

Ricinodendron 1990 - 2004

Author	Ekam VS
Title	Evaluation and characterization of the seed oils of <i>Trichosanthes cucumerina</i> (sna
Year	2003
Source title	Global Journal of Pure and Applied Sciences
Reference	9(2): 217-220

Abstract

The estimation of the chemical composition and physical properties of the seed oils of *Trichosanthes cucumerina* and *Ricinodendron heudelotii* using standard methods of analysis showed that the seed of *T. cucumerina* and *R. heudelotii* have high oil content ($46.3 \pm 4\%$ and $42.5 \pm 5\%$ respectively). Assessment of the physical constants revealed that *Ricinodendron heudelotii* had a low heat of combustion ($12.9 \pm 3 \text{ kcal/g}$) when compared to that of *Trichosanthes cucumerina* ($32.8 \pm 4 \text{ kcal/g}$). The refractive indices at 40°C, boiling point, smoke point and flash points were high in the two oils. Their relative densities were high and their melting points were low. From the chemical parameters, the high ester value and saponification values of *T. cucumerina* and *R. heudelotii* qualifies them to be used in industries for soap making, while the high iodine value for *R. heudelotii* ($158.8 \pm 8 \text{ gI/100g oil}$) qualifies it as a drying oil and suggest possible usefulness in the paint industry. Their percentage free fatty acid and acid values were low suggesting increased stability and usefulness in nutritional and industrial applications.

Author Okoli IC; Anunobi MO; Obua BE; Enemuo V
Title Studies on selected browses os southeastern Nigeria with particular reference to th
Year 2003
Source title Livestock Research for Rural Development
Reference 15(9)

Abstract

Seven Commonly utilized browse plants (Diodiascandens, Microdesmis puberula, Nuaclea popegnine, Palisota hirsute, Ricinodendron heudelotti, Urena lobata and Vernonia amygdalina) were collected from Ihiagwa in Imo State, Nigeria and analysed for proximate chemical composition and s o m e a n t i - n u t r i t i v e c o m p o n e n t s o f t h e i r l e a v e s .

A high variability was recorded in values of percentage crude protein in DM (CP) (13.3 to 25.9), Ash (4.80 to 12.8), crude fiber (7.50 to 19.9), ether extract (7.50 to 19.9) and nitrogen free extract (40.1 to 57.6). The concentrations of anti-nutritional factors were generally low. Tannin content ranged from 0.38 in V. amygdalina to 1.97 in P. hirsuta, while phytin and hydrocyanic acid levels ranged from 13.8 mg/kg to 25.2 mg/kg and 1.52 mg/kg to 6.40 mg/kg, respectively.

The results show that the browse plants studied have good levels of nutrients, low and safe levels of anti-nutritional factors, and may therefore form good feed resources for modern intensive animal p r o d u c t i o n .

Author Tchiegang C; Dandjouma AA; Kapseu C; Parmentier M
Title Etude des conditions d'extraction de l'huile par pressage des amandes de Ricinode
Year 2003
Source title Journal of Food Engineering
Reference 58(4): 363-371

Abstract

Conditions for the extraction of oil by pressing of Ricinodendron hendelotii (Bail.) Pierre ex Pax, kernels after fragilisation have been realised. The fragilisation of kernels was done by dry and wet ways at different temperatures (50, 70 and 90 degreesC) and durations (5 10 15 20 30 and 60 min). Results obtained showed that heating kernels at 90 degreesC for 60 min gave the optimal friability 60,86% and 58,13% respectively for dry and wet ways. Heating and grinding significantly ($p < 0,05$) increased the oil yield. Extraction of the oil by pressing gave an optimal extraction yield of 19,45% corresponding to an extraction efficiency of 38,75%. This yield was obtained with the press reservoir filled at 37,5% (w/w). These results are sufficient to show the interest of this tree and to draw the attention of agroforestry police makers on the importance of it integration in agrary l a n d s c a p e s . (C) 2 0 0 3 P u b l i s h e d b y E l s e v i e r S c i e n c e L t d .

Author	Opoko IY; Akrofi AY; Appiah AA
Title	Shade trees are alternative hosts of the coca pathogen <i>Phytophthora megakarya</i>
Year	2002
Source title	Crop Protection
Reference	21(8): 629-634

