

Scientific papers on ‘Taper functions’

ArticleID:001

Student:

PublicationYear: 2017

Authors: Scolforo, H.F., McTague, J.P., Raimundo, M.R., Weiskittel, A., Carrero, O., Scolforo, J.R.S.

Title: Comparison of taper functions applied to eucalypts of varying genetics in Brazil: Application and evaluation of the penalized mixed spline approach

Source: (2018) Canadian Journal of Forest Research, 48 (5), pp. 568-580, DOI: 10.1139/cjfr-2017-0366

URL: <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85046101611&doi=10.1139%2fcjfr-2017-0366&partnerID=40&md5=6ca12aa51842a6a8d86630c3e88d440f>

Function Species: Eucalypts Code

ArticleID:002

Student: Angelo Manca PublicationYear:2016 Authors: Andrew J. Warner, Monton Jamroenprucksas, Ladawan Puangchit,

Title: Development and evaluation of teak (*Tectona grandis* L.f.) taper equations in northern Thailand, Source: Agriculture and Natural Resources, Volume 50, Issue 5, Pages 362-367, ISSN 2452-316X, URL: <https://doi.org/10.1016/j.anres.2016.04.005>. (<http://www.sciencedirect.com/science/article/pii/S2452316X16302459>)

Function Species: *Tectona grandis* L.f.

$$d_{ub} = (H - h) (S + \beta_3 (h - h_1) + D_{ub} / [H - h_1]) \quad (2)$$

$$\text{where } S = \beta_1 \beta_2^2 (h_1 - h) / [(1 + \beta_2 h) (1 + \beta_2 h_1) (1 + \beta_2 H)]$$

$$\beta_1 = c_0 + c_1 H + c_2 H^2 + c_3 (D_{ub} / 10)^2$$

$$\beta_2 = d_0 + d_1 H + d_2 / H$$

$$\beta_3 = f_0 + f_1 H + f_2 / H + f_3 (D_{ub} / 10) + f_4 (D_{ub} / 10)^2$$

Code :

“ ## ArticleID:003 Student: PublicationYear:2016 Authors:Xiaolu Tang,César Pérez-Cruzado,Lutz Fehrmann,Juan Gabriel Álvarez-González,Yuanchang Lu,and Christoph Kleinn,

Title:Development of a Compatible Taper Function and Stand-Level Merchantable Volume Model for Chinese Fir Plantations Source:Rongling Wu, Editor URL:<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4723312/>

Function Species:Cunninghamia lanceolata [Lamb.] Hook

Taper function:

$$d = c_1 \sqrt{H^{(k-b_1)/b_1 \bullet (1-q)^{(k-\beta)/\beta} \bullet \alpha_1^{I_1+I_2} \bullet \alpha_2^{I_2}}} \quad (2)$$

where $I_1 = 1$, if $p_1 \leq q \leq p_2$; 0 otherwise;

$I_2 = 1$, if $p_2 \leq q \leq 1$; 0 otherwise

p_1 and p_2 are the relative height from the ground level where the two inflection points assumed in the model occur.

$$\beta = b_1^{1-(I_1+I_2)} \bullet b_2^{I_1} \bullet b_3^{I_2}, \quad a_1 = (1-p_1)^{\frac{(b_2-b_1) \bullet k}{b_1 \bullet b_2}}, \quad a_2 = (1-p_2)^{\frac{(b_3-b_2) \bullet k}{b_2 \bullet b_3}}$$

$$r_0 = (1 - h_{st}/H)^{\frac{k}{b_1}}, \quad r_1 = (1 - p_1)^{\frac{k}{b_1}}, \quad r_2 = (1 - p_2)^{\frac{k}{b_2}}$$

$$c_1 = \sqrt{\frac{a_0 \bullet D^{a_1} \bullet H^{a_2-k/b_1}}{b_1 \bullet (r_0 - r_1) + b_2 \bullet (r_1 - \alpha_1 \bullet r_2) + b_3 \bullet \alpha_1 \bullet r_2}}$$

Code:

ArticleID:004

Student: Maria Chiara Ruggiu PublicationYear: 2017 Authors:José Javier Corral-Rivas, Daniel Jose Vega-Nieva, Roque Rodríguez-Soalleiro, Carlos Antonio López-Sánchez, Christian Wehenkel, Benedicto Vargas-Larreta, Juan Gabriel Álvarez-González and Ana Daría Ruiz-González.

