Senegalia senegal (L.) Britton 15 Fabaceae

Nomenclatural reference 1217 Govaerts, R. (2022): The World Checklist of Vascular Plants (WCVP). – Royal Botanic Gardens, Kew. Checklist dataset of 2022-12-08. Retrieved from https://sftp.kew.org/pub/data-repositories/WCVP/, viewed 4.3.2023.

Summary

Intrinsic Traits

Distribution	Senegalia senegal (= Acacia senegal) is native and widely distributed in tropical and central Africa, in the Arabian Peninsula (Oman) and also in India and Pakistan.
Abundance	No data available.
Habitat	Gum arabic trees grow where annual rainfall is in the range of 380 to 2280 mm, and annual mean temperatures between 16.2°C and 27.8°C. It cannot survive frost but is particularly tolerant of drought. The gum arabic tree thrives in the drier parts of Sudan and in the Northern Sahara. It can survive in places where drought lasts for 11 months. It thrives on rocky slopes and sandy soils, but also on clay plains and cotton soils.
Regeneration	The trees coppice well, but grow at a slow rate.
Reproduction	Flowers are bisexual. Natural regeneration is mainly from seed but germination rate is low. Pollination is mainly by bees and other generalist insects.
Plant Parts	Gum exudate obtained from the stems and branches.
Lifeform	Small to medium-sized tree or shrub.
Systematics	The species was formerly called Acacia senegal and this name is still used in trade contexts. However, this is now considered to be a synonym of the name in current use: Senegalia senegal (L.) Britton. The genus Senegalia comprises 183 species distributed in tropical areas across all continents.

Extrinsic Traits

Threat Status	Senegalia senegal has not been assessed globally by IUCN but is considered not threatened by some sources. It was assessed nationally as "Lower Risk - Least Concern" in Namibia and as Least Concern in South Africa and in Burkina Faso. It has been Assessed as LC in China as well but is not native there.
Threats	Although in general gums and resin producing species are declining at a significant rate due to habitat degradation or loss, overgrazing, drought, fires, and poor harvesting techniques, Acacia senegal is less affected by these impacts and shows good regeneration and stable populations at least in parts of its range.
Purpose	Main uses of gum arabic are in the food industries, particularly confectionery. Also used in flavourings and in pharmaceutical preparations as a building and emulsifying agent. Technical grades of gum arabic are also used in other industrial products.
Use Fields	Animal food; environmental use (horticulture); food (beverages, sweets); fuel; material; medicine; social use (cosmetics).
Trade Trend	Production and trade levels e.g. in Ethiopia have increased by 12% each year in the period 1998 to 2007. However, available sources report at least for part of the range that current demand and trade is lower than the potential production levels.
Legislation	The species is not protected by CITES.

Taxonomy and Identification

Taxonomy	*Reference*
genus: "183 trop. (As. 43 (7 also in Afr.), Aus. 2, Afr. 69, 97 Am."	3753 Mabberley, D.J. (2017): The plant-book. 4th e
[A. senegal, A. seyal and A. polyacantha in ET] can only distinguished on the basis of different production areas	3792 Tadesse, W., Desalegn, G. & Alia, R. (2007):
"Senegalia senegal can be divided into four different varieties based on morphology: senegal, kerensis, rostrata, and leiorhachis […]. The variety senegal is established in West Africa and also East Africa, as are the leiorhachis and kerensis varieties."	3896 Bakhoum, N., Fall, D., Fall, F., Diouf, F., Hirsc

Synonyms

Synonym	Eval	Ref	
Acacia senegal (L.) Willd.		1217	Govaerts, R. (2022): The World Checklist of Vascular Plants (WCVP). –
Acacia senegal var. rostrata Brenan		1217	
Acacia verek Guill. & Perr.		1217	

Taxon Present in Pharmacopoeias and other References

Name as used in Source	Status	Reference	
Acacia senegal Willd.		2156	FRLHT - Indian Medicinal Plants Database - http://www.medicinalplants.in/
Acacia senegal		3145	Brinckmann, J.A., Kathe, W., Berkhoudt, K, Harter, D.E.V. & Schippmann, U. (2022): A new global estimation of medicinal and aromatic plant species in commercial cultivation and their conservation status. Economic Botany 22(10): 1-15.
Acacia senegal		8394	Therapeutic Goods Administration (ed.) (2007): Substances that may be used in listed medicines in Australia. Therapeutic Goods Administration, Symonston. Retrieved from http://www.tga.gov.au/cm/listsubs.pdf, viewed: 25.01.2009.
Acacia senegal (L.)		8378	United States Pharmacopeia (ed.) (2008): Food Chemicals Codex. 6th edition. U.S. Pharmacopeia.
Acacia senegal (L.) Wild		2095	Iwu, M.M. (1993): Handbook of African medicinal plants. CRC Press, Boca Raton.
Acacia senegal (L.) Willd.		1101	Hänsel, R. & al. (1992-1998): Hagers Handbuch der pharmazeutischen Praxis. 5. Auflage.5 volumes [4179, 4180, 4181, 6097, 6098]
Acacia senegal (L.) Willd.		1236	United States Pharmacopeial Convention (2024): Dietary Supplements Compendium (DSC). https://www.usp.org/products/dietary-supplements-compendium
Acacia senegal (L.) Willd.		1237	United States Pharmacopeial Convention (2024): Food Chemicals Codex (FCC). https://www.foodchemicalscodex.org/
Acacia senegal (L.) Willd.		1244	United States Pharmacopeial Convention (2024): National Formulary (NF). https://www.uspnf.com/
Acacia senegal (L.) Willd.		3145	Brinckmann, J.A., Kathe, W., Berkhoudt, K, Harter, D.E.V. & Schippmann, U. (2022): A new global estimation of medicinal and aromatic plant species in commercial cultivation and their conservation status. Economic Botany 22(10): 1-15.
Acacia Senegal (L.) Willd.		3221	Goraya, G.S. & Ved, D.K. (2017): Medicinal plants in India. An assessment of their demand and supply. National Medicinal Plants Board & Indian Council of Forestry Research & Education, New Delhi & Dehradun. Retrieved from http://www.rcfceast.org/wp-conten
Acacia Senegal (L.) Willd.		3451	United States Pharmacopeial Convention (2020): The United States Pharmacopeia USP 43. The National Formulary 38. 2020. United States Pharmacopeial Convention, Rockwell, MD.
Acacia senegal (L.) Willd.		3561	Quattrocchi, U. (2012): World dictionary of medicinal and poisonous plants. Common names, scientific names, eponyms, synonyms, and etymology. CRC Press, Boca Raton.
Acacia senegal (L.) Willd.		6369	McGuffin, M., Kartesz, J.T., Leung, A.Y. & Tucker, A.O. (2000): Herbs of commerce. 2nd edition. AHPA, Silver Spring, USA.
Acacia senegal (L.) Willd.		6796	Arnold, T.H., Prentice, C.A., Hawker, L.C., Snyman, E.E., Tomalin, M., Crouch, N.R. & Pottas-Bircher, C. (2002): Medicinal and magical plants of southern Africa. An annotated checklist. Strelitzia 13: 1-203.
Acacia senegal (L.) Willd.		7279	van Wyk, B.-E. & Wink, M. (2004): Medicinal plants of the world. Timber Press, Portland.
Acacia senegal (L.) Willd.		8418	Brandão, M.G.L., Cosenza, G.P., Assis Moreira, R. & Monte-Mor, R.L.M. (2006): Medicinal plants and other botanical products from the Brazilian Official Pharmacopoeia. Revista Brasileira de Farmacognosia 16 (3): 408-420.
Acacia senegal (L.) Willd.		8876	United States Pharmacopeial Convention (2013): The United States Pharmacopeia USP 37. The National Formulary 32. 2014. United States Pharmacopeial Convention, Rockwell, MD.
Acacia senegal (L.) Willd. var. rostrata Brenan		6796	Arnold, T.H., Prentice, C.A., Hawker, L.C., Snyman, E.E., Tomalin, M., Crouch, N.R. & Pottas-Bircher, C. (2002): Medicinal and magical plants of southern Africa. An annotated checklist. Strelitzia 13: 1-203.
Acacia senegal (L.) Willdenow		8375	Medicines and Healthcare Products Regulatory Agency (2008): British Pharmacopoeia 2009. 4 volumes. Stationery Office, London.
Acacia senegal (L.) Willdenow		8380	European Directorate for the Quality of Medicines & Health Care (EDQM) (ed.) (2007-2009): European Pharmacopoeia. 6th edition. 2 volumes and 8 supplements. Council of Europe, Strasbourg.
Acacia senegal (L.) Willdenow		8450	Homoeopathic Pharmacopoeia of the United States (s.dat.): HPUS Online Database. Retrieved from http://www.hpus.com, viewed: 26.10.2009.
Acacia senegal (Linne) Willdenow		8379	United States Pharmacopeial Convention (ed.) (2008): The United States Pharmacopeia USP 32. The national formulary NF 27. 2009. 3 volumes. United States Pharmacopeial Convention, Rockwell, MD.