Abstract

Two methods of isolation, direct plating on selective agar medium, and baiting with cocoa pod husks, were used to isolate *Phytophthora megakarya* from root pieces of some shade trees. Isolates were identified on the basis of their growth rates, colony morphology and sporangium characteristics. Pathogenicity tests were conducted on detached green mature cocoa pods and stems of the relevant host trees. After 36 months of sampling and baiting *P. megakarya* was isolated from the roots of four out of 34 shade tree species examined. The host trees were *Funtumia elastica* (Apocynaceae), *Sterculia tragacantha* (Sterculiaceae), *Dracaena mannii* (Agavaceae) and *Ricinodendron heudelotii* (Euphorbiaceae). *P. megakarya* isolations were made in both the wet and the dry seasons. The rate of recoveries were very low in both seasons ranging from 0.6% to 1.2%. The highest recoveries were in October and the lowest in December and February. In general, plating onto medium was slightly superior to cocoa pod husk baiting for the recovery of *P. megakarya*. Colonies of *P. megakarya* isolates from the trees were morphologically indistinguishable from a reference isolate, but were less virulent on cocoa pods than the reference isolate from cocoa. The epidemiological significance of these findings are not clear, but roots of the host trees were likely to be sites for survival and not for multiplication of *P. megakarya*. Field observation indicated that levels of black pod incidence on cocoa trees around the affected shade trees were not greater than those in other parts of the cocoa plantation. This is the first reported isolations of *P. megakarya* from roots of plants other than cocoa.

Author Manga TT; Fondoun JM; Kengue J; Thiengang C

Title Chemical composition of *Ricinodendron heudelotii*: An indigenous fruit tree in so

Year 2000

Source title African Crop Science Journal

Reference 8(2): 195-201

Abstract

An ethnobotanical survey and germplasm collection of (*Ricinodendron heudelotii*) (an indigenous fruit tree) were carried out in six provinces of the humid rainforest zone in southern Cameroon [date not given]. Fruit samples were collected at 40-50 km intervals along the main road network of the zone, from homegardens, food crop as well as cash crop fields, bush fallow and primary forest land uses. At each point, 100 fruits were randomly collected under a tree chosen by farmers. A total of 47 accessions or tree provenances were sampled in 47 different villages. Kernels (cotyledons) or the edible parts of these fruits were analysed for fat, crude protein, ash and crude fibre. Total carbohydrates and energy values were also determined. The edible parts of *R. heudelotii* were found to have a very high fat content (49.2 to 63.5 %) and crude protein (49.9 to 65.2%), and low total carbohydrates (4.9 to 6.4 %). The highest values for crude fibre and total ash were 9.37 and 17.76%, respectively. The species also gave higher energy values (2748 to 3558 KJ 100g-1 DM) compared with food crops (84-2500 KJ 100-1DM). Two provenances, FTKC 27 and FTKC 32, were classified as high and low energy "ideotypes".

Author Agyeman VK; Swaine MD; Thompson J
Title Responses of tropical forest tree seedlings to irradiance and the derivation of a lig
Year 1999
Source title Journal of Ecology
Reference 87(5): 815-827

Abstract

1. Seedlings of 16 West African timber tree species were grown in six neutral shadehouses with irradiances 2%, 6%, 10%, 28%, 44% and 66% of unshaded values. 2. Tested species included well-known pioneers, which showed negative growth in 2% irradiance but which responded strongly to increased irradiance, and very shade-tolerant non-pioneers, which had positive growth in 2% irradiance but responded only slightly to increased irradiance. 3. For all species, maximum growth occurred at an irradiance varying between 10% and 44%. The inhibition of growth at higher irradiance was greater in the more shade-tolerant species. 4. Data from growth analyses were used in a principal components analysis to quantify the species' positions on a light response gradient. The growth variables most strongly correlated with this gradient were relative growth rate (RGR) and relative diameter growth in 2% irradiance, and also apparent quantum efficiency and leaf mortality rate in both 2% and 66% irradiance. These results draw attention to the importance of performance in deep forest shade in defining differences among tropical forest tree species. 5. The second (independent) axis of the principal components analysis separated three species that are known from other experiments to be drought tolerant. Other species' traits of functional significance (adult deciduousness, seed size, seed dispersal) were only weakly, if at all, associated with the gradient of light response. 6. Possible methods for efficient placement of other species on the gradient of light response are discussed. Formulation of standardized conditions simulating deep shade would allow diameter growth to be used as a simple non-destructive measure of a species' position on the gradient of light response, which could then be applied to any tropical forest flora.

Author Ayuk ET; Duguma B; Franzel S; Kengue J; Mollet M; Tiki-Manga T; Zenkeng P
Title Uses, management and economic potential of *Garcinia kola* and *Ricinodendron heudelotii*
Year 1999
Source title Journal of Tropical Forest Science
Reference 11(4): 746-761

Abstract

Garcinia kola and *Ricinodendron heudelotii*, both secondary forest tree species, are among the most preferred species in the humid lowlands of Cameroon. *Garcinia kola* fruits and *Ricinodendron heudelotii* seeds are highly valued and traded. The species grow in the wild and not much work has been done on domesticating them. As part of a prioritization exercise a field survey was undertaken to quantify, at the farm-level, uses, management and economic potential of the species. Results from this study show that there are several uses of different products of the species including those for medicinal purposes and for home consumption. Desired improvement objectives include reduced time to bearing, reduced tree height, higher yield, increased fruit size and spreading the fruiting period. Improvement research in those lines might increase the value of the species to land users.

