

Table S3 Sampling correlation matrix for all models tested. Above diagonal pedigree-based and below diagonal marker-based models. additive models 1 and 6 (A), additive plus dominance models 2 and 7 (B), additive plus dominance plus additive-by-additive models 3 and 8 (C), additive plus dominance plus dominance-by-dominance models 4 and 9 (D), and additive plus dominance plus additive-by-dominance models 5 and 10 (E). Estimated effects are Iblock = incomplete block, Add = Additive, Dom = dominance and Culture = silviculture type.

A	Iblock	Add	Culture x Add	Residual
Iblock	1.00	0.00	0.01	-0.07
Add	0.00	1.00	-0.14	-0.08
Culture x Add	0.01	-0.08	1.00	-0.24
Residual	-0.07	-0.13	-0.19	1.00

B	Iblock	Add	Dom	Culture x Add	Culture x Dom	Residual
Iblock	1.00	0.00	0.00	0.00	0.01	-0.07
Add	0.00	1.00	-0.90	-0.08	0.05	-0.04
Dom	0.00	-0.70	1.00	0.09	-0.15	0.02
Culture x Add	0.00	-0.12	0.12	1.00	-0.62	0.02
Culture x Dom	0.01	0.09	-0.17	-0.69	1.00	-0.26
Residual	-0.07	-0.05	-0.02	0.00	-0.19	1.00

C	Iblock	Add	Dom	Add x Add*	Culture x Add	Culture x Dom	Culture x (Add x Add)	Residual
Iblock	1.00	0.00	0.00	-	-0.07	-0.07	0.01	-0.07
Add	0.00	1.00	-0.89	-	-0.02	-0.02	-0.04	-0.02
Dom	0.00	-0.31	1.00	-	0.01	0.01	-0.07	0.01
Add x Add	0.00	-0.52	-0.52	1.00 ⁺	-	-	-	-
Culture x Add	0.00	-0.09	0.00	0.13	1.00	1.00	-0.30	1.00
Culture x Dom	-0.07	0.01	0.00	-0.02	0.13	1.00	-0.30	1.00
Culture x (Add x Add)	0.01	0.07	0.00	-0.16	-0.77	-0.29	1.00	-0.30
Residual	-0.07	0.01	0.00	-0.02	0.13	1.00	-0.29	1.00

D	Iblock	Add	Dom	Dom x Dom*	Culture x Add	Culture x Dom	Culture x (Dom x Dom)	Residual
Iblock	1.00	0.00	0.00	-	0.01	-0.07	0.00	-0.07
Add	0.00	1.00	-0.89	-	-0.02	-0.01	-0.05	-0.01
Dom	0.00	-0.45	1.00	-	0.04	0.01	-0.07	0.01
Dom x Dom	0.00	-0.27	-0.58	1.00 ⁺	-	-	-	-
Culture x Add	0.00	-0.09	0.00	0.11	1.00	0.02	-0.48	0.02
Culture x Dom	-0.07	0.00	0.01	-0.01	0.04	1.00	-0.31	1.00
Culture x (Dom x Dom)	0.01	0.04	0.00	-0.18	-0.54	-0.31	1.00	-0.31
Residual	-0.07	0.00	0.01	-0.01	0.04	1.00	-0.31	1.00

E	Iblock	Add	Dom	Add x Dom*	Culture x Add	Culture x Dom	Culture x (Add x Dom)	Residual
Iblock	1.00	0.00	0.00	-	0.01	-0.07	0.00	-0.07
Add	0.00	1.00	-0.89	-	-0.03	-0.02	-0.02	-0.02
Dom	0.00	-0.40	1.00	-	0.06	0.01	-0.10	0.01
Add x Dom	0.00	-0.34	-0.58	1.00 ⁺	-	-	-	-
Culture x Add	0.00	-0.09	0.00	0.12	1.00	0.03	-0.54	0.03
Culture x Dom	-0.07	0.00	0.01	-0.02	0.08	1.00	-0.30	1.00
Culture x (Add x Dom)	0.01	0.05	0.00	-0.17	-0.63	-0.30	1.00	-0.30
Residual	-0.07	0.00	0.01	-0.02	0.08	1.00	-0.30	1.00

*Correlation of epistasis with other effects were not calculated in pedigree-based models as epistasis had no variance (See Table 2)

⁺Value from marker-base method