

Table 1. Top 100 trees for planting in tropical countries based on compilation from geographically and functionally diverse databases.

Database abbreviations before and after the hyphen correspond to presence in global and regional databases, respectively, and within brackets to 'attribute' databases that were not used for scoring purposes. Species marked **x** are considered potentially invasive by CABI and/or IUCN lists.

Species	Databases	Species	Databases
<i>Acacia auriculiformis</i> x	EeHLNTu-AXSZ (copsw)	<i>Euphorbia tirucalli</i> x	EeGHNTu-AXS (cw)
<i>Acacia mangium</i> x	EeHLNTuW-RZ (ciosw)	<i>Faidherbia albida</i>	EeGHNTu-AXS (asw)
<i>Acacia mearnsii</i> x	EeHLNTuW-AXSZ (ciopsw)	<i>Falcataria moluccana</i> x	EeHLNTu-ASZ (cis)
<i>Acacia nilotica</i> x	EeFGHLNTu-AXIS (ciosw)	<i>Garcinia mangostana</i>	EeNTUuY-ASZ (aw)
<i>Acacia saligna</i> x	EeGHNTu-AX (cips)	<i>Gliricidia sepium</i> x	EeFGHLNTu-AXCMRPSZ (cosw)
<i>Acacia senegal</i>	EeGHNTu-AX (os)	<i>Gmelina arborea</i>	EeHLNTu-AXIZ (osw)
<i>Acacia seyal</i>	EeGLNTuW-AX (sw)	<i>Grevillea robusta</i> x	EeHTuW-AXISZ (ciopsw)
<i>Acacia tortilis</i>	EeGHNTu-AX (s)	<i>Guazuma ulmifolia</i>	EeGLTu-ACRS (sw)
<i>Albizia lebeck</i> x	EeFGHLNTuW-AXISZ (ciosw)	<i>Hevea brasiliensis</i>	EeGHNTuWY-AXISZ (gsw)
<i>Albizia saman</i> x	EeGHNTuW-AXICMRPSZ (isw)	<i>Hymenaea courbaril</i>	EeGNTuW-ACMR (sw)
<i>Aleurites moluccanus</i> x	EeGNTu-AXPSZ (ciw)	<i>Jatropha curcas</i> x	EeGLNTu-AXCRS (cgoswz)
<i>Alnus nepalensis</i>	EeGHNTuW-A (psw)	<i>Khaya senegalensis</i>	EeHLTuW-AXZ (osw)
<i>Anacardium occidentale</i>	EeGHNTuY-AXICRSZ (aopsw)	<i>Leucaena diversifolia</i> x	EeFGTu-AXSZ (cow)
<i>Andira inermis</i>	eHTuW-AXCRS (sw)	<i>Leucaena leucocephala</i> x	EeGHNTu-AXIRSZ (ciosw)
<i>Annona cherimola</i>	EeNTUu-AXMRS (p)	<i>Macadamia integrifolia</i>	EeGNTUuW-AXSZ (pw)
<i>Annona muricata</i>	EeNTUu-AXCMSZ (psw)	<i>Maesopsis eminii</i> x	EeHLTu-AXSZ (cow)
<i>Areca catechu</i>	EeGTuY-AXIPSZ (p)	<i>Mangifera indica</i>	EeNTUuWY-AXIPSZ (asw)
<i>Artocarpus altilis</i>	EeGNTUu-ARPSZ (apsw)	<i>Manilkara zapota</i>	EeNTUu-ACSZ (w)
<i>Artocarpus heterophyllus</i>	EeGTUu-AXIPSZ (apsw)	<i>Melia azedarach</i> x	EeGHNTuW-AXSZ (cisw)
<i>Azadirachta indica</i> x	EeGHNTu-AXISZ (cgopsw)	<i>Moringa oleifera</i> x	EeGLNTu-AXIZ (acosw)
<i>Bactris gasipaes</i>	EeGNTu-CMRS (p)	<i>Morus alba</i> x	EeGNTuW-AXSZ (acipsw)
<i>Bertholletia excelsa</i>	EeGNTUuY-AMS (pw)	<i>Olea europaea</i> x	EeGNTUWY-AX (iopswz)
