

# SIMANF{P}R

## Storage model for forest Spanish species

### Model

existencias\_v01

### Model description

- Species included on the model (table on the next page)
- Geographical area: Spain

### Model type

- Category: static
- Model level: distance independent individual tree model

### Model requirements and recommended use

- Initial inventory requirements: species, expan and dbh of all the trees
- Geographical area: Spain
- Stand type: pure and mixed stands
- Execution recommended time: **executions not allowed**



Figure 1: Poplar wood stacked

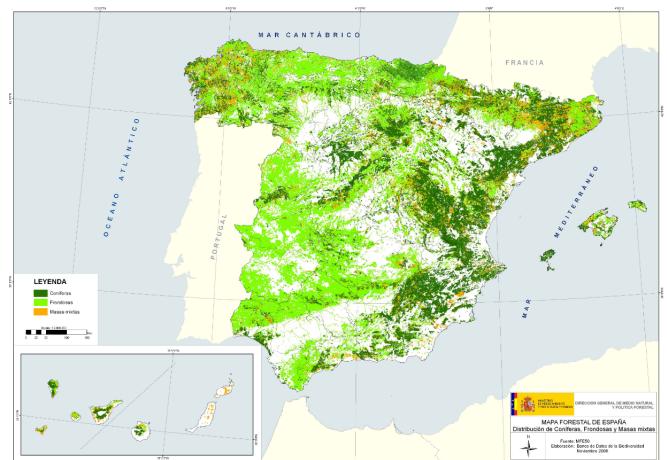


Figure 2: Spanish Forest Map for conifers, broadleaved and mixed stands

**Species** and **SFNI codes** list from which the model is able to make some estimations.  
 From the coloured species, other species of the same genre are specified at the bottom of the table.