Title: "Compatible System for Predicting Total and Merchantable Stem Volume over and under Bark, Branch Volume and Whole-Tree Volume of Pine Species"

Source:Forests 2017, Volume 8, Issue 11, 417, MDPI AG URL:<https://doi.org/10.3390/f8110417>

Function

Species: Pinus cooperi, Pinus durangensis

(1) Over bark taper function:

$$d_{ob} = c_1 \sqrt{H^{(k-b_1)/b_1} (1-q)^{(k-\beta)/\beta} \alpha_1^{I_1+I_2} \alpha_2^{I_2}}$$

where $q = h/H$ and

$$\begin{cases} I_1 = 1 \text{ if } p_1 \leq q \leq p_2; 0 \text{ otherwise} \\ I_2 = 1 \text{ if } p_2 < q \leq 1; 0 \text{ otherwise} \end{cases}$$

Code:

ArticleID: 005

Student: Matteo Piccolo PublicationYear: 2016 Authors: Yuan Sun, Xinlian Liang, Ziyu Liang, Clive Welham and Weizheng Li

Title: Deriving Merchantable Volume in Poplar through a Localized Tapering Function from Non-Destructive Terrestrial Laser Scanning Source: Forests 2016

URL: <http://www.mdpi.com/1999-4907/7/4/87/htm>

$$d^2 = a_0 D^{a_1} \frac{(H-h)^{a_2}}{H^{a_3}}$$

Schumacher and

Function Species: *Populus × canadensis* Moench cv. Code

ArticleID: 006

Student: PublicationYear: 2017 Authors: Ana Paula Marques Martins, Aline Bernarda Debastiani, Allan Libanio Pelissari, Sebastião do Amaral Machado, Carlos Roberto Sanquetta

Title: Araucaria Stem Taper or Use of Artificial Intelligence Techniques Source: Floresta Ambient. vol.24 Seropédica 2017 Epub May 08, 2017 URL: <http://europepmc.org/backend/ptpmcrender.fcgi?accid=PMC4723312&blobtype=pdf>

Function Species: *Araucaria angustifolia* Code

ArticleID: 007

Student: PublicationYear: 2006 Authors: Lana Mirian Santos da Silva, Luiz Carlos Estraviz Rodriguez, José Vicente Caixeta Filho; Simone Carolina Bauch

Title: Fitting a taper function to minimize the sum of absolute deviations Source: Scientia Agricola Url: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0103-90162006000500007

Function Species: *Eucalyptus* Code

ArticleID: 008

Student: PublicationYear: 2016 Authors: Emanuel Arnoni Costa, César Augusto Guimarães Finger, Paulo Renato Schneider, André Felipe Hess

Title: Taper function and timber assortments for *Araucaria angustifolia* Source: *Ciência Florestal* Url: <http://www.redalyc.org/articulo.oa?id=53446151016>

Function Species: *Araucaria angustifolia* Code

ArticleID: 009

Student: PublicationYear: 2008 Authors: Carlos Alberto Martinelli de Souza, Tatiane Chassot, César Augusto Guimarães Finger, Paulo Renato Schneider, Frederico Dimas Fleig

Title: Taper function for assortment of *Pinus taeda* L. stem Source: *Ciência Rural* Url: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0103-84782008000900014

Function Species: *Pinus taeda* L Code

ArticleID: 010

Student: PublicationYear: 2015 Authors: Manuel Arias-Rodil, Fernando Castedo-Dorado, Asunción Cámara-Obregón, Ulises Diéguez-Aranda

Title: Fitting and Calibrating a Multilevel Mixed-Effects Stem Taper Model for Maritime Pine in NW Spain Source: *PLOS One* Url: <http://europepmc.org/backend/ptpmcrender.fcgi?accid=PMC4668033&blobtype=pdf>

Function Species: *Pinus pinaster* Ait. Code

ArticleID: 011

Student: PublicationYear: 2015 Authors: Francisco Rodríguez1, Iñigo Lizarralde1 and Felipe Bravo

Title: Comparison of stem taper equations for eight major tree species in the Spanish Plateau Source: Instituto Nacional de Investigación y Tecnología Agraria y Alimentaria (INIA) Url: <http://revistas.inia.es/index.php/fs/article/download/6229/2595>

Function Species: Various Code

ArticleID: 012

Student: PublicationYear: 2013 Authors: J. Návar, F. de Jesús Rodríguez-Flores, P.A. Domínguez-Calleros

Title: Taper functions and merchantable timber for temperate forests of northern Mexico Source: *ANNALS OF FOREST RESEARCH* www.e-afr.org Url: <http://www.editurasilvica.ro/afr/56/1/navar.pdf>

Function Species: *P. pseudostrobus*, *P. hartwegii*, *P. cooperi*, *P. ayacahuite*, *Q. spp*, *P. durangensis*, *P. leiophylla*, *P. teocote*, *P. arizonica*, *Quercus spp* Code

ArticleID: 013

Student: PublicationYear: 2017 Authors: Ramazan Özçelik, Osman Dirican

Title: Individual taper models for natural cedar and Taurus fir mixed stands of Bucak Region, Turkey Source: Journal of the Faculty of Forestry Istanbul University Url: <http://dergipark.gov.tr/download/article-file/330518>

Function Species: Cedrus libani A. Rich., Abies cilicica Carr. Code

ArticleID: 014

Student: PublicationYear: 2005 Authors: Sebastião do Amaral Machado, Edilson Urbano, Marcio Barbosa da Conceição

Title: Comparação de Métodos de Estimativa de Volume para Pinus oocarpa em Diferentes Idades e Diferentes Regimes de Desbastes Source: Url: <https://pfb.cnpf.embrapa.br/pfb/index.php/pfb/article/view/242/193>

Function Species: Pinus oocarpa Code