<i>Bixa orellana</i> x	EeGNTu-ACRSZ (cpw)	<i>Persea americana</i>	EeGNTUuY-AXCRS (asw)
<i>Borassus flabellifer</i>	EeGTuW-AISZ (psw)	<i>Phoenix dactylifera</i>	EeGNTUuY-AXS (g)
<i>Cajanus cajan</i>	EeFGNTUuY-AXRSZ (gopz)	<i>Phyllanthus emblica</i>	EeLNTu-AISZ (sw)
<i>Calliandra calothyrsus</i>	EeFGHLNTu-XRSZ (opsw)	<i>Pinus caribaea</i> x	EeGLTuW-AXCMZ (ciosw)
<i>Carica papaya</i>	EeNTUuY-AXISZ (agps)	<i>Pinus kesiya</i>	EeHLTuW-AXIZ (osw)
<i>Castanea sativa</i>	EeGNTUWY-S (opsw)	<i>Pinus merkusii</i>	EeGHNTuW-AZ (sw)
<i>Casuarina equisetifolia</i> x	EeGHNTu-AXIPSZ (ciopsw)	<i>Pinus oocarpa</i>	EeGHNTuW-AXCM (osw)
<i>Cedrela odorata</i> x	EeHLTuW-AXCMR (cipsw)	<i>Pinus patula</i> x	EeHLTuW-AXM (copsw)
<i>Ceiba pentandra</i>	EeGHNTuY-AXCRZ (sw)	<i>Pinus radiata</i> x	EeGHNTuW-AX (copsw)
<i>Chrysophyllum cainito</i>	EeNTu-ACRSZ (apw)	<i>Pithecellobium dulce</i> x	EeGHNTu-AXICSZ (cisw)
<i>Citrus aurantiifolia</i> x	EeNuY-AXPSZ (cp)	<i>Pouteria sapota</i>	EeNTUu-AXRSZ (w)
<i>Citrus limon</i>	EeNuY-AXIPS (ps)	<i>Prosopis juliflora</i> x	EeGHNTuW-AXCMRS (cisw)
<i>Citrus maxima</i>	EeNTUu-AXPSZ (s)	<i>Prunus armeniaca</i>	EeGNTUWY-AS (psw)
<i>Citrus reticulata</i>	EeNTUuY-AXPSZ (gp)	<i>Psidium guajava</i> x	EeHNTUuY-AXICSZ (acisw)
<i>Citrus sinensis</i>	EeNTUuY-AXPSZ (gpswz)	<i>Punica granatum</i>	EeHNTUu-AXRSZ (pw)
<i>Cocos nucifera</i>	EeGHNTUuWY-AXIPZ (apsz)	<i>Senna siamea</i> x	EeGHNTuW-AXISZ (cosw)
<i>Cordia alliodora</i> x	EeHLTuW-ACMRS (cpsw)	<i>Sesbania grandiflora</i>	EeFGHNTu-ASZ (w)
<i>Cupressus lusitanica</i>	EeHTuW-AXCM (opsw)	<i>Spondias mombin</i>	EeNTu-AXCRS (sw)
<i>Dalbergia sissoo</i> x	EeHLNTuW-AXI (cisw)	<i>Swietenia macrophylla</i>	EeHLTuW-ACMRZ (sw)
<i>Elaeis guineensis</i> x	EeGHNTuY-AXZ (acgisz)	<i>Syzygium cumini</i> x	EeHNTUu-AXISZ (cisw)
<i>Enterolobium cyclocarpum</i>	EeGHNTuW-ACMRS (sw)	<i>Tabebuia rosea</i>	EeHTu-AXCMR (sw)
<i>Eriobotrya japonica</i> x	EeNTUu-AXRS (ipsw)	<i>Tamarindus indica</i>	EeGHNTUuW-AXISZ (aosw)
<i>Erythrina poeppigiana</i> x	EeFGNTu-ACSZ (cow)	<i>Tectona grandis</i>	EeHLNTuW-AXIZ (opsw)
<i>Eucalyptus camaldulensis</i> x	EeGHNTuW-AXSZ (cgopsw)	<i>Terminalia catappa</i> x	EeNTUu-AXIRSZ (ciosw)
<i>Eucalyptus globulus</i>	EeGHNTu-AX (opsw)	<i>Theobroma cacao</i>	EeGNTuY-AXMRSZ (gswz)
<i>Eucalyptus grandis</i>	EeGHNTuW-AXZ (gosw)	<i>Vitellaria paradoxa</i>	EeGLNTuY-AX (as)
<i>Eucalyptus tereticornis</i>	EeGHNTu-AXISZ (osw)	<i>Ximenia americana</i>	EeLTuY-AXRS (sw)
<i>Eucalyptus urophylla</i>	EeGHNTu-ASZ (osw)	<i>Ziziphus mauritiana</i> x	ELNTu-AXIRSZ (acisw)

