Supplementary Material

Table S1. Allometric equations relating total tree height (H in m) to tree diameter (D in cm). A total of ten different allometric models were fitted to the height-diameter data, following Fayolle et al. (2016). The Akaike Information Criterion (AIC), the Residual Standard Error (RSE) and parameter estimates are given for each model. The best model (lowest AIC and RSE) relating height to diameter is shown in bold for each forest type.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Mixed forest (n = 127) |  | Monodominant forest (n = 137) |
| Model | AIC | RSE | a | b | c |  | AIC | RSE | a | b | c |
| Monotonic models |  |  |  |  |  |  |  |  |  |  |  |
| Linear model,  | 836.3 | 6.41 | 12.99 | 0.358 | NA |  | 899.1 | 6.35 | 15.63 | 0.356 | NA |
| Log-linear model,  | 818.2 | 5.97 | -27.83 | 15.7 | NA |  | 877.4 | 5.86 | -27.83 | 16.4 | NA |
| Power model,  | 820.5 | 6.02 | 3.83 | 0.544 | NA |  | 879.8 | 5.92 | 4.76 | 0.51 | NA |
|  |  |  |  |  |  |  |  |  |  |  |  |
| Second-order polynomial models |  |  |  |  |  |  |  |  |  |  |  |
|  | 823.6 | 6.07 | 7.23 | 0.628 | -0.00237 |  | 882 | 5.94 | 8.94 | 0.661 | -0.00259 |
|  | 818.3 | 5.95 | -7.33 | 3.79 | 1.673 |  | 877.6 | 5.85 | -7.51 | 4.81 | 1.604 |
|  | 818.7 | 5.96 | -0.008 | 1.267 | -0.0947 |  | 877.9 | 5.85 | 0.368 | 1.143 | -0.0824 |
|  |  |  |  |  |  |  |  |  |  |  |  |
| Asymptotic models |  |  |  |  |  |  |  |  |  |  |  |
| Monomolecular model,  | 819.8 | 5.98 | 53.2 | 49.9 | 0.0184 |  | 879.1 | 5.88 | 57.3 | 51.9 | 0.0177 |
| Gompertz model,  | 822.2 | 6.04 | 48 | 1.83 | 0.0325 |  | 881.4 | 5.93 | 52.8 | 1.67 | 0.0295 |
| Weibull model,  | 819.2 | 5.97 | 60.4 | 0.032 | 0.821 |  | 878.3 | 5.86 | 66.4 | 0.0385 | 0.768 |
| Michaelis-Menten model,  | **817** | **5.94** | **70.1** | **55.2** | **NA** |  | **876.7** | **5.85** | **71.9** | **49.1** | **NA** |

Table S2. Literature equations to predict tree height (H) as function of tree diameter (D) used in this study.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Source | Location | Type function | Equation |  |
| Banin et al. (2012) | Africa | Exponential |  | A |
| Fayolle et al. (2016) | Local (Cameroon) | Michaelis-Menten  |  | B |
| Feldpausch et al. (2011) | Central Africa | Power |  | C |
| Feldpausch et al. (2012) | Central Africa | Weibull |  | D |
| Kearsley et al. (2013)- Mixed | Local (DRC) | Exponential |  | E |
| Kearsley et al. (2013)- Monodominant | Local (DRC) | Exponential |  | F |
| Lewis et al. (2009) | Africa | Weibull |  | G |
| Loubota Panzou et al. (2018a) | Local (Republic of Congo) | Michaelis-Menten |  | H |

DRC: Democratic Republic of Congo