Author Fondoun JM; Tiki Manga T; Kengue J
Title *Ricinodendron heudelotii* (djansang): Ethnobotany and importance for forest dwellers
Year 1999
Source title Plant Genetic Resources Newsletter
Reference 118: 1-6

Abstract

Domestication of indigenous wild fruit trees for integration into existing land use systems can improve the livelihood of rural communities while maintaining plant biodiversity. Such improvement could be in terms of production systems, income-generating opportunities or nutritional well-being. An ethnobotanical survey and germplasm collecting of *Ricinodendron heudelotii* (an indigenous fruit tree) were carried out in six provinces of the humid lowland forest of Cameroon. Fruit samples were collected at 40-50 km intervals along the main road network of southern Cameroon from domestic gardens, food and cash crops fields, bush fallow and in primary forest land. At each point, the samples were collected from trees chosen by farmers. Questionnaires were used to interview farmers to understand the importance of the tree in their community. An average of 100 fruits was collected per tree provenance or accession for a germplasm collection and morphological description. A total of 47 accessions was recorded and seed weight performance calculated per accession. Fruit morphology showed various hilum shapes, indicating variability among provenances as well as the number of seeds per fruit. Seed weight varied significantly among provenances by a difference of 110 g between the highest and lowest yields. Four major uses, depending on the ethnic groups, ranging from food consumption, medicinal, sociocultural and soil fertility improvement are listed in order of priority.

Author Leakey RRB

Title Potential for novel food products from agroforestry trees: A review

Year 1999

Source title Food Chemistry

Reference 66(1): 1-12

Abstract

The domestication of trees for agroforestry approaches to poverty alleviation and environmental rehabilitation in the tropics depends on the expansion of the market demand for non-timber forest products. This paper reviews published data on the nutritive values of the flesh, kernels and seedoils of the seventeen fruit tree species that have been identified, in four ecoregions of the tropics, by subsistence farmers as their top priorities for domestication. In some species, genetic variation in nutritive value has been reported, but in most species there is still inadequate information on which to base programmes for the genetic improvement of these species. Farmers and agroforesters have identified many of the biological constraints relevant to their viewpoint on production, but there is a need for inputs from the food industry into the identification of the desirable traits and characteristics of potentially novel food products. This paper calls for greater collaboration between agroforesters and the food industry in the effort to promote the domestication and commercialization of under-utilized tree products.

Author Mapongmetsem PM; Duguma B; Nkongmeneck BA; Selegny E

Title Seed germination, growth and development of some local tree species of the forest

Year 1999

Source title Tropicultura

Reference 16/17(4): 175-179

Abstract

Studies were conducted on eight indigenous multipurpose trees species: *Alstonia boonei*, *Ceiba pentandra*, *Cordia platythyrsa*, *Milicia excelsa*, *Pycnanthus angolensis*, *Ricinodendron heudelotii*, *Terminalia superba* and *Triplochiton scleroxylon*. The objective of the study was to evaluate germination capacity, development and growth rate of the seedlings.

Author	Mapongmetsem PM; Duguma B; Nkongmeneck BA; Selegny E
Title	The effect of various seed pretreatments to improve germination in eight indigeno
Year	1999
Source title	Annals of Forest Science
Reference	56(8): 679-684

Abstract

With the long-term aim of increasing knowledge about potential indigenous tree species which could be used in agroforestry land use systems in Cameroon, pretreatment techniques were tested for improving seed germination. An earlier ethnobotanical survey had indicated that local farmers had good knowledge of ten indigenous agroforestry species; the 8 tested were: *Ceiba pentandra* (70% = interviews in which the species was mentioned); *Terminalia superba* (57%); *Triplochiton scleroxylon* (56%); *Cordia platythyrsa* (24%); *Milicia excelsa* (24%); *Pycnanthus angolense* [*P. angolensis*] (24%); and *Ricinodendron heudelotii* (18%). Two *Ficus* species, *F. exasperata* (12%) and *F. mucoso* (10.5%) were excluded from the study. Mature and healthy seeds were collected (in 1992) from four trees. Pretreatment depended on seed morphology - e.g., wings, hairs and cotton were removed before drying, and if present mesocarps were disintegrated (the seeds of *C. platythyrsa* and *P. angolensis*, being recalcitrant, were sown immediately). Five pretreatments were tested: 12 h soak in cold water; 3 min soak in boiling water; 20 min soak in 98% sulfuric acid, stirring every 3 min; hand scarification by puncturing the seedcoats at both the micropyle and the opposite end; and untreated (control). Manual scarification was the most efficient treatment for all species, although a significant interaction between treatment and species was found. Only one species (*Ceiba pentandra*) was sensitive to all treatments. The use of sulphuric acid was not an effective alternative to manual scarification.

