

**Table S1.** Summary statistics for individual tree and stand variables used to develop the forestry tools.

Variable <sup>[1]</sup>	Minimum	Maximum	Mean	Std. dev.	No. obs.
<i>d</i>	12.90	96.00	37.48	14.19	411
<i>h</i>	4.60	39.87	17.03	5.02	411
<i>Vcc</i>	0.069	5.777	1.063	0.977	411
<i>Vsc</i>	0.064	5.419	0.999	0.925	411
<i>N</i>	94	4200	1218.32	775.09	112
<i>G</i>	15.35	178.70	44.57	17.27	112
<i>H<sub>0</sub></i>	7.15	35.90	17.73	4.80	112
<i>Hm</i>	6.79	33.21	14.17	4.63	112
<i>dg</i>	3.92	77.99	21.27	10.70	112
<i>VCC</i>	81.78	1155.95	378.99	195.72	112
<i>VSC</i>	75.66	1069.88	355.88	184.59	112
<i>Wf</i>	52.22	924.54	236.41	139.19	112
<i>Wt</i>	82.48	1653.67	330.07	195.22	112
<i>RS</i>	10.84	46.66	21.11	6.20	112
<i>SI</i>	7.62	26.76	16.18	4.96	60

<sup>[1]</sup> *d* = tree diameter (cm). *h* = tree height (m). *Vcc* = wood volume with bark (m<sup>3</sup> tree<sup>-1</sup>). *Vsc* = wood volume without bark (m<sup>3</sup> tree<sup>-1</sup>). *N* = tree density (trees ha<sup>-1</sup>). *G* = basal area (m<sup>2</sup> ha<sup>-1</sup>). *H<sub>0</sub>* = dominant height (m). *Hm* = medium height (m). *dg* = squared mean diameter (cm). *VCC* = wood volume with bark (m<sup>3</sup> ha<sup>-1</sup>). *VSC* = wood volume without bark (m<sup>3</sup> ha<sup>-1</sup>). *Wf* = stand stem biomass (Mg ha<sup>-1</sup>). *Wt* = stand total biomass (Mg ha<sup>-1</sup>). *RS* = relative spacing index (%). *SI* = site index (m of height at 80 years).

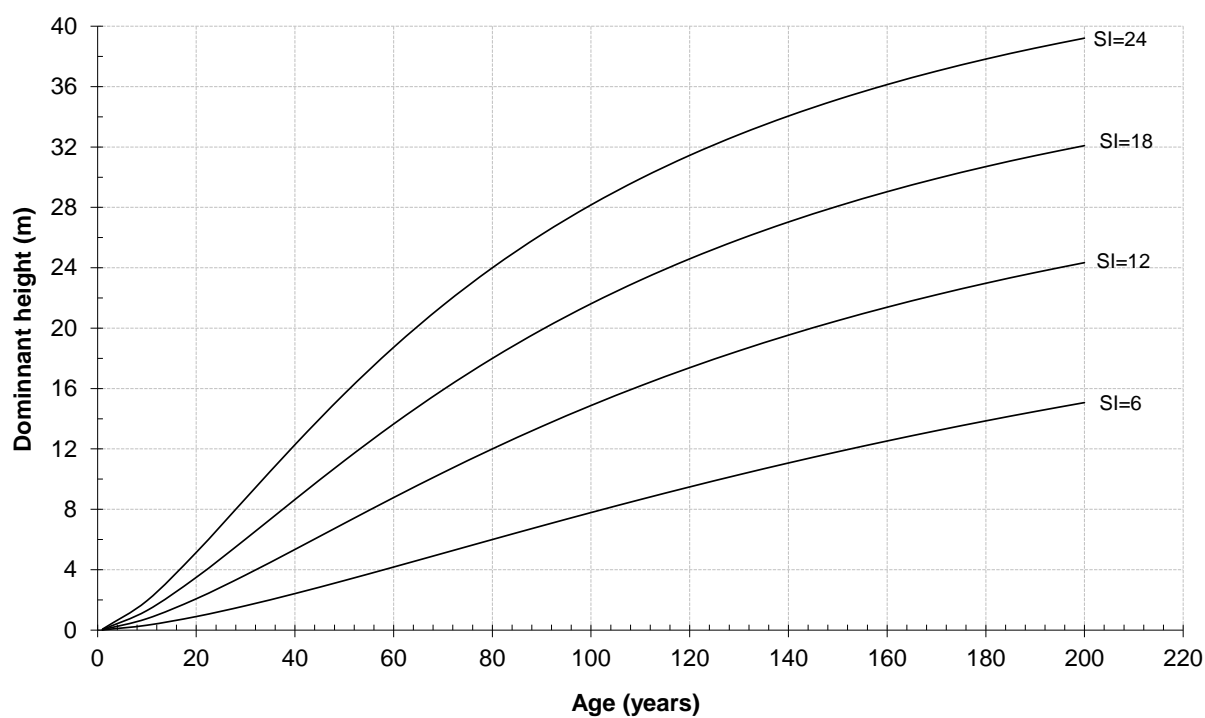
**Table S2.** Individual and stand volume equations analyzed.

