Table S1. Summary statistics of preprocessed individual tree for *Pinus koraiensis* and *Larix kaempferi*. Variables include the number of plots, age, tree height, diameter at breast height (DBH), tree density, basal area, site index and crown ratio (mean ± standard deviation).

Category	*Pinus koraiensis*	*Larix kaempferi*
Number of plots	117	171
Age	36.21 ± 8.87	33.4 ± 9.64
Dominant tree height (m)	14.96 ± 2.98	17.72 ± 4.37
Diameter at breast height (cm)	23.46 ± 8.35	24.12 ± 8.24
Tree density (trees/ha)	581.90 ± 326.78	513.30 ± 252.74
Basal area (m^2/ ha)	26.21 ± 9.91	22.91 ± 9.54
Site Index	13.44 ± 1.45	17.29 ± 2.86
Crown Ratio	0.53 ± 0.02	0.32 ± 0.07

Table S2. Actual forest's site index for *Pinus koraiensis* and *Larix kaempferi* based on dominant height (m) at given stand ages (15–70 years). Values correspond to different site index (SI) classes derived from the 5th and 6th cycles of the South Korea NFI. The dataset is available from the Korea Forest Services' website (NIFoS, 2023).

Age (year)	*Pinus Koraiensis*			*Larix Kaempferi*			
	SI=12	SI=14	SI=16	SI=16	SI=18	SI=20	SI=22
15	5.4	6.3	7.2	8.6	9.6	10.7	11.8
20	7.9	9.3	10.6	11.6	13.0	14.5	15.9
25	10.2	11.8	13.5	14.1	15.8	17.4	19.0
30	12.0	14.0	16.0	16.0	18.0	20.0	22.0
35	13.5	15.7	18.0	17.6	19.9	21.9	24.0
40	14.6	17.1	19.5	18.9	21.3	23.4	25.6
45	15.5	18.1	20.7	19.9	22.6	24.9	27.1
50	16.2	18.9	21.6	20.8	23.6	26.1	28.3
55	16.7	19.5	22.3	21.4	24.4	26.9	29.0
60	17.1	19.9	22.8	21.8	25.0	27.5	29.7
65	17.4	20.2	23.1	22.1	25.5	28.1	30.0
70	17.6	20.5	23.4	21.3	25.3	26.6	29.3

Reference.

National Institute of Forest Science (NIFoS). 2023 *Tree Volume, Biomass, and Stand Yield Table* (Research Report No. 1092); National Institute of Forest Science: Seoul, Republic of Korea, 2023. (accessed on 1 January 2025).

Table S3. Equations and parameter estimates of site index and crown ratio models for *Pinus koraiensis* and *Larix kaempferi*, derived from previous studies. Variables are described in the table, and coefficients ($b_1 - b_4$) are species-specific. References indicate the original sources of each model.

Category	Equation	Description	Species	Coefficient				Reference
				b_1	b_2	b_3	b_4	
Site Index	$SI = H_D \times \left[\frac{1 - e^{-b_1 \times age}}{1 + e^{-b_1 \times 30}}\right]^{b_2}$	H_D is dominant tree height (m), and age is stand age (years).	*Pinus koraiensis*	0.0609	-2.3660			NIFoS (2023)
			Larix kaempferi	0.0635	-1.9182			
Crown Ratio	$CR = b_1 \times \left[\frac{1}{1 + b_2 \times BA}\right] + b_3 \times [1 - \exp(-b_4 \times DBH)]$	BA is basal area (m²/ha), and DBH is diameter at breast height (cm).	*Pinus koraiensis*	0.1733	0.0312	0.4414	0.1864	Kwon et al. (2003)
			Larix kaempferi	0.0630	0.0091	0.7540	0.0198	Kwon (2003)

Reference.

42.National Institute of Forest Science (NIFoS). *2023 Tree Volume, Biomass, and Stand Yield Table* (Research Report No. 1092); National Institute of Forest Science: Seoul, Republic of Korea, 2023. (accessed on 1 January 2025).

43.Kwon, S.D.; Lee, K.H.; Kim, H.H.; Chung, J.S. Development of Individual-Tree/Distance-Independent Growth-and-Mortality Prediction Equations for *Pinus koraiensis* Stands. *J. Korean For. Soc.* **2003**, *92*, 590–597.

61.Kwon, S. (2003). Development of a simulation model for stand-level forest management (Doctoral dissertation, Seoul National University). Seoul National University Graduate School. https://hdl.handle.net/10371/25773