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Supplementary file S4: Full list of constructed linear mixed models for Scots pine and Norway spruce.

Table S4.1 Comparison of the linear mixed models for Scots pine growth response to nitrogen fertilization (variables and their units are presented in Table 2). Bolded models are the backward stepwise models and others are manually constructed. DF is degrees of freedom, AIC is Akaike's Information Criteria, R^2 is the adjusted coefficient of determination of the fixed effects, and RMSE is the residual mean square error. The models were sorted according to ascending AIC-value.

Model number	Variables	DF	AIC	R^2	RMSE	p-value
1	$\mathbf{F_N + P_a + G_{fertility} + S_F}$	107	73.3	0.547	0.318	<0.001
2	$F_N + P_a + G_{fertility} + V_{ini} + S_F$	107	74.5	0.550	0.317	<0.001
3	$\mathbf{F_N + G_{fertility} + S_F}$	107	76.9	0.523	0.327	<0.001
4	$F_N + G_{fertility} + G_{lat} + S_F$	107	77.7	0.528	0.325	<0.001
5	$F_N + G_{fertility} + G_{north} + S_F$	107	77.9	0.527	0.325	<0.001
6	$F_N + G_{fertility} + T_{sum} + S_F$	107	78.1	0.526	0.326	<0.001
7	$F_N + G_{fertility} + G_{middle} + S_F$	107	78.2	0.526	0.326	<0.001
8	$F_N + G_{fertility} + V_{ini} + S_F$	107	78.6	0.524	0.326	<0.001
9	$F_N + G_{fertility} + G_{lat} + V_{ini} + S_F$	107	78.8	0.532	0.324	<0.001
10	$F_N + G_{fertility} + G_{south} + S_F$	107	78.9	0.523	0.327	<0.001
11	$F_N + G_{fertility} + G_{north} + V_{ini} + S_F$	107	79.2	0.530	0.324	<0.001
12	$F_N + G_{fertility} + T_{sum} + V_{ini} + S_F$	107	79.3	0.530	0.324	<0.001
13	$F_N + G_{fertility} + G_{middle} + G_{NORTH} + S_F$	107	79.8	0.528	0.325	<0.001
14	$F_N + G_{fertility} + G_{middle} + V_{ini} + S_F$	107	80.1	0.526	0.326	<0.001
15	$F_N + G_{fertility} + G_{south} + V_{ini} + S_F$	107	80.5	0.525	0.326	<0.001
16	$F_N + G_{fertility} + G_{middle} + G_{north} + V_{ini} + S_F$	107	81.2	0.530	0.324	<0.001
17	$F_N + P_a + V_{ini} + S_F$	107	84.8	0.496	0.336	<0.001

Model number	Variables	DF	AIC	R^2	RMSE	p-value
18	$F_N + P_a + S_F$	107	86.8	0.477	0.342	<0.001
19	$F_N + G_{north} + V_{ini} + S_F$	107	89.5	0.473	0.343	<0.001
20	$F_N + G_{lat} + V_{ini} + S_F$	107	89.6	0.473	0.343	<0.001
21	$F_N + G_{middle} + S_F$	107	90.1	0.460	0.347	<0.001
22	$F_N + V_{ini} + S_F$	107	90.1	0.460	0.347	<0.001
23	$F_N + T_{sum} + V_{ini} + S_F$	107	90.2	0.470	0.344	<0.001
24	$F_N + G_{middle} + V_{ini} + S_F$	107	90.6	0.468	0.345	<0.001
25	$F_N + S_F$	107	90.6	0.448	0.351	<0.001
26	$F_N + G_{north} + S_F$	107	91.2	0.455	0.349	<0.001
27	$F_N + P_a + G_{fertility} + V_{ini}$	107	91.3	0.505	0.326	<0.001
28	$F_N + G_{middle} + G_{north} + V_{ini} + S_F$	107	91.4	0.474	0.343	<0.001
29	$F_N + G_{lat} + S_F$	107	91.8	0.452	0.350	<0.001
30	$F_N + G_{middle} + G_{north} + S_F$	107	92.0	0.461	0.347	<0.001
31	$F_N + G_{south} + V_{ini} + S_F$	107	92.0	0.461	0.347	<0.001
32	$F_N + T_{sum} + S_F$	107	92.1	0.450	0.351	<0.001
33	$F_N + G_{south} + S_F$	107	92.3	0.449	0.351	<0.001
34	$F_N + P_a + V_{ini}$	107	93.4	0.483	0.332	<0.001
35	$F_N + G_{fertility} + P_a$	107	93.9	0.445	0.335	<0.001
36	$F_N + G_{fertility} + G_{lat} + V_{ini}$	107	99.1	0.446	0.339	<0.001
37	$F_N + G_{fertility} + T_{sum} + V_{ini}$	107	100.4	0.435	0.341	<0.001
38	$F_N + G_{fertility} + G_{lat}$	107	100.9	0.392	0.343	<0.001
39	$F_N + G_{lat} + V_{ini}$	107	101.2	0.419	0.345	<0.001
40	$F_N + G_{fertility} + G_{north} + V_{ini}$	107	101.4	0.430	0.345	<0.001
41	$F_N + G_{fertility} + T_{sum}$	107	101.6	0.387	0.344	<0.001
42	$F_N + G_{fertility} + G_{north}$	107	101.7	0.391	0.346	<0.001
43	$F_N + G_{fertility} + V_{ini}$	107	101.8	0.401	0.347	<0.001