Acacia senegal L.Willdenow	8875	European Directorate for the Quality of Medicines & Health Care (EDQM) (2012): European Pharmacopoeia. Pharmacopée Européenne. 7.8 edition. USB stick version. Council of Europe, Strasbourg.
Acacia senegal Willd.	3800	Committee on Japanese Pharmacopoeia (2016-2019): The Japanese Pharmacopoeia. 17th edition, incl. Supplements I and II. English version. Ministry of Health, Labour and Welfare, sine loco. Retrieved from https://www.pmda.go.jp/english/rs-sb-std/standards-de
Acacia senegal Willd.	8730	Brendler, T., Eloff, J.N., Gurib-Fakim, A. & Phillips, L.D. (ed.) (2010): African Herbal Pharmacopoeia. Graphic Press, Mauritius.
Acacia senegal Willd.	9876	Anon. (2012): Korean Pharmacopoeia. 10th edition. Minstry for Food and Drug Safety, sine loco. Retrieved from https://www.mfds.go.kr/eng/brd/m_18/view.do?seq=70483&srchFr=&srchTo=&srchWord=&srchTp=&itm_seq_1=0&itm_seq_2=0&multi_itm_seq=0&company_cd=&compa
Acacia senegal Willdenow	8382	Committee of the Japanese Pharmacopoeia (ed.) (2006): The Japanese Pharmacopoeia. 15th edition English version. Ministry of Health Labour and Welfare, Tokyo. Retrieved from http://jpdb.nihs.go.jp/jp15e/JP15.pdf.
Acacia senegal Willdenow	8869	Anon. (2007): Korean Pharmacopoeia. 9th edition. Korea Food and Drug Administration, sine loco. Retrieved from http://eng.kfda.go.kr/board/board_view.php?av_seq=23&av_pg=1&board_id=ENG_RULE&textfield=&keyfield=, viewed: 06.08.2015.
Acacia senegal Willdenow	8870	Anon. (2012): The Japanese Pharmacopoeia. 16th edition. English edition. sine loco. Retrieved from http://www.pmda.go.jp/english/pharmacopoeia/pdf/jpdata/JP16eng.pdf, viewed: 07.05.2012.
Acacia verek Guill. & Perr.	8450	Homoeopathic Pharmacopoeia of the United States (s.dat.): HPUS Online Database. Retrieved from http://www.hpus.com, viewed: 26.10.2009.
Senegalia senegal	3751	van Wyk, B.-E. & Wink, M. (2017): Medicinal plants of the world. 2nd edition. CABI, Wallingford & Boston.
Senegalia senegal (L.) Britton	1180	GRIN (17.3.2015): Download World Economic Plants report from GRIN Taxonomy for the query. Medizin = 'Alle Nutzungen'. Retrieved from http://www.ars-grin.gov/cgi-bin/npgs/html/taxecon.pl?language=de

Common Names

Common Name	Typ	Language	Country	Ref	
acacia à gomme	tra	French		1100	GRIN Database (Germplasm Resources In
acacia del Senegal	ver	Spanish		1100	
Acaciae gummi	pha	Latin		1101	Hänsel, R. & al. (1992-1998): Hagers Han
alloba		Arabic (Sudan)		1122	Mansfeld's World Database of Agricultural
deievingerdoring		Africaans		1122	
gomdoring		Africaans		1122	
gommier blanc	tra	French		1100	GRIN Database (Germplasm Resources In
gum arabic tree	scn			6369	McGuffin, M., Kartesz, J.T., Leung, A.Y. &
gum-arabic	tra	English		1100	GRIN Database (Germplasm Resources In
gum-arabic-tree	ver	English		1100	
Gummi arabicum	tra			1101	Hänsel, R. & al. (1992-1998): Hagers Han
gummiakacia	tra	Swedish		1100	GRIN Database (Germplasm Resources In
Gummiarabikumbaum	ver	German		1100	
hashab		Arabic (Sudan)		1122	Mansfeld's World Database of Agricultural
kher		English		1100	GRIN Database (Germplasm Resources In
kikwata		Swahili		1122	Mansfeld's World Database of Agricultural
kolhol gum				3753	Mabberley, D.J. (2017): The plant-book. 4t
red talah		English		1122	Mansfeld's World Database of Agricultural
Senegal-Akazie	ver	German		1100	GRIN Database (Germplasm Resources In
Senegal-gum	tra	English		1100	
subahi		Arabic (Sudan)		1122	Mansfeld's World Database of Agricultural
Sudan gum-arabic	tra	English		1100	GRIN Database (Germplasm Resources In
three-thorn acacia	ver	English		1100	
um gebala		Arabic (Sudan)		1122	Mansfeld's World Database of Agricultural

Distribution Range

Distribution Range	Ref	
"distributed in the Sudano-Sahelian savannah belt of West Africa"	3898	Lyam, P.T., Duque-Lazo, J., Durka, W., Hau
"dry tropics and subtropics"	3897	Heuzé, V., Thiollet, H., Tran, G., Hassoun, P.
"found in Mauritania, Senegal, Gambia, Ghana, Burkina Faso, Cote d'Ivoire, Mali, Niger, Nigeria, Cameroon, Zaire, Central African Republic, Rwanda, Chad, Sudan, Ethiopia, Somalia, Uganda, Kenya, Tanzania, Mozambique, Oman, Pakistan, and India"	3792	Tadesse, W., Desalegn, G. & Alia, R. (2007)

