

Supplementary materials

Table S1 Initial explanatory variables used for construction of neural network model

Value at original site (1961-1990)		Ecodistance (origin - new site)	
bio1	Annual mean temperature	bio1ED	Annual mean temperature
bio2	Mean diurnal range of temperature	bio2ED	Mean diurnal range of temperature
bio3	Isothermality	bio3ED	Isothermality
bio4	Temperature Seasonality	bio4ED	Temperature Seasonality
bio5	Max temperature of warmest month	bio5ED	Max Temperature of warmest month
bio6	Min temperature of coldest month	bio6ED	Min temperature of coldest month
bio7	Temperature annual range	bio7ED	Temperature annual range
bio8	Mean temperature of wettest quarter	bio8ED	Mean temeprature of wettest quarter
bio9	Mean temperature of driest quarter	bio9ED	Mean temperature of driest quarter
bio10	Mean temperature of warmest quarter	bio10ED	Mean temperature of warmest quarter
bio11	Mean temperature of coldest quarter	bio11ED	Mean temperature of coldest quarter
bio12	Annual precipitation	bio12ED	Annual precipitation
bio13	Precipitation of wettest month	bio13ED	Precipitation of wettest month
bio14	Precipitation of diest month	bio14ED	Precipitation of diest month
bio15	Precipitation seasonality	bio15ED	Precipitation seasonality
bio16	Precipiation of wettest quarter	bio16ED	Precipiation of wettest quarter
bio17	precipitation of driest quarter	bio17ED	precipitation of driest quarter
bio18	Precipitation of warmest quarter	bio18ED	Precipitation of warmest quarter
bio19	Precipitation of coldest quarter	bio19ED	Precipitation of coldest quarter
		TED	Mean temperature
		T59ED	Mean temperature (May-September)
		PrecED	Precipitation sum
		Prec59ED	Precipitation sum (May-September)
		EQED	Ellenberg quotient
		FAIED	Forest Aridity Index
		xED	Latitude
		yED	Longitude
		AltED	Altitude

Table S2 Full country name of provenance abbreviations used in table 3

FR02	France 02
ESP05	Spain 05
GER47	Germany 4
IT78	Italy 8
IT80	Italy 80
PL38	Poland 38
CZ48	Czech Republic 48
GER85	Germany 85
PL117	Poland 117
RO155	Romania 155
ESP02	Spain 02
FR23	France 23
IT37	Italy 37
IT108	Italy 108
CR139	Croatia 139
AU35	Austria 35
AU36	Austria 36
CZ51	Czech Republic 51
AU39	Austria 39
UA141	Ukraine 141