Model number	Variables	DF	AIC	R^2	RMSE	p-value
44	$F_N + G_{fertility} + G_{middle}$	107	102.0	0.393	0.347	<0.001
45	$F_N + G_{fertility} + G_{south}$	107	102.7	0.381	0.346	<0.001
46	$F_N + T_{sum} + V_{ini}$	107	102.7	0.405	0.349	<0.001
47	$F_N + G_{fertility} + G_{south} + V_{ini}$	107	103.0	0.411	0.346	<0.001
48	$F_N + G_{fertility} + G_{middle} + V_{ini}$	107	103.2	0.409	0.348	<0.001
49	$F_N + G_{fertility} + G_{middle} + G_{north} + V_{ini}$	107	103.2	0.432	0.344	<0.001
50	$F_N + G_{north} + V_{ini}$	107	103.5	0.400	0.353	<0.001
51	$F_N + G_{fertility} + G_{middle} + G_{north}$	107	103.6	0.395	0.346	<0.001
52	$F_N + V_{ini}$	107	104.8	0.363	0.358	<0.001
53	$F_N + G_{middle} + G_{north} + V_{ini}$	107	105.3	0.403	0.352	<0.001
54	$F_N + G_{south} + V_{ini}$	107	105.7	0.375	0.354	<0.001
55	$F_N + G_{middle} + V_{ini}$	107	105.9	0.374	0.359	<0.001

Table S4.2 Comparison of the linear mixed models for Norway spruce growth response to nitrogen fertilization (variables and their units are presented in Table 2). Bolded models are the backward stepwise regression models and others are manually constructed. DF is degrees of freedom, AIC is Akaike's Information Criteria, R^2 is the adjusted coefficient of determination of the fixed effects, and RMSE is the residual mean square error. The models were sorted according to ascending AIC-value.

Model number	Variables	DF	AIC	R^2	RMSE	p-value
56	$\mathbf{F_N + P_a + S_F}$	56	2.7	0.510	0.204	<0.001
57	$F_N + G_{south} + S_F$	56	2.7	0.481	0.195	<0.001
58	$\mathbf{F_N + V_{ini} + S_F}$	56	4.0	0.493	0.195	<0.001
59	$F_N + G_{lat} + S_F$	56	4.1	0.479	0.200	<0.001
60	$F_N + G_{south} + V_{ini} + S_F$	56	4.4	0.471	0.196	<0.001
61	$F_N + P_a + V_{ini} + S_F$	56	4.4	0.502	0.201	<0.001
62	$F_N + G_{south} + G_{north} + S_F$	56	4.7	0.481	0.195	<0.001
63	$F_N + G_{lat} + V_{ini} + S_F$	56	5.7	0.487	0.197	<0.001

Model number	Variables	DF	AIC	R^2	RMSE	p-value
64	$F_N + T_{sum} + S_F$	56	5.7	0.450	0.200	<0.001
65	$F_N + G_{north} + V_{ini} + S_F$	56	5.8	0.492	0.196	<0.001
66	$F_N + T_{sum} + V_{ini} + S_F$	56	5.9	0.490	0.195	<0.001
67	$F_N + G_{middle} + V_{ini} + S_F$	56	6.0	0.492	0.195	<0.001
68	$F_N + G_{south} + V_{ini}$	56	6.1	0.308	0.197	<0.001
69	$F_N + G_{south} + G_{north} + V_{ini} + S_F$	56	6.4	0.469	0.196	<0.001
70	$F_N + P_a + V_{ini}$	56	7.2	0.363	0.204	<0.001
71	$F_N + G_{north} + S_F$	56	7.2	0.467	0.208	<0.001
72	$F_N + G_{south} + G_{north} + V_{ini}$	56	8.0	0.304	0.197	<0.001
73	$F_N + G_{middle} + S_F$	56	8.0	0.453	0.203	<0.001
74	$F_N + G_{lat} + V_{ini}$	56	8.8	0.254	0.197	<0.001
75	$F_N + T_{sum} + V_{ini}$	56	8.9	0.247	0.196	<0.001
76	$F_N + G_{middle} + V_{ini}$	56	9.0	0.248	0.195	<0.001