Global databases: E Ecocrop; e World Economic Plants in the Germplasm Resources Information Network; F Selection of Forages for the Tropics; G Global Species Matrix; H Tropical Forestry Handbook's most frequently used species for plantations in the tropics; L Seed Leaflets; N NewCROP; T Agroforestry Database; u USDA Food Composition Databases; W the Wood Database; Y FAO Crop statistics

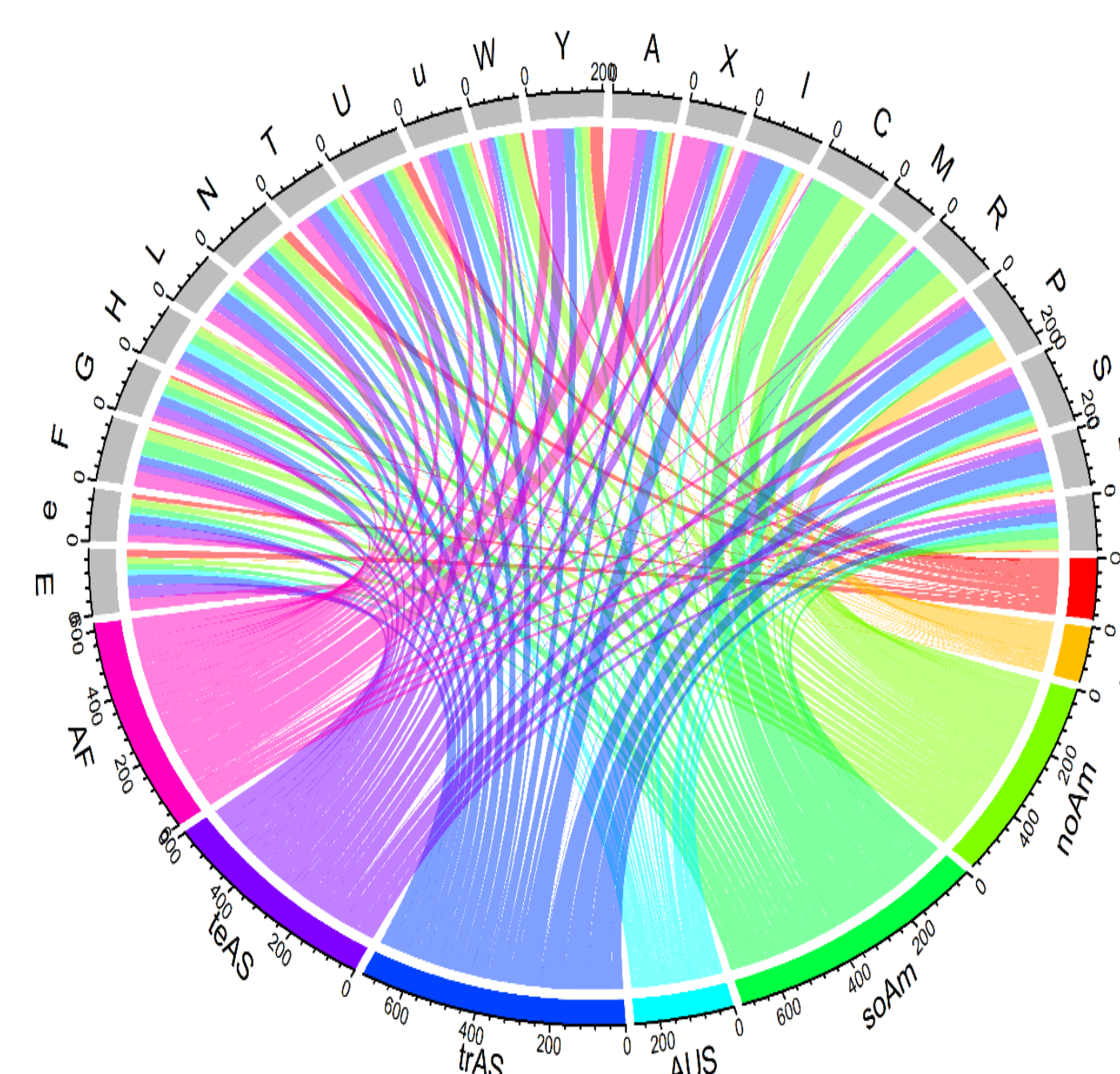
Regional databases: A Plant Resources of Tropical Africa; X Useful Tree Species for Africa; I Useful Tree Species for India; C Árboles de Centroamérica; M MAPFORGEN Atlas para la conservación de los recursos genéticos forestales; R Especies para restauración; P Species Profiles for Pacific Island Agroforestry; S Plant Resources of South-East Asia online database; Z Useful Tree Species for South-East Asia