Author	Chimbelu EG
Title	Developing zambian tree resources through community needs and values
Year	1998
Source title	PWPA Conference, Eastern, Central and Southern Region, Musungwa Lodge, Za
Reference	Professors World Peace Academy of Zambia, Lusaka, Zambia, 66-75 pp

Abstract

The introduction to this paper discusses the important role of the cultural values and needs of rural people in community forestry development programmes, and examines these aspects through a case study. The study is based on the multipurpose indigenous fruit tree mugongo (*Ricinodendron rautanenii*), and its use and cultivation by the Luchazi people, said to have migrated from Angola about 60 yr ago to the Zambezi District. A survey was carried out in Oct. 1983 in an area inhabited by 2 chiefs, and with abundant mugongo (up to 15 trees/ha). Some 68 people were interviewed randomly in 44 villages in areas with a high concentration of mugongo. Data were collected on types of mugongo use, parts used, priority among users (age groups, sex), priority of use of parts, cultivation, and income from selling products. All parts of the trees were used, but the stem was most popular, being used by about 55% of respondents for various wood products (furniture, musical instruments, footw! ear, medicine etc.). Prominent users of the stem were males more than 50 yr old. The species was rated the most favoured fruit tree. However, it was not a commercial species since about 60% of people received no income from the tree. Some 70-89% of respondents cultivated the tree from cuttings. A similar study of the Tokaleya people of the southern Shungu region (only briefly reported) indicated that the most extensively used part of the tree was the fruit (93.9%) which was used as food for humans and feed for livestock. Mugongo was also regarded as a priority species by the Tokaleya, but use of the fruit was more prominent among females than males. It is concluded that both studies indicate the potential for the commercial development of mugongo, but that the goals for the 2 peoples will be different: wood production among the Luchazi people, catering for their wood craftsmanship culture, and fruit production among the Tokaleya.

Author Mapongmetsem PM; Duguma B; Nkongmeneck BA; Puig H

Title Phenological studies of the shading-off of some tropical forest tree species in Cam

Year 1998

Source title Revue d Ecologie la Terre et la Vie

Reference 53(3): 193-210

Abstract

Phenological studies were conducted on eight indigenous multipurpose tree species (MPTS) of the forest zone of Cameroon. The species were *Alstonia boonei* De Willd., *Ceiba pentandra* (L.) Gaertn., *Cordia platythyrsa* Bark, *Milicia excelsa* (Welw) C.C. Berg, *Pycnanthus angolensis* (Welw) Warb., *Ricinodendron heudelotii* (Baill.) Pierre ex Pax, *Terminalia superba* Engl & Diels and *Triplochiton scleroxylon* K. Schum. The studies which involve periodic monitoring of the selected species were carried out from 1989 to 1991 in the forest zone of Cameroon. The objective of the studies was to assess the phenological behaviour of the selected species in their natural habitat, with a view to determining their response to climate change in terms of shading off. If we understand sufficiently about it, and have at least a basic understanding of phenological characteristics, morphology and physiological adaptive behaviour when exposed to environmental change, we will be able to propose appropriate management techniques to optimise the products we require. The results show significant differences between species ($P=0.001$) and years ($P=0.05$). Species are classified into two categories: deciduous and evergreen. Climate data in relation with phenological manifestations show that even if it is possible to find mean patterns, individual factors remain very important for more refined predictions, before quantitative explorations, which must be foreseen are done.

Author Mapongmetsem PM; Duguma B; Nkongmeneck BA; Puig H

Title Study of leaf fall in some tropical forest species of Cameroon. OT: Determinisme

Year 1998

Source title Revue d'Ecologie la terre et la vie

Reference 53(3): 193-210

Abstract

Phenological studies were conducted on 8 indigenous multipurpose tree species (MPTS) of the forest zone of Cameroon: *Alstonia boonei*, *Ceiba pentandra*, *Cordia platythyrsa*, *Milicia excelsa*, *Pycnanthus angolensis*, *Ricinodendron heudelotii*, *Terminalia superba* and *Triplochiton scleroxylon*. Data on the period of maximum leaf fall and duration of the leafless state were collected during 1989-91 for 21 trees of each species on each of 2 locations - Yaounde and Sangmelima. The objective of the studies was to assess the phenological behaviour of the selected species in their natural habitat, with a view to determining their response to climate change in terms of leaf fall. The results showed significant differences between species and years. All species except *P. angolensis* showed a period of leaf fall, but the timing was asynchronous between species. Climatic data in relation to phenology showed that even if it is possible to find mean patterns, individual factors remain very important for more refined predictions.