"native to Western Sudan, Nigeria and the Arabian Peninsula. It is commonly found in tropical areas of Western and Central Africa, and in Eastern Africa from Mozambique to South Africa. It was introduced into Egypt, Australia, Puerto Rico, the Virgin Islands, and South Asia. It is cultivated in India, Pakistan and Nigeria."	3897	Heuzé, V., Thiollet, H., Tran, G., Hassoun, P.,
"Native: Africa: NORTHEAST TROPICAL AFRICA: Chad, Ethiopia, Somalia, Sudan; EAST TROPICAL AFRICA: Kenya, Tanzania, Uganda; WEST-CENTRAL TROPICAL AFRICA: Cameroon, Rwanda, Zaire; WEST TROPICAL AFRICA: Cote D'Ivoire, Gambia, Mali, Mauritania, Niger, Nigeria, Senegal; SOUTH TROPICAL AFRICA: Angola, Mozambique, Zambia, Zimbabwe; SOUTHERN AFRICA: Botswana, Namibia, South Africa, [KwaZulu-Natal, Limpopo, Mpumalanga, North West] Swaziland. Asia-Temperate: ARABIAN PENINSULA: Oman; Asia-Tropical: INDIAN SUBCONTINENT: India, Pakistan. Cultivated: Africa: NORTHEAST TROPICAL AFRICA: Chad, Sudan; WEST TROPICAL AFRICA: Nigeria"	1100	GRIN Database (Germplasm Resources Info
"W. Pakistan (Sind, Baluchistan); India (Rajasthan, South-East Punjab, Delhi); Arabia; widely distributed in Tropical Africa."	1119	Flora of Pakistan. http://legacy.tropicos.org/
"widely distributed in the drier parts of tropical Africa, from Senegal and Mauritania in the west to Eritrea and Ethiopia in the northeast and to South Africa in the south [...] outside Africa it occurs in Oman, Pakistan and India"	8730	Brendler, T., Eloff, J.N., Gurib-Fakim, A. & P
"widely distributed on the African continent as well as in Arabia, Pakistan and India"	5002	Seif el Din, A.K. & Zarroug, M. (1997): Produ
[Re possible distribution in CN]: "Senegalia senegal (L.) Britton was included (as Acacia senegal (L.) Willd.) in both Huang (1985) and byWu (1988), accompanied by an illustration, where it was recorded as cultivated in Yunnan and Taiwan. However, again Wu and Nielsen (2010) regarded the species as being only rarely cultivated in China and therefore excluded from their treatment; a decision that we have followed."	3845	Maslin, R.M., Boon Chuan Ho, Hang Sun &
Afr.; Arabian Pen.; Ind. Subcont.	1180	GRIN (17.3.2015): Download World Econom
Native to: Angola, Benin, Botswana, Burkina, Cameroon, Central African Repu, Chad, Eritrea, Ethiopia, Gambia, Ghana, India, Ivory Coast, Kenya, KwaZulu-Natal, Malawi, Mali, Mauritania, Mozambique, Namibia, Niger, Nigeria, Northern Provinces, Oman, Pakistan, Rwanda, Saudi Arabia, Senegal, Somalia, Sudan, Swaziland, Tanzania, Uganda, Yemen, Zambia, Zaïre, Zimbabwe. Introduced into: Haiti, Leeward Is., Taiwan"	1192	Plants of the World Online (POWO). Royal B

Distribution

Continent	Region	ICC	Status	Free Text	Ref
2 Africa	22 West Tropical Africa	BF		Burkina	1109
		CI	native		1100
		GM	native		1100
		ML			1109
		ML	native		1100
		MR	native		1100
		NE			1109
		NE	native		1100
		NG			1109
		NG	native		1100
		SN			1109
		SN			2049
		SN	native		1100
	23 West-Central Tropical	CD	native		1100
		CM	native		1100
		RW	native		1100
	24 Northeast Tropical Afri	ET			1109
		ET	native		1100
		SD			1109
		SD	native		1100
		SO			1109
		SO	native		1100
		TD			1109
		TD	native		1100
	25 East Tropical Africa	KE			1109
		KE	native		1100
		TZ			1109
		TZ	native		1100
		UG			1109
		UG	native		1100
	26 South Tropical Africa	AO	native		1100
		MZ	native		1100
		ZM	native		1100
		ZW			8448

				ZW	native			1100
		27	Southern Africa	BW				6796
				BW	native			1100
				NA				6796
				NA	native			1100
				SZ				6796
				SZ	native			1100
				ZA				1109
				ZA				6796
				ZA	native			1100
3	Asia-Temporate	35	Arabian Peninsula	OM	native			1100
4	Asia-Tropical	40	Indian Subcontinent	IN	native			1100
				IN	native		India (Rajasthan, South-East Punjab, Delhi)	1119
				IN	native			1192
				PK	native			1100
				PK	native		W. Pakistan (Sind, Baluchistan)	1119
				PK	native			1192
8	Southern America	81	Caribbean	HT	introd., established			1192

Abundance / Local Population Size

Ecology

TypeEc	ICC	Ecology	Ref	
alti	ET	600-1700 m	3792	Tadesse, W., Desalegn, G. & Al
alti	SO	0-1340m	8889	Thulin, M. (1999): Flora of Soma
grow		"The gum arabic tree is a low branching, small, and spiny tree, which grows up to 7-15 m in height with a girth of about 1.3 m […]. It has a rounded, flat-topped crown. The tree is deciduous, dropping its leaves during the dry season. Under dry conditions, the taproot develops to a great depth allowing the tree to become larger than usual. The trunk is about 30 cm in diameter and is covered by a greyish-white bark that becomes dark, scaly and thin in old trees."	3897	Heuzé, V., Thiollet, H., Tran, G.,
habit		"grow[s] in various plant communities in the drier parts of Africa and Asia"	5002	Seif el Din, A.K. & Zarroug, M. (
habit		"Gum arabic trees grow where annual rainfall is in the range of 380 to 2280 mm, and annual mean temperatures between 16.2°C and 27.8°C. It cannot survive frost but is particularly tolerant of drought. The gum arabic tree thrives in the drier parts of Sudan and in the Northern Sahara. It can survive in places where drought lasts for 11 months. It thrives on rocky slopes and sandy soils, but also on clay plains and cotton soils with a pH ranging from 5 to 8."	3897	Heuzé, V., Thiollet, H., Tran, G.,
habit		"thrives on dry rocky hills, in low-lying dry savannas"	8919	Moges, Y. (2004): Gum and ince
habit	ET	"dry rocky hills, in low-lying dry savannas […] widespread in dry scrub, wooded grassland"	3792	Tadesse, W., Desalegn, G. & Al
regen		"can also be reproduced by shoot cutting"	8730	Brendler, T., Eloff, J.N., Gurib-F
regen		"growing to 6 m [...] by 6 m [...] at a slow rate"	1123	Plants for a Future - www.pfaf.o
regen		"Plants can be coppiced and pollarded"	1123	
regen		"trees coppice well"	8730	Brendler, T., Eloff, J.N., Gurib-F
regen	SD	"A. senegal also regenerates by coppicing."	7113	Abdel Nour, H.O. (1999): Gum a
repro		"best propagated from seeds, which are produced once every few years "	8730	Brendler, T., Eloff, J.N., Gurib-F
repro		"flowers are pollinated by Bees, Insects"	1123	Plants for a Future - www.pfaf.o
repro		"flowers bisexual"	8730	Brendler, T., Eloff, J.N., Gurib-F
repro		"mainly propagated by seeds"	3897	Heuzé, V., Thiollet, H., Tran, G.,
repro		"pollination system […] is undertaken by generalist pollinators"	3902	Omondi, S.F. (2016): Reproduct
repro		"predominantly an outcrossing species."	3902	
repro	SD	"The natural regeneration of Acacia senega/ comes mainly from the natural seed fall."	7113	Abdel Nour, H.O. (1999): Gum a

Life Form

LF_Standard	Duration	Lifeform	Woodiness	Height	Ref	
shrub or tree					3904	Purcell, K. (2005): Sudan was i
shrub or tree				10(–15) m	8889	Thulin, M. (1999): Flora of Som
shrub or tree				7 (-15) m	1192	Plants of the World Online (PO
shrub or tree				up to 15m	8730	Brendler, T., Eloff, J.N., Gurib-
tree					3221	Goraya, G.S. & Ved, D.K. (201
tree				up to 6m	1101	Hänsel, R. & al. (1992-1998):
tree				up to 10m	8919	Moges, Y. (2004): Gum and in
tree	perennial				1122	Mansfeld's World Database of