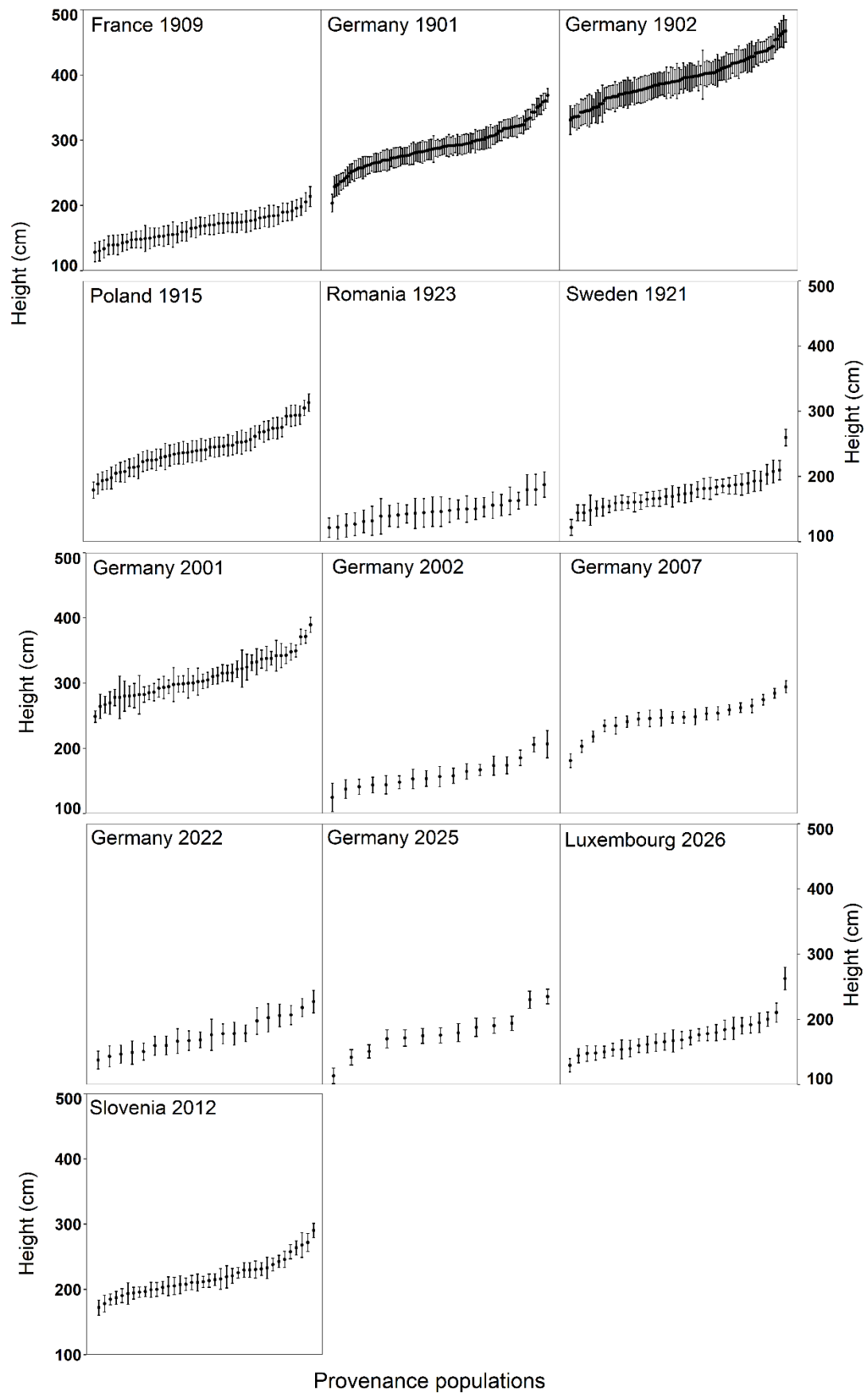


Figure S1 Variability of height among provenance populations at the 13 common garden sites used for NN development

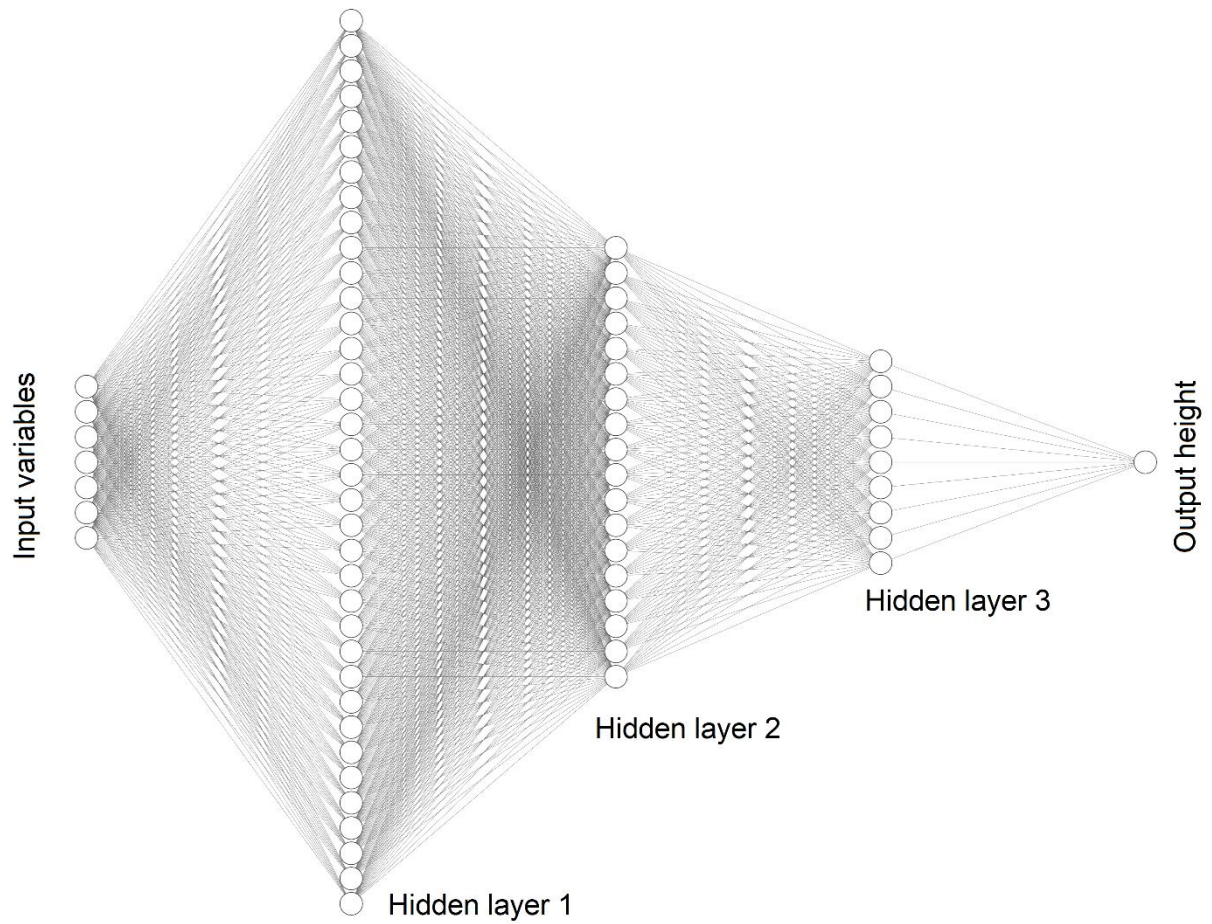


Figure S2 Final architecture of the neural network model. Input layer has seven neurons (climate variables and ecodistances), which are connected to three hidden layers (36, 18 and 9 neurons) and lead to output height. Each line represents linear or non-linear function between the two connected neurons.