

Supplementary file S3: Comparison of linear mixed models for Scots pine and Norway spruce growth response to nitrogen fertilization (variables and their units are presented in Table 2). These models were constructed by keeping the N fertilizer dose as an explanatory variable and adding other explanatory variables one at the time. 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.

Tree species	Variables	DF	AIC	R^2	RMSE	p-value
Scots pine	$F_N + S_F$	107	90.6	0.448	0.351	<0.001
	$F_N + P_a$	107	99.3	0.384	0.350	<0.001
	$F_N + G_{fertility}$	107	100.7	0.381	0.346	<0.001
	$F_N + V_{ini}$	107	104.8	0.363	0.358	<0.001
	$F_N + G_{lat}$	107	106.2	0.322	0.357	<0.001
	$F_N + G_{middle}$	107	106.3	0.341	0.363	<0.001
	$F_N + G_{north}$	107	106.6	0.328	0.360	<0.001
	$F_N + T_{sum}$	107	106.8	0.318	0.358	<0.001
	$F_N + G_{south}$	107	107.7	0.315	0.360	<0.001
	$F_N + G_{middle} + G_{north}$	107	108.1	0.342	0.362	<0.001
Norway spruce	$F_N + P_a$	56	5.3	0.343	0.203	<0.001
	$F_N + G_{south}$	56	5.6	0.255	0.195	<0.001
	$F_N + G_{lat}$	56	6.9	0.264	0.200	<0.001
	$F_N + V_{ini}$	56	7.1	0.249	0.195	<0.001
	$F_N + G_{middle} + G_{north}$	56	7.6	0.254	0.195	<0.001
	$F_N + T_{sum}$	56	7.6	0.246	0.200	<0.001
	$F_N + S_F$	56	7.7	0.446	0.210	<0.001
	$F_N + G_{north}$	56	9.8	0.264	0.208	<0.001
	$F_N + G_{middle}$	56	10.1	0.233	0.203	<0.001