Threat Situation

ICC	PopulationStatus	Ref	
	"climate change is going to affect the population genetic structure of Senegalia senegal, and […] patterns of genetic diversity are going to influence the species' adaptive response to climate change"	3898	Lyam, P.T., Duque-Lazo, J., D
	"Gum supplies from Senegal declined especially following periods of drought in the 1970s and 1980s which had decreased the density of woody cover in the northern ecoregions in Senegal, the natural growing areas of Senegalia senegal"	3905	Sarr, M.S., Seiler, J.R., Sulliva
	"importance of Acacia senegal as a building material and firewood is of course a threat to environmental sustainability, as the trees reduce soil erosion and improve soil fertility"	3782	Elmqvist, B., Olsson, O., Mirgh
	"not threatened"	1122	Mansfeld's World Database of
ET	[Acacia, Boswellia and Commiphora species in ET]: "declining at an alarming rate due to degradation due to agricultural expansion, overgrazing, fire, poor incense harvesting practices, shifting cultivation, termite and other infestations"	3792	Tadesse, W., Desalegn, G. &
ET	[non species-specific information for gums & resins] „Drivers of dryland degradation include population growth and farmland expansion, lack of regeneration, human-induced fires, improper use of woodlands, improper tapping, overgrazing and bush encroachment"	8898	Lemenih, M. & Kassa, L. (2010
ET	„The density of the gum-producing species A. senegal and A. seyal is within the range of 31-947 stems/ha. Acacia senegal depicts normal population structures in the Central Rift Valley, showing good regeneration and stable population"	8898	
KE	"key anthropogenic disturbances [are] selective harvesting for charcoal production and livestock grazing. These activities are known to negatively affect regeneration through suppression and lack of seed producers"	3902	Omondi, S.F. (2016): Reprodu
KE	"over-exploited and threatened due to lack of basic knowledge of the biological process and the effects that comes with human interferences"	3902	

Threat Status: Global and Supranational

Glo	Threat Category		Criteria	Ass.	Publ.	Ref	
glo	NT	Not Threatened			1997	1109	UNEP-WCMC Threatened Species Database. Download of 1997 regional threat assessments sent 15.6.2011 by H. Gillett. Cambridge, UK (cf. Walter & Gillett, 1997 IUCN Red List of threatened plants)

Name used in redlist: Acacia senegal (L.) Willd. Synonym Name used in redlist: Acacia senegal (L.) Willd.

Threat Status: Countries

ICC	Region	Threat Category		Assd.	Publ.	Ref	
BF		LC	Least Concern		2017	3785	Schmidt, M. & al. (2017): Diversity, distribution and p
			Name used in redlist: Acacia senegal (L.) Willd. Synonym		Accepted Name: Senegalia senegal (L.) Britton		
CN		LC	Least Concern – 无危		2013	3319	Chinese Academy of Sciences (2013): Chinese biodi
			Name used in redlist: Acacia senegal Synonym		Accepted Name: Senegalia senegal (L.) Britton		
MA		R?	Presumably Rare – Soupçonné Rare		1998	5531	Fennane, M. & Ibn Tattou, M. (1998): Catalogue des
			Name used in redlist: Acacia senegal (L.) Willd. Synonym		Accepted Name: Senegalia senegal (L.) Britton		
UG		NT	Not Threatened		1997	1109	UNEP-WCMC Threatened Species Database. Downl
			Name used in redlist: Acacia senegal (L.) Willd. Synonym		Accepted Name: Senegalia senegal (L.) Britton		
ZA		LC	Least Concern		2009	8950	Raimondo, D., von Staden, L., Foden, W., Victor, J.E
			Name used in redlist: Acacia senegal var. rostrata Brenan Synonym		Accepted Name: Senegalia senegal (L.) Britton		
ZA		LC	Least Concern	2015		1164	Red List of South African Plants. - http://redlist.sanbi.
			Name used in redlist: Senegalia senegal var. leiorhachis		Accepted Name:		
ZA		LC	Least Concern	2015		1164	
			Name used in redlist: Senegalia senegal var. rostrata Synonym		Accepted Name: Senegalia senegal (L.) Britton		

Purpose of Use

Purpose		Ref
<multiple>	"A. senegal yields commercial gum arabic, used extensively in pharmaceutical preparations, inks, pottery pigments, water-colors, wax polishes, and liquid gum; for dressing fabrics, giving lustre to silk and crepe; for thickening colors and mordants in calico-printing; in confections and sweetmeats. […] Its major use is in foods, for example, as suspending or emulsifying agent, stabilizer, adhesive, flavor fixative, and to prevent crystallization of sugar, etc. Used in practically all categories of processed foods (candy, snack foods, alcoholic and nonalcoholic beverages, baked goods, frozen dairy desserts, gelatins, and puddings, imitation dairy products, breakfast cereals, and fats and oils). […] In modern pharmacy, it is commonly employed as a demulcent in preparations designed to treat diarrhea, dysentery, coughs, throat irritation, and fevers. It serves as an emulsifying agent and gives viscosity to powdered drug materials; is used as a binding agent in making pills and tablets and particularly cough drops and lozenges."	8919
	"Contemporary uses of gum arabic include many of the ancient ones, as a binder in art supplies and cosmetics, as well as more modern uses such as an emulsifier in soft drinks and as a binder, adhesive, and emulsifier for the pharmaceutical industry."	3895
	"for lozenges, gum sweets, adhesives, inks, watercolours & med. (mediaeval stauncher of blood)"	3753
	"Gum arabic has many commercial uses: food (flavour fixative, emulsifier, stabilizer of dairy products), pharmaceutics (these two sectors representing 60-75% of the use of gum arabic), and industrial products (inks, pigments, polishes)."	3897