Author Shiembo PN; Newton AC; Leakey RRB
Title Vegetative propagation of *Ricinodendron heudelotii*, a west african fruit tree
Year 1997
Source title Journal of Tropical Forest Science
Reference 9(4): 514-525

Abstract

Leafy stem cuttings of *Ricinodendron heudelotii* (Baill) Pierre ex Pax, a West African fruit tree, were taken from seedlings or coppice shoots and inserted in a low-technology non-mist propagation system in Cameroon. Three separate experiments were tested: (i) six propagation media, namely sawdust (SD), fine sand (FS), medium sand (MS), gravel (G), and 50:50 mixtures of G:SD and MS:SD; (ii) four IBA concentrations, namely 0, 8, 40 and 200 μg IBA dissolved in 10 μl of alcohol; and (iii) four leaf area treatments, namely 0, 25, 50 and 80 cm^2 , obtained using paper templates. The overall effect of propagation medium on final rooting percentage was highly significant (p identical with 0.003, ANOVA), highest values being recorded in FS and SD. The number of roots per rooted cutting also differed markedly between treatments, mean values ranging from 3.8 to 7.3 in G and SD respectively. Application of IBA had no significant effect on final rooting percentage, although root number was positively related to IBA concentration, values ranging from 2.7 to 10.5 in 0 and 250 μg respectively. Leaf area had a highly significant effect on rooting percentage and root number ($p < 0.001$, ANOVA), with highest values recorded in the 80 cm^2 treatment. Defoliated cuttings completely failed to root. The maximum rooting percentages exceeding 80% obtained in all three experiments indicate that *R. heudelotii* is amenable to vegetative propagation using these techniques, which should be of value to current domestication efforts.

Author Tchiegang C; Kapseu C; Ndjouenkeu R; Ngassoum MB
Title Ricinodendron heudelotii (bail.) kernels: A novel ingredient for tropical food agro
Year 1997
Source title Journal of Food Engineering
Reference 32(1): 1-10

Abstract

Ricinodendron heudelotii (Bail.) is a tree with many uses and should be cultivated. Physicochemical analyses of some kernel nutrients as well as the fatty acids and amino acids of R. heudelotii (Bail.) cake are the main objectives of this work. The composition of these seeds has been investigated for their potential food uses. This study shows the nutritional interest of R. heudelotii (Bail.) and draws the attentions of agroforestry policy makers to the importance of its integration in agriculture. Results so far show that these kernels contain more than 54% total lipids (very fluid oil). The fatty acid composition determined by gas chromatography shows that this oil mainly contains a polyunsaturated fatty acid (C18:3) found to be alpha elaeostearic acid (51.1%). The defatted flour contains more than 8% nitrogen and 16% ash. The determination of defatted protein nutritive value shows a lower chemical index of its amino acids compared to that obtained from soybean and cottonseed. However, this protein presents satisfactory chemical equilibrium of its amino acids for n u t r i t i o n a l n e e d s .

Author Anigbogu NM; Mapongmetsem PM; Tchiegang C; Teketay D; Widanapathirana
Title Nature's gifts. Improving trees and shrubs around the world
Year 1996
Source title Agroforestry Today
Reference 8(2): 18-21

Abstract

A collection of brief reports by various authors on the importance and uses of various multipurpose trees: Ricinodendron heudelotii in Nigeria and Cameroon, Olea europaea in East Africa, Tamarix in China (for desertification control), Populus ciliata and Elaeagnus umbellata in the Himalayas, and Parrotia jacquemontiana [Parrotiopsis jacquemontiana] in India.

Author Mallet B
Title Symposium on the agroforestry development and research in humid areas of centr
Year 1996
Source title Bois et Forets des Tropiques
Reference 0(248): 70-72

Abstract

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Author Kapseu C; Tchiegang C
Title Chemical properties of Ricinodendron heudelotti (Bail.) seed oil
Year 1995
Source title Journal of Food Lipids
Reference 2(2): 87

Abstract

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Author Mollet M; Tiki-Manga T; Kengue J; Tchoundjeu Z
Title The 'top 10' species in cameroon: A survey of farmers' views on trees
Year 1995
Source title Agroforestry Today
Reference 7(3/4): 14-16

Abstract

Results are reported from a survey of 5 villages. The 10 preferred species identified were (in descending order of preference): Irvingia gabonensis, Baillonella toxisperma, Dacryodes edulis, Elaeis guineensis, Ricinodendron heudelotii, Alstonia boonei, Guibourtia demensei [G. demeusii], Entandrophragma cylindricum, Garcinia lucida and Chlorophora excelsa [Milicia excelsa].

