Cordeiro N.G., Pereira K.M.G., Silva Júnior E.M., Araújo Júnior C.A., Maia R.D., Dutra M.L., Cabacinha C.D., 2026. Bee-inspired Radial Basis Function network to estimate tree aboveground wood volume in Brazilian Savanna.

Table S1 Aboveground wood volume models fitted to the Cerrado sensu stricto fragment data in Montes Claros, Minas Gerais, southeast Brazil. Where: β_i: coefficients to be estimated; DBH: diameter at 1.30 meters from the ground; *h*: total tree height; Ln: Neperian logarithm; ε: error.

Equation	Author	Mathematical Model
1	Kopezky-Gehrhardt	$V = \beta_0 + \beta_1 DBH^2 + \varepsilon$
2	Dissescu-Meyer	$V = \beta_1 DBH + \beta_2 DBH^2 + \varepsilon$
3	Hohenadl-Krenm	$V = \beta_0 + \beta_1 DBH + \beta_2 DBH^2 + \varepsilon$
4	Berkhout	$V = \beta_0 DBH^{\beta 1} + \varepsilon$
5	Husch	$LnV = \beta_0 + \beta_1 LnDBH + \varepsilon$
6	Brenac	$LnV = \beta_0 + \beta_1 Ln\ DBH + \beta_2 \frac{1}{DBH} + \varepsilon$
7	Spurr	$V = \beta_0 + \beta_1 DBH^2 h + \varepsilon$
8	Schumacher-Hall	$V = \beta_0 * DBH^{\beta 1} * h^{\beta 2} + \varepsilon$
9	Schumacher-Hall (log)	$LnV = \beta_0 + \beta_1 LnDBH + \beta_2 Lnh + \varepsilon$
10	Honner	$V = \frac{DBH^2}{\beta_0 + \beta_1 \frac{1}{h}} + \varepsilon$
11	Ogaya	$V = DBH^2 (\beta_0 + \beta_1 h) + \varepsilon$
12	Stoate	$V = \beta_0 + \beta_1 DBH^2 + \beta_2 DBH^2 h + \beta_3 h + \varepsilon$
13	Näslund	$V = \beta_1\ DBH^2 + \beta_2 DBH^2 h + \beta_3 DBHh^2 + \beta_4 h^2 + \varepsilon$
14	Takata	$V = \frac{DBH^2 h}{\beta_0 + \beta_1 DBH} + \varepsilon$
15	Spurr (log)	$LnV = \beta_0 + \beta_1\ Ln(DBH^2 h) + \varepsilon$
16	Meyer	$V = \beta_0 + \beta_1 DBH + \beta_2 DBH^2 + \beta_3 DBHh + \beta_4\ DBH^2 h + \beta_5 h + \varepsilon$
17	Scolforo and Silva (1993) (Modified)	$V = \beta_0 + \beta_1 DBH^2 h^{\beta 2} + \varepsilon$
18	Rezende et al. (2006) (Modified)	$V = \beta_1 DBH^2 + \beta_2 DBHh + \varepsilon$

Table S2 Coefficients of the aboveground wood volume models fitted to the Cerrado sensu stricto fragment data in Montes Claros, Minas Gerais, southeast Brazil. Where: bn: parameters or coefficients; p: p-value.

Model	b0	b1	b2	b3	b4	b5
Kopezky-Gehrhardt	$-9.72x10^{-4}$ ($p:7x10^{-8}$)	$2.96x10^{-4}$ ($p:<2x10^{-16}$)	-	-	-	-
Dissescu-Meyer	-	$-3.32x10^{-4}$ ($p:1.92x10^{-7}$)	$3.22x10^{-4}$ ($p:<2x10^{-16}$)	-	-	-
Hohenadl-Krenm	$-1.68x10^{-3}$ (p:0.123)	$2.55x10^{-4}$ (p:0.508)	$2.75x10^{-4}$ ($p:<2x10^{-16}$)	-	-	-
Berkhout	$1.92x10^{-4}$ ($p:<2x10^{-16}$)	2.18 ($p:<2x10^{-16}$)	-	-	-	-
Husch	-8.94 ($p:<2x10^{-16}$)	2.37 ($p:<2x10^{-16}$)	-	-	-	-
Brenac	-7.41 ($p:<2x10^{-16}$)	1.80 ($p:3.71x10^{-11}$)	-2.95 (p:0.0309)	-	-	-
Spurr	$6.85x10^{-4}$ ($p:3.48x10^{-5}$)	$5.00x10^{-5}$ ($p:<2x10^{-16}$)	-	-	-	-
Schumacher-Hall	$1.23x10^{-4}$ ($p:<2x10^{-16}$)	2.05 ($p:<2x10^{-16}$)	0.44 ($p:<2x10^{-16}$)	-	-	-
Schumacher-Hall(log)	-9.27 ($p:<2x10^{-16}$)	2.26 ($p:<2x10^{-16}$)	0.35 ($p:4.25x10^{-12}$)	-	-	-
Honner	$1.92x10^{3}$ ($p:<2x10^{-16}$)	$8.51x10^{3}$ ($p:<2x10^{-16}$)	-	-	-	-
Ogaya	$1.50x10^{-4}$ ($p:<2x10^{-16}$)	$2.50x10^{-5}$ ($p:<2x10^{-16}$)	-	-	-	-
Stoate	$-2.94x10^{-4}$ (p:0.628)	$1.66x10^{-4}$ ($p:9.5x10^{-14}$)	$2.35x10^{-5}$ ($p:2.49x10^{-8}$)	$-3.60x10^{-5}$ (p:0.780)	-	-
Näslund	-	$1.79x10^{-4}$ ($p:1.29x10^{-13}$)	$1.40x10^{-5}$ (p:0.0922)	$1.70\ x10^{-5}$ (p:0.0701)	$-6.90x10^{-5}$ (p:0.0225)	-
Takata	$1.75x10^{4}$ ($p:<2x10^{-16}$)	$1.80x10^{2}$ (p:0.11)	-	-	-	-
Spurr (log)	-9.56 ($p:<2x10^{-16}$)	0.95 ($p:<2x10^{-16}$)	-	-	-	-
Meyer	$5.58x10^{-3}$ (p:0.1656)	$-2.12x10^{-3}$ (p:0.1641)	$3.38x10^{-4}$ (p:0.0119)	$-5.85x10^{-4}$ (p:0.0536)	$-2.34x10^{-5}$ (p:0.3693)	$1.68x10^{3}$ (p:0.0402)
Scolforo and Silva 1993 (Modified)	$-3.88x10^{-4}$ (p:0.0262)	$1.45x10^{-4}$ ($p:<2x10^{-16}$)	0.41 ($p:<2x10^{-16}$)	-	-	-
Rezende et al 2006 (Modified)	-	$2.50x10^{-4}$ ($p:<2x10^{-16}$)	$3.40x10^{-5}$ (p:0.00596)	-	-	-