	"Gums are used in pill manufacturing for coating and binding, as an emulsifier in processed foods, as a thickener in sauces, in creating various cosmetics, in the lithographic printing processes, in marbling colors, and to make adhesives and ink."	3904
	"In modern times, gum arabic is used in a variety of products and industries, including the pharmaceutical, chemical, and the food and beverage industries, as well as in fine arts, restoration, hobbies, and leather processing."	3904
	"The main uses of gum arabic are in the food industries […], particularly confectionery, which uses about 60% of world consumption. It is also used in flavourings and in pharmaceutical preparations as a building and emulsifying agent. Other industrial products that use technical grades of gum arabic include adhesives, textiles, printing, lithography, water colours, paints, paper sizing and pottery glazing."	5002
	"The seed yields oil, which is used in soap-making, and dyes."	1123
	"This legume produces gum arabic, which is used for foods, beverages, pharmaceuticals, and cosmetics, and other applications. Senegalia senegal also supports dryland ecosystems in tropical Africa"	3896
	"used as raw material in chewing gum, sweets and food industry, in adhesives and finishing agent in textile industry, in paper, film and pharmaceutical industry. [...] productive bee fodder for honey production in the dry tropics. Leaves serve as fodder"	1122
animal food - bee plant	"Bee plants: honey production"	1100
	"Flowers provide valuable nectar to bees for honey production."	3897
animal food - general	"Gum arabic trees provide valuable fodder to sheep, goats and camels. Leaves and pods are browsed by domestic and wild ruminants."	3897
	"leaves […] are nutritious browsing and fodder"	3782
	"leaves and pods are browsed by livestock"	3897
environmental use - general	"Because of their tolerance to adverse soil and climate conditions, S. senegal trees are an excellent biological means for rehabilitating degraded soils."	3896
	"Besides promoting soil stability and fixing N2, another advantage of these trees is that they transfer fixed N to other crops, and in addition, acacias play an especially important role in rehabilitating sandy or clay soils. By fixing N2, S. senegal improves the soil, which permits crop growth in restored gum arabic agroforestry systems of sub-Saharan Africa. Moreover, S. senegal has also been used for enhancing soil fertility in sorghum fields in Sudan (Blue Nile region) and in rotational bush-fallow systems. Thus, these trees have significant potential for restoring soil fertility in several African countries."	3896
	"Environmental: boundary/barrier/support"	1100
	"Environmental: soil improver"	1100
	"Gum arabic trees can help prevent desertification through dune stabilisation and by acting as a wind break. It is valued in agroforestry systems where it is combined with crops such as millet, sorghum, sesame, and groundnut, and where it is reported to improve soil fertility, though its N-fixing status is debated."	3897
	"In African drylands, S. senegal is recognized as being critical for increasing and diversifying agricultural production systems and also for stabilizing and restoring damaged agroecosystems. S. senegal has an important role in restoring these eroded fields because of the tree's ability to associate with N2-fixing bacteria that improve the nutrient-depleted soil. Senegalia senegal trees are responsible for the accumulation of large amounts of N, especially in the first few years after their establishment."	3896
environmental use - horticulture	"Environmental: ornamental"	1100
food - beverage	"mainly for uses such as soft drinks"	3782
	"major use […] today is as an emulsifier for citrus oils in fruit-based soft drinks […] and colatype drinks"	3782
food - general	"Human food: gum/mucilage"	1100
	"In the food industry gum arabic is used as a flavour fixative and emulsifier, to prevent crystallisation of sugar in confectionery, as a stabiliser in frozen dairy products, for its viscosity and adhesive properties in bakery products, and as a foam stabiliser and clouding agent in beer. The dried and preserved seeds […] are used as vegetables. […] The flowers are a good source of honey, an important source of nutrition and income generation to support rural livelihoods in marginal lands."	1192
	"seeds are traditionally used for human nutrition in Rajasthan"	3897
	"The dried seed is cooked as a protein source. The dried seed is the main component of panchkut, a delicacy in Jodhpur, India, also containing fruits of Capparis decidua, Cucumis sativa and Prosopis cinerearia."	1123
food - sweets	"mainly for uses such as confectionary"	3782
food additive - general	"Gum arabic functions as an emulsifier in certain products."	3904
	"The gum obtained from the trunk is important in the food industry, where it is used as an emulsifier, stabilizer and flavour fixative. It is also used as an additive that retards the crystallization of sugar. It is found especially in products such as chewing gum and confectionery."	1123
	"valued for the production of gum arabic, the only acacia gum evaluated as a safe food additive"	3897
fuel general	"Acacia senegal wood is locally valued for fuel wood and charcoal, although biomass yield per unit of land area is not sufficient to plant it for this."	1192

	"Fuels: charcoal"	1100
	"wood is valued as firewood, and can be used to produce charcoal"	3897
material - general	"Industrially, gum arabic is applied as an adhesive, as a protective colloid and safeguarding agent for inks, sensitiser for lithographic plates, coating for special papers, sizing agent for cloth to give body to certain fabrics, and coating to prevent metal corrosion. Gum arabic is also used in the manufacture of matches and ceramic pottery. In construction the wood is used locally for poles and fence-posts, the light-coloured wood for tool handles and dark heartwood for weaver's shuttles. Strong ropes are made from the bark fibres of the long surface roots."	1192
	"Materials: gum/resin"	1100
	"possibly […] of industrial significance [as] a completely "bio" adhesive for wood panels"	3901
	"The gold industry […] utilizes the gum to stabilize the metal's nanoparticles"	3895
	"The gum obtained from the trunk has a variety of uses, including adding lustre to crape and silk, thickening colours, calico printing, manufacturing ink and as a mucilage"	1123
	"wood from the trees makes good firewood and timber"	3782
material - timber, wood products	"wood is […] used to make utensils, poles and fence-posts. The bark and the roots provide fibre and make strong ropes and fishing nets"	3897
medicine - general	"fruits may be used for medicinal purposes"	3782
	"gum arabic is used to treat sore throats, coughs, catarrh, dysentery, diarrhea, burns, leprosy, ophthalmia, hemorrhage, gonorrhea, and nodular leprosy."	1123
	"Gum arabic was reported to have antidotal effects as it can destroy many alkaloids"	3897
	"In pharmaceuticals, it is used as a stabiliser for emulsions, a binder and coating for tablets, and as an ingredient in cough drops and syrups. A soothing and softening agent, gum arabic is extensively employed in folk medicines. Among many other uses, it is used internally for coughs, diarrhoea, dysentery, haemorrhage, and externally to cover inflamed areas."	1192
	"mainly for uses such as […] pharmaceuticals"	3782
	"softens and soothes skin and mucosa; moisturising; antibiotic; protective; used as pharmaceutical aid (in solid formulations)"	3751
	"The bark, leaves and gum contain tannins and are used as an astringent to treat colds, ophthalmia, diarrhoea and haemorrhages."	1123
	"The gum obtained from the trunk has soothing properties and forms a protective coating over inflamed tissue, reducing irritation and encouraging healing. It is taken internally, often in the form of pastilles, to treat sore throats, coughs and catarrh. It is also often added to proprietary mixtures used in the treatment of dysentery and diarrhoea. Externally, it is used in the treatment of sores, burns and leprosy."	1123
	"The roots are used to treat dysentery, gonorrhea and nodular leprosy."	1123
	"The seeds contain fat (khakhan), which is used in medicine."	1123
medicine - traditional herbal medicine	"In [Persian Medicine] literature, various methods such as replacement therapy with single product and herbal compounds for the treatment of opiate addiction were expressed. One of them is an herbal remedy called Hab-o Shefa. […] The combination of Hab-o Shefa includes Datura stramonium L. seed at a rate of 43.3%, root of Rheum palmatum L. at a rate of 27.9%, Zingiber officinala roscoe rhizome at a rate of 14.4% and Acacia senegal L. at a rate of 14.4 %. Datura stramonium is the main ingredient of this compound. Hab-o Shefa is useful in opioid maintenance treatment and its associated parameters particularly craving. In terms of relapse prevention it can be a new promising drug."	3899
	"In some forms of folk medicine the gum tears are […] considered highly nutritious and may be valuable for nourishing sick patients."	3904
	"Medicines: folklore"	1100
	Traditional African medicine	3751
	Traditional European medicine	3751
	Traditional Indian medicine	3751
social use - cosmetics	"used in cosmetics as an adhesive for face masks and powders, and to give a smooth feel to lotions."	1192

Purpose: Standardized Use Fields

Purpose: Fields of Use	*Frequency*
<multiple>	10
animal food - bee plant	2
animal food - general	3
environmental use - general	6
environmental use - horticulture	1
food - beverage	2
food - general	4
food - sweets	1
food additive - general	3
fuel general	3
material - general	6

material - timber, wood products	1
medicine - general	10
medicine - traditional herbal medicine	6
social use - cosmetics	1

Purpose: Number of Use Fields

Purpose: Number of use fields

Taxon used in 14 different standardized use categories (max. 27 categories possible).