3 - <i>Frangula alnus</i>	11 - <i>Ailanthus altissima</i>	12 - <i>Malus sylvestris</i>	13 - <i>Celtis australis</i>
14 - <i>Taxus baccata</i>	15 - <i>Crataegus spp.</i>	16 - <i>Pyrus spp.</i>	17 - <i>Cedrus atlantica</i> *
21 - <i>Pinus sylvestris</i>	22 - <i>Pinus uncinata</i>	23 - <i>Pinus pinea</i>	24 - <i>Pinus halepensis</i>
25 - <i>Pinus nigra</i>	26 - <i>Pinus pinaster</i>	27 - <i>Pinus canariensis</i>	28 - <i>Pinus radiata</i>
31 - <i>Abies alba</i>	32 - <i>Abies pinsapo</i>	33 - <i>Picea abies</i>	34 - <i>Pseudotsuga menziesii</i>
36 - <i>Cupressus sempervirens</i> *	37 - <i>Juniperus communis</i>	38 - <i>Juniperus thurifera</i>	39 - <i>Juniperus phoenicea</i>
41 - <i>Quercus robur</i>	42 - <i>Quercus petraea</i>	43 - <i>Quercus pyrenaica</i>	44 - <i>Quercus faginea</i>
45 - <i>Quercus ilex</i>	46 - <i>Quercus suber</i>	47 - <i>Quercus canariensis</i>	51 - <i>Populus alba</i>
52 - <i>Populus tremula</i>	54 - <i>Alnus glutinosa</i>	55 - <i>Fraxinus angustifolia</i> *	56 - <i>Ulmus minor</i> *
57 - <i>Salix</i> spp.*	61 - <i>Eucalyptus globulus</i>	62 - <i>Eucalyptus camaldulensis</i>	64 - <i>Eucalyptus nittens</i>
65 - <i>Ilex aquifolium</i>	66 - <i>Olea europaea</i>	67 - <i>Ceratonia siliqua</i>	68 - <i>Arbutus unedo</i>
71 - <i>Fagus sylvatica</i>	72 - <i>Castanea sativa</i>	73 - <i>Betula</i> spp.*	74 - <i>Corylus avellana</i>
75 - <i>Juglans regia</i>	76 - <i>Acer campestre</i> *	78 - <i>Sorbus</i> spp.*	95 - <i>Prunus</i> spp.*
97 - <i>Sambucus nigra</i>	258 - <i>Populus x euroamericana</i>	-	-
17 - <i>Cedrus atlantica</i>	217 - <i>Cedrus deodara</i>	317 - <i>Cedrus libani</i>	917 - <i>Cedrus</i> spp.
236 - <i>Cupressus arizonica</i>	336 - <i>Cupressus lusitanica</i>	436 - <i>Cupressus macrocarpa</i>	936 - <i>Cupressus</i> spp.
55 - <i>Fraxinus angustifolia</i>	255 - <i>Fraxinus excelsior</i>	355 - <i>Fraxinus omus</i>	955 - <i>Fraxinus</i> spp.
56 - <i>Ulmus minor</i>	256 - <i>Ulmus glabra</i>	356 - <i>Ulmus pumila</i>	956 - <i>Ulmus</i> spp.
57 - <i>Salix</i> spp.	257 - <i>Salix alba</i>	357 - <i>Salix atrocinerea</i>	457 - <i>Salix babylonica</i>
557 - <i>Salix cantabrica</i>	657 - <i>Salix caprea</i>	757 - <i>Salix eleagnos</i>	857 - <i>Salix fragilis</i>
858 - <i>Salix canariensis</i>	957 - <i>Salix purpurea</i>	273 - <i>Betula alba</i>	373 - <i>Betula pendula</i>
276 - <i>Acer monspessulanum</i>	376 - <i>Acer negundo</i>	476 - <i>Acer opalus</i>	576 - <i>Acer pseudoplatanus</i>
676 - <i>Acer platanoides</i>	976 - <i>Acer</i> spp.	278 - <i>Sorbus aria</i>	378 - <i>Sorbus aucuparia</i>
478 - <i>Sorbus domestica</i>	578 - <i>Sorbus torminalis</i>	678 - <i>Sorbus latifolia</i>	778 - <i>Sorbus chamaemespilus</i>
295 - <i>Prunus spinosa</i>	395 - <i>Prunus avium</i>	495 - <i>Prunus lusitanica</i>	595 - <i>Prunus padus</i>

# Bibliography

Complete SIMANFOR model recommended citation):

SIMANFOR (2022). Storage model for forest Spanish species.

Model components:

- General calculations: bal, g, slenderness, normal circumference:

Standard equations

- Taper equations over bark (volume):

Badía M, Rodríguez F, Broto M (2001). Modelos del perfil del árbol. Aplicación al pino radiata (*Pinus radiata* D. Don). In Congresos Forestales

Bravo, F., Álvarez González, J. G., Rio, M. D., Barrio, M., Bonet Lledos, J. A., Bravo Oviedo, A., ... & Diéguez Aranda, U. (2011). Growth and yield models in Spain: historical overview, contemporary examples and perspectives. *Forest Systems*, 2011, vol. 20, núm. 2, p. 315-328.

Calama R, Montero G (2006). Stand and tree-level variability on stem form and tree volume in *Pinus pinea* L.: a multilevel random components approach. *Forest Systems*, 15(1), 24-41

Diéguez-Aranda, U., Alboreca, A. R., Castedo-Dorado, F., González, J. A., Barrio-Anta, M., Crecente-Campo, F., ... & Balboa-Murias, M. A. (2009). Herramientas selvícolas para la gestión forestal sostenible en Galicia. *Forestry*, 82, 1-16.

Lizarralde I (2008). Dinámica de rodales y competencia en las masas de pino silvestre (*Pinus sylvestris* L.) y pino negral (*Pinus pinaster* Ait.) de los Sistemas Central e Ibérico Meridional. Tesis Doctoral. 230 pp

López-Sánchez C A (2009). Estado selvícola y modelos de crecimiento y gestión de plantaciones de *Pseudotsuga menziesii* (Mirb.) Franco en España (Doctoral dissertation, Doctoral thesis. Universidad de Santiago de Compostela, Lugo.

