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Supplementary file S6

Univariate test results of the effects of fertilizer dose (N dose), year (Y; 2019, 2021, 2022), site (S; Juuka, Savonranta) and their interactions on the abundance of ground vegetation species in the Norway spruce stands. Statistically significant results are shown in bold text ($p \leq 0.05$).

Group	Species	N dose (N)		Year (Y)		Site (S)		N × Y		N × S		Y × S	
		Dev _{1,483}	<i>p</i>	Dev _{2,481}	<i>p</i>	Dev _{1,480}	<i>p</i>	Dev _{2,478}	<i>p</i>	Dev _{1,477}	<i>p</i>	Dev _{2,475}	<i>p</i>
Grasses	<i>Agrostis</i> sp.	2.10	0.792	21.80	0.001	10.98	0.028	7.98	0.493	6.06	0.31	5.93	0.777
	<i>Calamagrostis arundinacea</i>	0.05	1	4.74	0.753	28.57	0.001	0.33	1	3.61	0.694	5.07	0.865
	<i>Calamagrostis</i> sp.	7.97	0.062	9.05	0.191	6.91	0.176	0.05	1	0.01	1	0.00	1
	<i>Deschampsia flexuosa</i>	0.07	1	1.41	1	0.07	1	0.34	1	0.13	1	0.67	0.999
	<i>Poa nemoralis</i>	0.69	0.997	25.66	0.001	2.71	0.78	4.45	0.951	0.60	0.998	9.73	0.226
Shrubs	<i>Calluna vulgaris</i>	7.98	0.062	0.23	1	4.89	0.428	0.00	1	0.00	1	0.00	1
	<i>Linnea borealis</i>	57.39	0.001	0.03	1	31.39	0.001	0.00	1	0.02	1	1.82	0.999
	<i>Vaccinium myrtillus</i>	12.02	0.007	0.61	1	0.25	1	0.01	1	0.06	1	2.09	0.999
	<i>Vaccinium vitis-idaea</i>	5.67	0.152	1.78	0.997	6.96	0.176	2.18	1	0.07	1	3.22	0.99
Herbs	<i>Carex brunnescens</i>	0.01	1	5.18	0.712	0.00	1	3.41	0.993	1.81	0.975	2.23	0.999
	<i>Carex digitata</i>	0.04	1	1.10	1	41.87	0.001	0.23	1	0.39	1	0.48	1
	<i>Carex globularis</i>	0.49	0.997	11.08	0.065	0.82	0.995	0.00	1	0.08	1	0.00	1
	<i>Carex</i> sp.	2.23	0.792	20.16	0.002	13.93	0.002	0.00	1	0.00	1	0.00	1
	<i>Convallaria majalis</i>	0.10	1	2.90	0.971	46.35	0.001	0.36	1	2.93	0.827	1.01	0.999
	<i>Dryopteris carthusiana</i>	6.18	0.112	0.07	1	2.85	0.768	0.52	1	0.10	1	0.07	1
	<i>Epilobium angustifolium</i>	0.18	1	0.98	1	4.44	0.483	0.68	1	0.96	0.998	0.16	1
	<i>Gymnocarpium dryopteris</i>	0.56	0.997	0.55	1	16.87	0.001	0.23	1	3.26	0.768	2.01	0.999
	<i>Hieracium</i> sp.	9.95	0.03	4.76	0.753	5.04	0.423	1.29	1	1.57	0.986	1.74	0.999

	<i>Luzula pilosa</i>	0.00	1	2.82	0.974	51.25	0.001	2.64	1	0.19	1	3.35	0.979
	<i>Maianthemum bifolium</i>	9.30	0.036	13.11	0.02	1.41	0.964	0.48	1	1.85	0.971	2.80	0.993
	<i>Melampyrum pratense</i>	5.47	0.172	15.61	0.008	45.08	0.001	0.57	1	0.95	0.998	5.76	0.777
	<i>Melampyrum sylvaticum</i>	0.09	1	29.82	0.001	0.77	0.995	0.00	1	3.99	0.623	0.00	1
	<i>Orthilia secunda</i>	1.55	0.921	5.75	0.658	9.50	0.06	0.03	1	0.00	1	0.00	1
	<i>Oxalis acetosella</i>	6.07	0.121	0.54	1	57.48	0.001	0.13	1	0.00	1	0.00	1
	<i>Pteridium aquilinum</i>	2.48	0.75	0.07	1	62.36	0.001	0.14	1	0.00	1	0.00	1
	<i>Rubus idaeus</i>	1.13	0.966	0.25	1	3.07	0.751	8.47	0.437	2.62	0.883	3.00	0.993
	<i>Rubus saxatilis</i>	0.22	1	0.23	1	0.70	0.995	0.19	1	0.97	0.998	0.13	1
	<i>Solidago virgaurea</i>	0.60	0.997	4.41	0.776	5.63	0.338	2.36	1	10.63	0.039	1.87	0.999
	<i>Trientalis europeae</i>	1.20	0.965	0.26	1	0.28	1	0.93	1	1.06	0.998	1.31	0.999
	<i>Viola canina</i>	12.04	0.007	0.22	1	7.41	0.151	0.00	1	0.00	1	0.00	1
	<i>Viola riviniana</i>	0.06	1	0.10	1	9.71	0.058	0.29	1	0.00	1	0.00	1
Bryophytes	<i>Aulacomnium palustre</i>	9.20	0.039	5.69	0.658	26.06	0.001	0.04	1	0.10	1	23.62	0.002
	<i>Brachythecium</i> sp.	4.89	0.24	10.80	0.067	6.79	0.186	2.84	0.997	5.98	0.31	5.86	0.777
	<i>Dicranum</i> sp.	2.44	0.764	28.57	0.001	20.07	0.001	4.32	0.957	0.89	0.998	0.93	0.999
	<i>Hylocomium splendens</i>	65.35	0.001	4.30	0.776	0.11	1	4.88	0.921	1.22	0.994	0.08	1
	<i>Marchantiophyta</i> (hepatic)	0.59	0.997	36.62	0.001	2.40	0.812	7.24	0.579	0.00	1	4.89	0.882
	<i>Plagiomnium cuspidatum</i>	7.50	0.072	7.77	0.35	0.09	1	1.56	1	6.48	0.264	7.15	0.585
	<i>Pleurozium schreberi</i>	0.02	1	24.82	0.001	0.10	1	1.80	1	0.41	1	0.01	1
	<i>Pohlia nutans</i>	7.35	0.081	6.61	0.55	0.17	1	3.50	0.992	4.01	0.623	2.83	0.993
	<i>Polytrichum</i> sp.	15.07	0.001	4.45	0.776	4.99	0.423	3.64	0.989	4.91	0.481	1.60	0.999
	<i>Ptilium crista-castrensis</i>	11.24	0.01	0.60	1	0.57	0.997	2.59	1	0.01	1	3.54	0.979
	<i>Rhodobryum roseum</i>	8.08	0.059	0.56	1	3.25	0.72	0.09	1	5.63	0.364	2.73	0.993
	<i>Rhytidiadelphus triquetrus</i>	0.04	1	6.63	0.55	0.14	1	-0.01	1	10.18	0.043	0.92	0.999