Plant Parts Used

Plant Part (standardized)	*Plant Part (free text)*	*Remark*	*Ref*	
exudate	"gum"		3751	van Wyk, B.-E. & Wink, M. (2017): Medicinal
exudate	"gum exudate"		8730	Brendler, T., Eloff, J.N., Gurib-Fakim, A. & Pl
exudate	"dried exudate obtained from the stems and branches"		8898	Lemenih, M. & Kassa, L. (2010): Opportunitie
exudate	"an der Luft erhärtete gummiartige Ausscheidung, die auf natürliche Weise oder nach Einschneiden des Stammes und der Zweige austritt"		1101	Hänsel, R. & al. (1992-1998): Hagers Handbu
exudate	"gum arabic, the dried exudation obtained from the stem and branches"		1122	Mansfeld's World Database of Agricultural ar
exudate	Gum		3221	Goraya, G.S. & Ved, D.K. (2017): Medicinal p

Scale and Trend of Trade

ICC	*Trade Trend*	*Ref*	
	"Currently the biggest markets for Senegalia senegal gum are the European Union, North America (mainly the USA) and the Indian Subcontinent (mainly India). The UK imported 1,253 tonnes in 1998. Sudan, Nigeria and Chad are the three biggest sources of this gum."	1192	Plants of the World Online (POWO). Royal Botanic Gardens, Kew - http://plantsoftheworldonline.org/
	"If traditional medicinal uses such as dental care, and possible benefits, which include anti-cancer and antioxidant properties, lower cholesterol, dietary fiber, and weight loss […] are and continue to be verified, demand for gum arabic may continue to increase."	3895	American Botanical Council (2013): The Acacia tree's gum arabic. Retrieved from http://herbalgram.org/resources/herbclip/herbclip-news/2013/the-acacia-trees-gum-arabic/, viewed: 30.03.2021.
	"Several thousand tons of gum arabic are internationally traded every year, mainly in Europe and the USA."	3897	Heuzé, V., Thiollet, H., Tran, G., Hassoun, P., Bastianelli, D. & Lebas, F. (2016): Gum arabic tree (Acacia senegal). Retrieved from https://www.feedipedia.org/node/342, viewed: 30.03.2021.
ET	"Ethiopia also has a large resource base for the production of gum arabic (product of Acacia senegal or A. seyal), although current production levels fall far short of the potential"	8898	Lemenih, M. & Kassa, L. (2010): Opportunities and challenges for sustainable production and marketing of gums and resins in Ethiopia. CIFOR, Bogor. Retrieved from http://www.cifor.org/publications/pdf_files/Books/BKassa1102.pdf, viewed: 12.06.2012.
ET	[non species-specific information] "The production and trade volumes of gums and resins in Ethiopia have been increasing since the 1990s. Between 1998 and 2007, Ethiopia exported about 25 192 tonnes – an average of approximately 2519 tonnes per year – of natural gums and resins with a value of [...] 34 138 670 USD [...]. The export volume increased on average by 12% each year from 1998 to 2007."	8898	

Utilization: Commodity, Cultivation, Harvest, Sustainability, Trade

Type	*ICC*	*Utilization*	*Ref*	
com		"Each manufacturer creates a variety of gum arabic products for use in different consumer goods. For example, Tragacanth Importing Company or TIC Gums, of Belcamp, Maryland, manufactures different kinds of gum arabic for use in food and flavor emulsions, in meal replacement products, to coat cereal, snack foods, and confections, and for use in making baked goods like cakes and muffins, as well as in icings and frostings."	3904	Purcell, K. (2005): Sudan was
com		"gum Arabic has a global market demand guaranteed by its high quality binding and storage properties"	3900	Muhammad, Y.K., Ilu, K.J., Jib
com		"Gum arabic is a colorless, tasteless, cold water-soluble, polysaccharide. It is a multi-functional hydrocolloid (a substance that forms a gel with water) with a highly branched arabino-galactan-protein complex."	3904	Purcell, K. (2005): Sudan was
com		"gum arabic is a dried exudate collected from several Acacia species"	8898	Lemenih, M. & Kassa, L. (201(
com		"Gum arabic is defined as a dried exudation obtained from the stems and branches of Acacia senegal or related species of Acacia"	8730	Brendler, T., Eloff, J.N., Gurib-

com		"Gum arabic is traded in large quantities, and is grouped into three grades. Grade 1 (the best) is in large, round or worm-shaped pieces and is white/pale or brownish yellow. Grade 2 gum is in rounded, worm-shaped or branched pieces, and is smaller in size and generally darker in colour than the top quality. The poorest grade gum (Grade 3) is in the form of small brown grains."	1192	Plants of the World Online (PC
com		"Harvested from Senegalia senegal, gum arabic has superior properties over other 'acacias', and hence it is this gum that has dominated international trade."	1192	
com		"international commercial specifications identify gum arabic as a dried exudate obtained from the stems and branches of A. senegal (L) Willdenow or A. seyal"	8898	Lemenih, M. & Kassa, L. (201(
com		"Materials sold as gum arabic are derived from the resin of several species of acacia trees: the true, preferred gum arabic is derived from Acacia senegal (L.) Willd., Fabaceae. Other gums of commerce are derived from A. nilotica (L.) Willd. ex Delile, Fabaceae (often called gum arabic, but is actually Indian gum arabic) and A. seyal Delile, Fabaceae (also called gum arabic, but is actually talha)"	3904	Purcell, K. (2005): Sudan was
com		"only three of these species are known to be of economic importance, namely Acacia senegal, Acacia seyal and Acacia seberina; otherwise called grades 1, 2 and 3 gum Arabic respectively"	3900	Muhammad, Y.K., Ilu, K.J., Jib
com		"Some companies like Coca-Cola and Pfizer, Inc., reportedly rely heavily on supplies from the Darfur region for the gum arabic used in their products."	3904	Purcell, K. (2005): Sudan was
com	NG	"Gum Arabic is produced in eleven states but the major ones are Jigawa, Yobe, Borno, Kebbi, Sokoto and Katsina states."	3900	Muhammad, Y.K., Ilu, K.J., Jib
com	SN	"Sudan is the biggest gum producer, but Senegal’s gum is internationally recognized for being of best quality despite low production potential accounting for less than five percent of the world market."	3905	Sarr, M.S., Seiler, J.R., Sulliva
cul		"Acacia senegal is mainly propagated by seeds. These should be harvested before the pods have dried in order to prevent insect attacks, and then treated with an insecticide, after which they will remain viable for many years in hermetic storage at 10°C. […]. For vegetative reproduction, shoot cuttings are used, and seedlings should be watered every 7th day […]. Gum arabic trees can be raised in nurseries or directly in the field. As the tree is slow to establish […] young plants should be protected from grazing animals."	3897	Heuzé, V., Thiollet, H., Tran, G
cul		"Anbau liefert nur einen Teil der Droge, meist Wildsammlung."	1101	Hänsel, R. & al. (1992-1998):
cul		"has been introduced into Egypt, Australia, Puerto Rico, and the Virgin Islands"	8730	Brendler, T., Eloff, J.N., Gurib-
cul		"in India, Nigeria, and Pakistan, it is under cultivation"	8730	
cul		"Senegalia senegal, which has the potential to restore degraded soils and to be used for agroforestry, is both economically and ecologically important for the dry areas of sub-Saharan Africa because it produces gum arabic, an important commodity crop for smallholder farmers; it succeeds where other crops fail. This tree species also can correct soil fertility loss caused by continuous agriculture and worsened by a reduced or non-existent fallow period."	3896	Bakhoum, N., Fall, D., Fall, F.,
cul		"Tended in a type of semi-cultivation ("gum gardens"), where 80% of the world production of gum arabic are produced"	1122	Mansfeld's World Database of
cul		cultivated in Chad, Sudan and Nigeria	1100	GRIN Database (Germplasm R
cul	CN	"African/Asian species regarded [...] as rarely cultivated in China."	3845	Maslin, R.M., Boon Chuan Ho,
cul	EG	In O-Afrika (EG) örtlich gepflanzt	2032	Mansfeld, R. (1986): Verzeichr
cul	NG	cultivated	3145	Brinckmann, J.A., Kathe, W.,
cul	SD	"Agroforestry systems based on S. senegal and a variety of crops produce combined yields that are larger than when the trees or agricultural crops are grown separately."	3896	Bakhoum, N., Fall, D., Fall, F.,
cul	SD	"In Sudan, a traditional rotation with agricultural crops and S. senegal was shown to maintain soil fertility and has a low input production cycle"	3896	
cul	SD	"Sudan has embarked on a steady A. senegal planting programme since the late fifties. From the early nineties, A. senegal plantations make up more than 50% of the annual afforestation/reforestation programmes with an annual average of 60 000 feddans (25200 ha). The total area of A. senegal planted in 1996 was 669291 feddans (2811 02 ha)."	7113	Abdel Nour, H.O. (1999): Gum
cul	SD	"trees are cultivated over a very large area in special 'gum gardens' "	8730	Brendler, T., Eloff, J.N., Gurib-
cul	SD	cultivated	3145	Brinckmann, J.A., Kathe, W.,
cul	SD	Im Sudan in "Gummigärten" in Halbkultur gepflegt (hier 80% des Weltbedarfs an Gummi arabicum erzeugt)	2032	Mansfeld, R. (1986): Verzeichr
cul	UG	cultivated	3145	Brinckmann, J.A., Kathe, W.,
exp		"Sudan is the world chief producer and exporter of gum Arabic produce followed by Chad and Mali. Nigeria also earns some reasonable foreign exchange from gum Arabic export"	3900	Muhammad, Y.K., Ilu, K.J., Jib
exp	ET	Production/ export of Gum acacia [= Acacia senegal]: 1992/92; 1993/269; 1994/1098; 1995/1485; 1996/1130; 1997/56; 1998/582; 1999/36 [yr/quintals; 1 quintal = 100 kg]	3786	Lemenih, M. &Teketay, D. (20(
exp	KE	"In Kenya, interest is developing in improving local S. senegal resources to benefit the large silvopastoral dryland community […]. Kenya is also developing a new market for gum arabic variety kerensis, which is widely distributed and also prized for its quality. Gum production forms the foundation of an active international market"	3896	Bakhoum, N., Fall, D., Fall, F.,
exp	SD	"Acacia senegal, the source of gum arabic, is the second export commodity of the country"	7113	Abdel Nour, H.O. (1999): Gum