Table S3 Statistical parameters analysis of the aboveground wood volume models fitted to the Cerrado sensu stricto fragment in Montes Claros, Minas Gerais, southeast Brazil. Where: R^2Adj. = Adjusted coefficient of determination; Syx = Residual standard error; AIC = Akaike Information Criterion.

Model	Syx	Syx %	R^2 Adj.	AIC
Kopezky-Gehrhardt	$2.31x10^{-3}$	29.10	0.8788	$5.33x10^{-6}$
Dissescu-Meyer	$2.31x10^{-3}$	29.18	0.9481	$5.35x10^{-6}$
Hohenadl-Krenm	$2.31x10^{-3}$	29.11	0.8786	$5.35x10^{-6}$
Berkhout	$2.32x10^{-3}$	29.29	0.8772	$5.40x10^{-6}$
Husch	$2.38x10^{-3}$	29.98	0.8656	$5.66x10^{-6}$
Brenac	$2.32x10^{-3}$	29.30	0.8666	$5.42x10^{-6}$
Spurr	$2.41x10^{-3}$	30.44	0.8673	$5.84x10^{-6}$
Schumacher-Hall	$2.14x10^{-3}$	27.04	0.8953	$4.61x10^{-6}$
Schumacher-Hall (log)	$2.21x10^{-3}$	27.85	0.8775	$4.89x10^{-6}$
Honner	$2.15x10^{-3}$	27.09	0.8949	$4.62x10^{-6}$
Ogaya	$2.15x10^{-3}$	27.08	0.8950	$4.62x10^{-6}$
Stoate	$2.14x10^{-3}$	26.95	0.8960	$4.59x10^{-6}$
Näslund	$2.13x10^{-3}$	26.88	0.9556	$4.56x10^{-6}$
Takata	$2.45x10^{-3}$	30.88	0.8635	$6.00x10^{-6}$
Spurr (log)	$2.42x10^{-3}$	30.52	0.8370	$5.87x10^{-6}$
Meyer	$2.12x10^{-3}$	26.80	0.8971	$4.56x10^{-6}$
Scolforo and Silva 1993 (Modified)	$2.14x10^{-3}$	26.95	0.8960	$4.58x10^{-6}$
Rezende et al 2006 (Modified)	$2.36x10^{-3}$	29.74	0.9461	$5.56x10^{-6}$

Table S4 Statistics ranking used to assess the aboveground wood volume models fitted to the Cerrado sensu stricto fragment data in Montes Claros, Minas Gerais, southeast Brazil. Where: Syx: Residual standard error; R2 Adj.: Adjusted coefficient of determination; AIC: Akaike information criteria.

Model	Syx %	R^2 Adj.	AIC	Residual graphs	Total
Kopezky-Gehrhardt	8	9	7	5	29
Dissescu-Meyer	10	2	8	6	26
Hohenadl-Krenm	9	10	9	4	32
Berkhout	11	12	10	7	40
Husch	14	15	13	3	45
Brenac	12	14	11	2	39
Spurr	15	13	14	14	56
Schumacher-Hall	4	6	4	11	25
Schumacher-Hall(log)	7	11	6	1	25
Honner	6	8	5	11	30
Ogaya	5	7	5	15	32
Stoate	3	5	3	12	23
Näslund	2	1	1	8	12
Takata	17	16	16	13	62
Spurr (log)	16	17	15	14	62
Meyer	1	4	1	9	15
Scolforo and Silva (1993) (Modified)	3	5	2	10	20
Rezende et al. (2006) (Modified)	13	3	12	16	44