Author Fuwape JA
Title Compatibility of tropical wood residue with portland cement
Year 1994
Source title Journal of the Timber Development Association of India
Reference 40(4): 10-14

Abstract

A calorimetric test was used to measure the rate of heat evolution of wood cement slurry in order to evaluate the compatibility of some tropical wood residues with Portland cement. The tropical wood residues studied included: *Nesogordonia papaverifera*, *Terminalia superba*, *Musanga cecropioides*, *Leucaena leucocephala*, *Triplochiton scleroxylon*, *Gmelina arborea*, *Albizia zygia*, *Ricinodendron africanum* and *Antiaris africana*. Results showed that unextracted wood residues had inhibitory effects on cement setting. There was an improvement in the cement setting with the addition of calcium chloride to the mixture.

Author	Musoko A; Last FT; Mason PA
Title	Populations of spores of vesicular-arbuscular mycorrhizal fungi in undisturbed soil
Year	1994
Source title	Forest Ecology and Management
Reference	63(2-3): 359-377

Abstract

Secondary, semideciduous, moist tropical forest at Mbalmayo (lat. 3-degrees-31'N; long. 11-degrees-30'E), Cameroon, has 108 trees ha⁻¹ including representatives of 90 species and 33 families of angiosperms. The most abundant species, namely *Alstonia boonei*, *Ricinodendron heudelotii* and *Terminalia superba*, each contribute 5% to the total number of trees. These, and many of the other species, are known to form vesicular-arbuscular (VA) (endo-) mycorrhizal associations. - - Using a modification of the sucrose centrifugation method, spores of VA fungi were extracted from soil of undisturbed forest. The spores were attributed to five species of *Acaulospora* (*laevigatum*, *mellea*, *morrowae*, *scrobiculata* and *spinosa*), seven of *Glomus* (*clavisporum*, *etunicatum*, *fasciculatum*, *geosporum*, *macrocarpum*, *occultum* and *rubiformis*) and two of *Scutellospora* (*coralloidea* and *pellucida*). There were two other distinctive types of spores, C4 and C12, with affinities to spores of *Acaulospora* and *Scutellospora* respectively. A few spores seemed to be parasitized. Of the 250 spores per 100 g dry soil 63% were attributed to *G. etunicatum* and 18%, 6% and 5% to aggregates of *G. occultum*/*A. scrobiculata*, *A. mellea*/*A. morrowae* and C12/*S. pellucida* respectively. Although spores were very unevenly distributed (Simpson's equitability index = 0.025), mean numbers in replicate plots (each 1 ha) were fairly consistent. However, numbers of C4, *A. spinosa*, *A. laevigatum* and *G. occultum*/*A. scrobiculata* were significantly larger near the trunks of *Terminalia superba* than at a distance (7.5-10 m away). - - Total numbers of spores extracted on different occasions sometimes differed significantly, but effects of season were not established. However, during the 2 year period of the investigation numbers of spores of some relatively sparse species consistently decreased while those of others increased. - - Total numbers of spores in the rhizosphere soils of four tree species were usually twice as large as those of spores in bulk soil (440-600 compared with 250 per 100 g dry soil). As in bulk soil, numbers of spores in rhizosphere soils were dominated by *G. etunicatum* and *G. occultum*/*A. scrobiculata*, but spores of *A. mellea*/*A. morrowae*, which tended to be restricted to *Entandrophragma cylindricum* and *Khaya* sp., were replaced by those of *G. geosporum*. *G. etunicatum* was more strongly associated with *Lovoa trichilioides* than *Entandrophragma cylindricum*, *Khaya* sp. and *Triplochiton scleroxylon*. On the other hand, *G. fasciculatum*/*G. macrocarpum* was linked with *Entandrophragma cylindricum*, *Lovoa trichilioides* and *Triplochiton scleroxylon* but not *Khaya* sp.

Author	Kpikpi WM
Title	Wood structure and paper-making potentials of <i>Ricinodendron heudelottii</i> and <i>Alb</i>
Year	1992
Source title	Nigerian Journal of Botany
Reference	5(0): 41-50

Abstract

The wood anatomy and other characteristics of *Ricinodendron heudelottii* (Baill.) Pierre Ex Pax, *Albizia zygia* (DC.) J.F. Macbr. and *Gmelina arborea* Roxb. as pulpwoods have been studied on comparative basis. Average fibre lengths are short: 1.35 mm, 1.18 mm and 1.05 mm respectively for *Ricinodendron*, *Albizia* and *Gmelina*, but their respective Runkel ratios of 0.22, 0.96, 0.18 and Flexibility ratios of 0.82, 0.51 and 0.88 are remarkably good. The overall wood structures are good for all three, none having excessive vessels and parenchyma. The strength properties of the paper sheets of *R. heudelottii* and *A. zygia* compare favourably with those of *Gmelina arborea*, thus indicating that they are all good hardwoods for pulp and papers.