exp	SD	"During its long history, the gum trade in the Sudan witnessed some major setbacks. […] and the third resulted from the prolonged drought in the Sahel of 1968-1975 and again from the relatively shortlived drought of 1983-1985. The last two droughts caused the exports to drop from an annual average of 45 000 t […]. From 1983 to 1991, gum production began to increase steadily back to its normal levels […]. Despite this increase of production, exports of gum arabic are reviving at a relatively slow pace, because of the confusion caused by the short supplies for world consumption during the drought years. Similar adverse production and export situations have been faced in other gum-producing countries in Africa, such as Chad, Nigeria, Niger and Senegal. In all cases, Sudan remained the supplier of some 70-90% of world consumption of gum arabic"	5002	Seif el Din, A.K. & Zarroug, M.
exp	SD	"Problems with gum arabic exportation and business interests began in November 1997 when the United States passed economic sanctions against Sudan because of suspected links between its government and terrorism. A market research report [...] describes how this influences the gum arabic business: Industry leaders have worked tirelessly and successfully to convince the U.S. State Department and Treasury Department that the embargo unfairly punishes a significant number of U.S. companies who process and use gum arabic without having any effect on total Sudan gum arabic exports. Due to pressure from interested businesses, the United States House of Representatives passed legislation exempting gum arabic from the embargo."	3904	Purcell, K. (2005): Sudan was
exp	SD	"The annual gum arabic exports from the Sudan ranged from about 2000 to 7000 tons during the last two decades of the 19th century and subsequently grew to reach the maximum of 62000 tonnes in 1968/69"	5002	Seif el Din, A.K. & Zarroug, M.
exp	SD	"Tribes have been smuggling the gum to Chad to be sold for hard currency"	3895	American Botanical Council (2
har		"A young gum arabic tree can produce 400 to 7,000 grams of gum arabic annually. The gum arabic season lasts from October through June, during which time the gum drops may be collected every 10 days. The gum cannot be harvested during the rainy season, when the trees are in full bloom."	3904	Purcell, K. (2005): Sudan was
har		"Annual yields from young trees may range from 188 to 2856 g (avg. 900 g), from older trees, 379 to 6754 g (avg. 2,000 g)."	8919	Moges, Y. (2004): Gum and in
har		"Because of severe and frequent drought occurrences, optimizing gum arabic production requires consideration of indicators of adaptability such as survival, growth, and water use efficiency (WUE)."	3905	Sarr, M.S., Seiler, J.R., Sulliva
har		"Gum exudes from cracks in the bark of wild trees, mostly in the dry season, with little or none in the rainy season when flowers are out. In some areas, a long strip of the bark is torn off and the gum is allowed to exude. In Africa, it is regularly tapped from trees, which are about 6 years old by making narrow transverse incisions in bark in February and March. Within a month, tears of gum form on surface and are gathered. Trees begin to bear between 4–18 years of age and are said to yield only when they are in unhealthy state due to poor soil, lack of moisture, or damaged. Attempts to improve conditions tend to reduce yield."	8730	Brendler, T., Eloff, J.N., Gurib-
har		"gum production fluctuates and is affected by abiotic environmental factors and associated changes in plant physiology, which make estimation of gum yield uncertain"	3905	Sarr, M.S., Seiler, J.R., Sulliva
har		"Gum production generally begins during the first tapping period, when the tree is 4 or 5 years old. The quality of the gum depends on the site of the population, the recorded rainfall, soil moisture, temperature, and the date on which tapping is practiced […]. The period of production is also highly dependent on climatic conditions. [There is] a correlation between the amount of water in the soil and gum arabic production […] gum arabic quality is also affected by origin, soil type, and/or climatic factors"	3896	Bakhoum, N., Fall, D., Fall, F.,
har		"Higher yields of gum arabic are obtained under adverse conditions, which is contrary to forage yield. Forage production from gum arabic tree thus remains below that of other sahelian trees, which limits its use as forage"	3897	Heuzé, V., Thiollet, H., Tran, G
har		"In Africa, it is regularly tapped from trees which are about 6 years old by making narrow transverse incisions in bark in February and March. In about a month, tears of gum form on surface and are gathered. Trees begin to bear between 4–18 years of age and are said to yield only when they are in unhealthy state due to poor soil, lack of moisture or damaged. Attempts to improve conditions tend to reduce yield."	8919	Moges, Y. (2004): Gum and in
har		"it takes between 8 and 13 years before sufficient gum arabic is produced by a tree, and the amount of gum produced fluctuates greatly from one tree to another and from one year to another, varying between 100 and 1000 g per tree. The annual average production per ha is about 200 to 300 kg in Sudan and 240 kg in Senegal."	3896	Bakhoum, N., Fall, D., Fall, F.,
har		"The gum arabic tree can be tapped after 4 years and remain productive up to 20 year-old"	3897	Heuzé, V., Thiollet, H., Tran, G
har		"The gum arabic trees [...] produce gum arabic only if they are in an unhealthy condition. The plant's ability to produce the gum is improved by inclement conditions such as hot weather, lack of water, poor soil […]. As a result, damaged trees can produce more gum."	3904	Purcell, K. (2005): Sudan was
har		"There are two stages to the collection of gum arabic. First, harvesters cut and strip pieces of bark from the trunks and branches of unhealthy trees. The trees weep the resin from the scars in the branches and trunk, forming tears of hardened amber-colored gum drops when the resin is exposed to the atmosphere. Next, harvesters return to collect the gum arabic drops or tears once they've dried. The tears are small (.75 to 3 inches in diameter), irregular-shaped, white- and/or yellow-tinged."	3904	
har		"To produce the gum, trees are cut (tapped) causing the trees to produce a wound-healing, aqueous substance that helps the tree prevent infection and keeps it hydrated. The substance hardens when it contacts air and sun forming amber-like chunks."	3895	American Botanical Council (2
har		"wildcrafted to some extent but quantities of cultivated material is available"	8730	Brendler, T., Eloff, J.N., Gurib-