Type	Equation <sup>[1]</sup>
Individual	$V = b_0 + b_1(d^2h)$
	$V = b_0 + b_1(d^2h) + b_2(d^2h)^2$
	$V = b_0 + b_1(d^2h) + b_2(d^2h)^2 + b_3(d^2h)^3$
	$V = b_0 + b_1h + b_2(dh) + b_3(d^2h)$
	$V = b_0 + b_1d^2 + b_2h + b_3(d^2h)$
	$V = b_0 + b_1(d^2h) + b_2h + b_3(dh^2)$
	$V = b_0 + b_1(d^2h)^{b_2}$
	$V = b_0 + b_1d^{b_1}h^{b_2}$
Stand	$Vt = b_0G^{b_1}H_0^{b_2}$
	$\ln(Vt) = b_0 + b_1\ln(G) + b_2\ln(H_0)$
	$Vt = b_0 + b_1G + b_2H_0$
	$Vt = b_0 + b_1GH_0$
	$Vt = b_0 + (GH_0)^{b_1}$
	$\ln(Vt) = b_0 + b_1\ln(GH_0)$

<sup>[1]</sup>  $d$  = tree diameter (cm).  $h$  = tree height (m).  $V$  = wood volume with and without bark ( $\text{m}^3 \text{ tree}^{-1}$ ).  $Vt$  = stand wood volume with and without bark ( $\text{m}^3 \text{ ha}^{-1}$ ).  $G$  = basal area ( $\text{m}^2 \text{ ha}^{-1}$ ).  $H_0$  = dominant height (m).

**Table S3.** Fitting results, parameter estimates and approximated standard errors for the best-performing models.

Model	Variable	Par. estimates	Apr. Std Error	$p >  t $	R <sup>2</sup> adj	RMSE
Individual volume equations	Vcc	$\beta_0 = -13.3833$	0.1240	< 0.0001		
		$\beta_1 = 1.797344$	0.0307	< 0.0001	95.52%	0.2070
		$\beta_2 = 0.906457$	0.0377	< 0.0001		
	Vsc	$\beta_0 = -13.4562$	0.1192	< 0.0001		
		$\beta_1 = 1.786746$	0.0295	< 0.0001	95.71%	0.1915
		$\beta_2 = 0.933680$	0.0362	< 0.0001		
Stand volume equations	VCC	$\beta_0 = 1.046832$	0.0338	< 0.0001	93.66%	43.5037
		$\beta_1 = 0.644167$	0.0438	< 0.0001		
	VSC	$\beta_0 = 1.028428$	0.0347	< 0.0001	93.41%	41.4827
		$\beta_1 = 0.646096$	0.0451	< 0.0001		
Second relationship	Hm	$\beta_0 = 1.028428$	0.0053	< 0.0001	73.26%	0.1632
Third relationship	High dens.	$\beta_0 = 11.77927$	0.3978	< 0.0001	71.10%	292.90
		$\beta_1 = -1.63664$	0.1348	< 0.0001		
	Low dens.	$\beta_0 = 11.89743$	0.6124	< 0.0001	78.03%	162.02
		$\beta_1 = -1.91428$	0.2041	< 0.0001		
Fourth relationship	High dens.	$\beta_0 = 5.632281$	0.8511	< 0.0001	86.63%	2.7215
		$\beta_1 = -0.46971$	0.0704	< 0.0001		
		$\beta_2 = 0.260024$	0.1023	0.0441		
	Low dens.	$\beta_0 = 3.573036$	1.3526	0.0143	84.53%	4.9837
		$\beta_1 = -0.33861$	0.1101	0.0052		
		$\beta_2 = 0.701497$	0.2117	0.0071		
Biomass equations	Wf	$\beta_0 = 0.5164583$	0.0034	< 0.0001	97.46%	23.3084
		$\beta_1 = 1.01162$	0.0311	< 0.0001		
		$\beta_2 = 0.800449$	0.0202	< 0.0001		
	Wt	$\beta_0 = 1.06622$	0.0092	< 0.0001	97.34%	31.8390
		$\beta_1 = 1.18191$	0.0333	< 0.0001		
		$\beta_2 = 0.399504$	0.0213	< 0.0001		
SDMDs	dg	$\beta_0 = 402.6608$	112.1	0.0362	83.97%	4.1349
		$\beta_1 = -0.52725$	0.0399	< 0.0001		
		$\beta_2 = 0.274108$	0.0896	0.0031		
	VCC	$\beta_0 = 0.000082$	0.000002	0.0331	70.56%	124.70
		$\beta_1 = 1.785519$	0.0811	< 0.0001		
		$\beta_2 = 0.952423$	0.1167	< 0.0001		



**Figure S1.** Dominant height growth curves for SI values of 6, 12, 18 and 24 m at a reference age of 80 years.