < 0.001
Cu mass (µg)
P < 0.001
P = 0.017
P < 0.001
P = 0.002
P = 0.089
P = 0.012
I mass (µg)
P < 0.001
P < 0.018
P < 0.001
P < 0.001
P < 0.001
P < 0.001
Mn mass (µg)
P < 0.001
P < 0.001
P < 0.001
P < 0.001
P = 0.302
P = 0.140
Se mass (µg)
P < 0.001
P = 0.009
P < 0.001
P < 0.001
P = 0.333
P = 0.531
Zn mass (µg)
P < 0.001
P = 0.142
P < 0.001
P < 0.001
P = 0.003
P = 0.206
A. pratensis
A. odoratum
D. glomerata
F. arundinacea
F. loliaceum
L. perenne
P. pratense
P. trivialis
A. geniculatus
A. odoratum
D. glomerata
H. lanatus
L. perenne
L. corniculatus
M. lupulina
M. officinalis
T. hybridum
T. pratense var Altaswede
T. pratense var Merula
L. corniculatus
M. lupulina
M. officinalis
T. dubium
T. pratense
A. millefolium
C. intybus
P. lanceolate
S. minor
A. millefolium
C. nigra
P. lanceolate
S. minor
Cultivated grasses
Wild grasses
Cultivated legumes
Wild legumes
Cultivated forbs
Wild forbs

Fig S2. Barchart showing masses of Mo, Fe and S in pasture species. Error bars show the confidence interval over the five replicates, as given by the LMM analysis. The P value shows the significance of the difference between species, within a plant type and botanical group.