Attribute databases: a African Orphan Crops Consortium; c CABI Invasive Species Compendium; g Species with sequenced genome; G Global Invasive Species Database; o OECD Approved Basic Forest Material; p Plants For A Future; s Priority species for the State of World's Forest Genetic Resources; w Wood density database; z Global Agroecological Zones

Figure 1. Circular diagram showing the percentage of species native to specific continents (AF: Africa, teAS: temperate Asia, trAS: tropical Asia, AUS: Australasia, soAM: southern America, noAM: northern America, PA: Pacific, EU: Europe) in the top-100 (B), global (EeFGHLNTUuWY) and regional (AXICMRPSZ) databases. Native continents were inferred from the US National Plant Germplasm System by downloading separate lists for each continent

More details on global and regional databases are available from ICRAF's [Agroforestry Species Switchboard](http://www.worldagroforestry.org/products/switchboard). Species counts were calculated using version 1.4 of the *Switchboard*.

<http://www.worldagroforestry.org/products/switchboard>



To create a current 'top 100' list of tree species planted in tropical nations primarily for agroforestry and mosaic forest landscape restoration, we applied a simple but novel method of counting entries of woody perennial species across a range of databases. Most of these databases are listed in ICRAF's *Agroforestry Species Switchboard*.

In our top 100 tree species list, the most common botanical families were the Fabaceae, Myrtaceae and Arecaceae (27, 7 and 6 species, respectively), which are among the top 10 for tree species richness globally. The most common genera were *Acacia*, *Pinus*, *Citrus* and *Eucalyptus* (8, 6, 5 and 5 species, respectively). With the exception of *Citrus* and the inclusion of *Hevea brasiliensis* and *Tectona grandis*, these genera are among the most important for plantation establishment in tropical countries, with an estimated total of 86% of area planted. Of the top 100 species, >94 occurred in Ecocrop (E), World Economic Plants (e), Agroforestry Tree (T), Useful Tropical Plants (u) and Plant Resources Of Tropical Africa (A) global and regional databases, while 56 to 76 occurred in Useful Tree Species for Africa (X), Plant Resources of South-East Asia (S), NewCROPS (N), Useful Tree Species for South-East Asia (Z), Global Species Matrix (G) and Tropical Forestry Handbook (H) databases. Global databases with <44 species were Seed Leaflets (L), the Wood Database (W), FCD (U), the Crop Statistics database (Y) and SoFT (F). As 96 species were present at least once in SoFT, GSM, TFH, FCD and the Wood Database, the top 100 species represent a wide portfolio of food, forage, timber and other tree products.

A relatively high proportion of 41 of the top 100 species were listed as potentially invasive by the CABI Invasive Species Compendium (38 species) and/or the IUCN global invasive species database (24 species), with *Albizia lebeck*, *Casuarina equisetifolia*, *Leucaena leucocephala* and *Prosopis juliflora* among trees mentioned by both databases.

Using a benchmark of 10% difference between observed and expected species, numbers revealed that the top 100 species had a higher percentage (+16) of species native to southern America, which could reflect historical activity on tree species collection and research in, and distribution from, the region. The findings that 38 of the top 100 species were native to only one continent, and that there were only two instances of native endemic species percentages higher than 50% for regional databases (56.5% African natives in X and 64.4% southern American natives in M) suggest a similar international interdependence for useful tree species as documented for food crops in global production systems.