Manrique-González, J., Bravo, F., del Peso, C., Herrero, C., Rodríguez, F., 2017. Ecuaciones de perfil para las especies de roble albar (*Quercus petraea* (Matt.) Liebl.) y rebollo (*Quercus pyrenaica* Willd) en la comarca de la “Castillería” en el Norte de la provincia de Palencia. 7º Congreso Forestal Español ( póster).

Rodríguez, F., & Torre, I. L. (2015). Comparison of stem taper equations for eight major tree species in the Spanish Plateau. *Forest systems*, 24(3), 2.

List of species:

Conifers: 21, 23, 24, 25, 26, 28, 34, 38

Broadleaved: 41, 42, 43, 61, 64, 71, 72, 258, 273

- Taper equations under bark (volume):

López-Sánchez C A (2009). Estado selvícola y modelos de crecimiento y gestión de plantaciones de *Pseudotsuga menziesii* (Mirb.) Franco en España (Doctoral dissertation, Doctoral thesis. Universidad de Santiago de Compostela, Lugo.

List of species:

Conifers: 21, 23, 26, 34

- Biomass equations:

Diéguez-Aranda U, Rojo A, Castedo-Dorado F, et al (2009). Herramientas selvícolas para la gestión forestal sostenible en Galicia. *Forestry*, 82, 1-16

Ruiz-Peinado R, del Rio M, Montero G (2011). New models for estimating the carbon sink capacity of Spanish softwood species. *Forest Systems*, 20(1), 176-188

Ruiz-Peinado R, Montero G, Del Rio M (2012). Biomass models to estimate carbon stocks for hardwood tree species. *Forest systems*, 21(1), 42-52

List of species:

Conifers: 21, 22, 23, 24, 25, 26, 27 28, 31, 32, 38

Broadleaved: 41, 42, 43, 44, 45, 46, 47, 54, 55, 61, 64, 66, 67, 71, 72, 258, 273

- **Technological wood uses information:**

Fernández-Manso A, Sarmiento A (2004). El pino radiata (*Pinus radiata*). Manual de gestión forestal sostenible. Junta de Castilla y León.

Rodríguez F (2009). Cuantificación de productos forestales en la planificación forestal: Análisis de casos con cubiFOR. In Congresos Forestales

List of species:

Conifers: 21, 23, 24, 25, 26, 28, 33, 34, 36, 236, 336, 436, 936, 37, 38, 39

Broadleaved: 3, 11, 12, 13, 14, 15, 16, 17, 217, 317, 917, 41, 42, 43, 44, 45, 46, 51, 52, 54, 55, 255, 355, 955, 56, 256, 356, 956, 57, 257, 357, 457, 557, 657, 757, 857, 858, 957, 62, 65, 66, 68, 71, 72, 73, 273, 373, 74, 75, 76, 276, 376, 476, 576, 676, 976, 78, 278, 378, 478, 578, 678, 778, 95, 295, 395, 495, 595, 97, 258

- **Value for Reineke Index equation:**

Standard

**Figures:**

- **Figure 1:** by Vázquez-Veloso, A.

- **Figure 2:** extracted from MITECO

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## Interest Links

**SIMANFOR** - Support system for simulating Sustainable Forest Management Alternatives. Accessed 11 May 2021, in <https://www.simanfor.es/>

**iuFOR** - Sustainable Forest Management Research Institute UVa-INIA. Accessed 11 May 2021, in <http://sostenible.palencia.uva.es/>

**ETSIIAA Palencia** - Higher Technical School of Agricultural Engineering of Palencia. Accessed 11 May 2021, in <http://etsiiaa.uva.es/>

**UVa** - University of Valladolid. Accessed 11 May 2021, in <https://www.uva.es>