Author	Pamboutchivounda H; Koudogbo B; Pouet Y; Casadevall E
Title	Fatty acid and triglyceride composition of seeds from trees of Gabon forest
Year	1992
Source title	Revue Francaise des Corps Gras
Reference	39(5-6): 147-151

Abstract

The seeds of *Baillonella toxisperma* (B.t), *Irvingia gabonensis* (I.g), *Poga oleosa* (P.o), *Ricinodendron heudelottii* (R.h) and *Scyphocephalum ochocoa* (S.o.) were hexane extracted. The extracts which appeared at room temperature as a white solid for I.g and S.o, an oil for P.o and R.h, an oil with a suspended solid for B.t., were mainly composed of triglycerides. The triglycerides were analyzed by HPLC and the fatty acids identified as FAME by chromatographic and spectroscopic methods. The main acids were : lauric and myristic acids for I.g and S.o ; palmitic, stearic and oleic acids, the last being the most abundant for B.t ; oleic and linoleic acids with a major contribution of C18:1 for P.o ; linoleic. alpha and beta eleostearic acids for R.h.

Author	Sabiti K; Matatu B; Baboy L
Title	Influence of stem diameter and nailing of barbed wire on regrowth of living fence
Year	1992
Source title	Tropicultura
Reference	10(3): 98-101

Abstract

Eleven woody plant species on the Bateke plateau (near Kinshasa) in Zaire had been previously identified by the local Dumi people as species capable of regrowth following cutting, and were also resistant to bush fire and insect attack. Trials were conducted with these species to evaluate their use as live fence posts. Stem cuttings (100 from each species) were taken in October/November at the onset of the wet season, and were classified into 3 stem diameter classes (3-5 cm, 6-8 cm and more than 8 cm). Stems were planted within one week of cutting, and a random selection of stems had barbed wire attached to them during planting. Data are given for the percentage of stems which sprouted by species (length of time of study, and presence/absence of nailed barbed wire not given). In descending order these were: *Ficus thonningii* [*Ficus thonningii*] 94%; *Dracaena arborea* 88%; *F. eriobotryoides* 85%; *F. elastica* 84%; *Lannea antiscorbutica* 78%; *Millettia versicolor* 64%; *D. nitens* 63! %; *Senna spectabilis* [*Cassia spectabilis*] 59%; and *M. laurentii* 48%. Two species (*Markhamia tomentosa* [*Markhamia tomentosa*], and *Ricinodendron heudelottii* [*Ricinodendron heudelottii*]) had very low resprouting rates of 4.5% and 7.7%, respectively. Analysis of variance was carried out on the data, and indicated that the only variable of those tested that had some significance in relation to the resprouting rate was stem diameter more than 8 cm (which explained 19% of variance).

Author Akinsoji A

Title Studies on epiphytic flora of a tropical rain forest in southwestern Nigeria: Ii: Bar

Year 1991

Source title Vegetatio

Reference 92(2): 181-185

Abstract

The second part of a study on the epiphytic flora of rain forest tree species in SW Nigeria [see Vegetatio (1990) 88, 87-92 (Part I, on vascular epiphytes)]. Bark microflora of 12 rainforest tree species (*Afzelia africana*, *Antiaris africana*, *Bosqueia angolensis*, *Chlorophora excelsa*, *Bombax buonopozense*, *Ceiba pentandra*, *Triplochiton scleroxylon*, *Cola gigantea*, *Hildegardia barteri*, *Ricinodendron heudelotii*, *Celtis zenkeri* and *Terminalia superba*) was examined. Crustose, foliose and fruticose forms of lichens were observed. *Bacillus* sp., *Erwinia* sp., *Micrococcus* sp., *Proteus* sp., and *Pseudomonas* sp. were the five genera of bacteria recorded; three genera of Cyanobacteria were recorded, viz., *Entophysalis*, *Gleocapsa* and *Stigonema*. Three genera of Chlorophyta were found, viz. *Chlorococcum*, *Pleurococcus* and *Physolinum*. Only one diatom, *Cocconeis* sp., was present (on only one tree). Most of the epiphytic microflora found are mainly terrestrial and their spores might have been deposited on bark by air or dust currents. While moisture is regarded as the most critical factor in growth of bark microflora, other factors such as texture of the bark, insolation and especially chemical characteristics of the bark may play a key role in occurrence and distribution of microorganisms.

Author Kimbu SF; Keumedjio F; Sondengam LB; Connolly JD

Title Two dinorditerpenoides from *ricinodendron heudelotii*

Year 1991

Source title Phytochemistry

Reference 30(2): 619-621

Abstract

Two dinorditerpenoids, heudelotinone [12-hydroxy-3-oxo-9(10 leads to 20)-abeo-16, 17-dinor-abieta-1(2),8,10(20),11,13-pentaene] and 1,2-dihydroheudelotino [3-beta,12-dihydroxy-9(10 leads to 20)-abeo-16,17-dinor-abieta-8,10(20),11,13-tetraene] and three known compounds E-ferulic acid octacosylate, 3-methylmethylorsellinate and lupeol were isolated from the stem bark and roots of *Ricinodendron heudelotii*/ The structure of the new compounds were established by spectroscopic and chemical methods.

Author Mizrahi Y; Cohen H; Gur D
Title Introduction and development of new subtropical fruits
Year 1991
Source title Israel Journal of Botany
Reference 40(3): 261-262

Abstract

During a continuing introduction programme in Israel, the following tree species were found to grow satisfactorily under the conditions of the Jordan Valley, Negev and Arava areas and produce fruits of commercial value: *Sclerocarya caffra*, *Casimiroa edulis*, *Manilkara zapota*, *Diospyros digyna* [D. ebenaster], *Ziziphus mauritiana* and *Ricinodendron rautanenii*. Additionally, 6 columnar cactus species were propagated; their fruits had outstanding colour and flavour and the crisp seeds were edible. They comprised *Pachycereus pecten-aboriginum*, *P. pringlei*, *Stenocereus gummosus* [*Lemaireocereus gummosus*], *S. [L.] thurberi*, *S. [L.] griseus* and *Cereus peruvianus*. The fruits of *C. peruvianus* were large and had a long shelf-life.

Author Riddoch I; Grace J; Fasehun FE; Riddoch B; Lapido DO
Title Photosynthesis and successional status of seedlings in a tropical semi-deciduous r
Year 1991
Source title Journal of Ecology
Reference 79(2): 491-503

Abstract

Data are presented for 9 species representing 3 ecological groupings (2 weeds of gaps, 5 pioneer trees and 2 climax trees) in the Gambari Forest Reserve, Ibadan, Nigeria. Weeds of gaps and pioneer trees had higher stomatal conductances, light compensation points, dark respiration, mesophyll conductances and quantum efficiencies than those of climax trees. Pioneer species were *Ceiba pentandra*, *Pterygota macrocarpa*, *Milicia [Chlorophora] excelsa*, *Ricinodendron heudelotii* and *Sterculia rhinopetala*. Climax species were *Blighia sapida* and *Strombosia pustulata*.

Author Fakankun OA; Loto C A

Title Determination of cations in the ashes of some medicinally used tropical woods

Year 1990

Source title Wood Science and Technology

Reference 24(4): 305-310

Abstract

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Author Leakey RRB; Mesen JF; Tchoundjeu Z; Longman KA; Dick JM; Newton A; Mati

Title Low-technology techniques for the vegetative propagation of tropical trees

Year 1990

Source title Commonwealth Forestry Review

Reference 69(3): 247-257

Abstract

Stem cuttings of 5 species from dry and semiarid woodlands (*Acacia tortilis*, *Prosopis juliflora*, *Terminalia spinosa*, *T. brownii*, *Albizia guachapele*) and 7 species from moist tropical forests (*Cordia alliodora*, *Vochysia hondurensis*, *Nauclea diderrichii*, *Ricinodendron heudelotii*, *Lourea trichiliodes*, *Gmelina arborea*, *Eucalyptus deglupta*) were easily rooted in improved low-technology, high humidity polyethylene propagators in Kenya, Cameroon, Costa Rica and the UK. There was, however, very considerable clonal variation in rooting ability of *A. tortilis* and *T. spinosa*, while cuttings of *T. brownii* have so far rooted with a low rate of success (about 10-15%). In Cameroon, the percentage rooting of cuttings of *L. trichiliodes* was relatively poor (about 40-50%). The propagators, which are cheap to construct, are very effective and have no essential requirements for either piped water or an electricity supply. Experiments have tested different rooting media and auxin applications, and compared mist and non-mist propagation. Assessments of the physical and gaseous environment of the propagators has indicated ways of improving the rooting environment through an understanding of the sensitivity of relative humidity to radiant energy and to opening the propagator for short periods (e.g. 2-3 minutes).

Author	Radcliffe-Smith A
Title	Notes on african Euphorbiaceae xxii. The genus Schinziophyon new-genus
Year	1990
Source title	Kew Bulletin
Reference	45(1): 157

Abstract

A new genus, first suggested by Dr. J. Hutchinson just prior to his death and never published by him, is here established for *Ricinodendron rautanenii* Schinz, [*S. rautanenii* comb nov] which differs in many features from the other species of the genus *Ricinodendron*, *R. heudelotii* (Baill.) Heckel, sufficiently to merit generic status for it. The name of its describing author forms the prefix, whilst the rest of the generic name is derived from the Greek. .vphi..upsilon..tau..omicron..nu., a plant.