har	ET	[non species-specific information] "Estimated potential and annual production of gum and incense in Ethiopia: Gum arabic 399,700 ha and 4,996 tonnes"	8898	Lemenih, M. & Kassa, L. (201(
har	ET	„Yield of arabic gum is estimated to be 0.25 kg per tree each season, which is often considered to be the average yield"	8898	
har	KE	"Annual production estimate: 2,000 tonnes for gum arabic"	3787	Gachathi, F.N. & Eriksen, S. (2
har	NG	"The plant is highly susceptible to weed at tender stage, but at maturity, weed stress becomes a favorable factor for optimum production"	3900	Muhammad, Y.K., Ilu, K.J., Jib
har	SD	"Gum arabic from Sudan is obtained or tapped from A. senegal trees, from which pieces of bark 10-30 cm long and 2-4 cm broad are removed to form wounds. The gum exudes in the form of small droplets on the wounds that steadily grow in size until they become nodules of 2-5 cm diameter. These nodules are ready to be picked for sale after about 4-6 weeks. Subsequent pickings are available at intervals of 1-2 weeks."	5002	Seif el Din, A.K. & Zarroug, M.
har	SD	"In the traditional bush fallow system, Acacia senegal grows on the land when it is in fallow. The tree can reach 4–5 m in height. […] When the land is taken back into cultivation, the tree is coppiced. The land is then cultivated until its fertility falls below an acceptable level. During this time most of the trees regenerate naturally by coppice growth. Three to five years after cutting, they may be tapped again."	3782	Elmqvist, B., Olsson, O., Mirgh
imp	IN	imported and wild harvested	3221	Goraya, G.S. & Ved, D.K. (201
price		"Gum arabic is one of Sudan's chief export commodities and agriculture products. The Sudanese gum arabic is considered one of the world's largest and most prized crops because of its quality and consistency. The Darfur region where most of the civil strife is occurring produces over two-thirds of the world's supply of gum Arabic. Due to the protracted violence and disruption of supply in the area, prices have tripled and quadrupled lately."	3904	Purcell, K. (2005): Sudan was
rem		"Gummi wird nur von Bäumen, die sich in physiologischen Stresssituationen befinden, gebildet.15 Alle Faktoren, die die Lebenskraft des Baumes schwächen, wie ausgelaugter, magerer Boden, geringe atmosphärische Feuchtigkeit verbunden mit großer Hitze, sind Stimuli für gute Gummiproduktion."	1101	Hänsel, R. & al. (1992-1998):
socu		"a gum (gum arabic) […] has been in known use since 3000 BCE as a binder for pigments, inks, and cosmetics, paint adhesive, and as part of the flaxen wrappings in the mummification process."	3895	American Botanical Council (2
socu		"Despite S. senegal's commercial, industrial, agricultural, and ecological importance, this tree still remains under-utilized in African drylands. This under-utilization is attributed to a lack of knowledge of production systems and also to the fact that there are relatively few seed sources. Nonetheless, S. senegal has been a successful crop in agroforestry systems in the Sudan and several West African nations."	3896	Bakhoum, N., Fall, D., Fall, F.,
socu		"exports to US (for Coca-Cola) not barred during sanctions against Sudan"	3753	Mabberley, D.J. (2017): The pl
socu		"Gum arabic has a long history and has been used for a variety of purposes. The Egyptians used gum arabic in cosmetics, in inks for hieroglyphics, and to help with the mummification process. They also exported gum arabic, calling it kami, and they sold, traded, and used the product as a pigment binder and adhesive in painting. Gum arabic's early trade routes inspired its early names, including the current moniker 'arabic' which it earned from the Arabian ports. In the Middle Ages, the gum was called 'Turkey Gum' because it was shipped through the Turkish Empire, and later it became 'Indian Gum' or 'East Indian Gum' from its shipments through Bombay, India."	3904	Purcell, K. (2005): Sudan was
socu		"Gum arabic has been used for at least 4,000 years in the preparation of food, in human and veterinary medicine, in crafts and as a cosmetic."	1192	Plants of the World Online (PC
socu		"S. senegal is a valuable species with products that are traded both locally and internationally with potential of revolutionizing the economy of these dry ecosystems".	3902	Omondi, S.F. (2016): Reprodu
socu		"The civil war and protracted violence in the Darfur region of Sudan, Africa, have adversely impacted the collection and exportation of a lucrative natural product, gum arabic, a tree resin used as an emulsifying agent in many commercial products. Both the subsistence farmers who collect the raw material and the trees that produce the valuable resin are fighting for their survival."	3904	Purcell, K. (2005): Sudan was
socu		"The current situation in the Darfur region is dire. The African farmers who harvest the gum arabic have either been displaced, murdered, or are unable to continue their work because of the recent violence. Similarly, the gum arabic trees have had to fight for survival with droughts and plagues of locusts. Thus, the people and their business suffer. The violence, however, compounds some of these hazards because the Sudanese refugees, who are more worried about their own survival than the gum business, have begun cutting down the valuable trees for firewood."	3904	
socu		"The use of gum arabic (or gum acacia), which is derived from an exudate from the bark, dates from the first Egyptian Dynasty (3400 B.C.). It was used in the production of ink, which was made from a mix of carbon, gum and water. Inscriptions from the 18th Dynasty refer to gum as 'komi' or 'komme'. Acacia senegal produces the only acacia gum evaluated toxicologically as a safe food additive."	1192	Plants of the World Online (PC
socu		"The wood is made into throwing-sticks which, in contrast to the Australian boomerang, can be made to fly straight and used for hunting and pageantry."	1192	
socu	NG	"production constraints […] included land tenure problem, poor extension services, lack of improved planting stocks and poor support on the part of government."	3900	Muhammad, Y.K., Ilu, K.J., Jib

socu	NG	"Socioeconomic data revealed that the gum Arabic production scenario was dominated by youth, the male gender, educated elites and public servants with small land holding. Financial results on the contrary, revealed US$ 805.86 [...] GM values per hectare per year, whereas US$ 345,948.88 [...] was the total net profit realized. On the average each respondent earned US$1,572.49 [...]."	3900	
socu	SD	"The Multi-Donor Trust Fund-National has provided funding for over 12,000 people with the Revitalizing the Sudan Gum Arabic Production and Marketing Project. The program was designed to help small scale gum arabic producers learn harvesting techniques, offers agroforestry training, and provides microloans. One-fourth of the beneficiaries have been women. The program has increased the quality of life by allowing villages to access more efficient water supplies and medical treatments."	3905	Sarr, M.S., Seiler, J.R., Sulliva
socu	SN	"Gum arabic from Senegalia senegal is a valuable non-timber forest product, and it represents a substantial component of household income for many local communities in Africa and particularly in the Sahel."	3905	
sus		"Careful 'wounding' of the trunk is required for sustainable gum production. The cut should be only just deep enough for the gum to exude."	1123	Plants for a Future - www.pfaf.
tra		"Biggest producers are Sudan, Nigeria and Chad; outside Africa small amounts of gum are produced in India."	1122	Mansfeld's World Database of
tra		"Hauptmenge an Arabischem Gummi kommt aus der Sudan-Region Nordostafrikas, z. B. Sudan-Kordofan, Senaar, Oberägypten-Nubien, Äthiopien und Somalia, aus der Senegambiaregion, z. B. Senegal, Gambia, Elfenbeinküste, Nord-Dahomey und Nord-Nigeria"	1101	Hänsel, R. & al. (1992-1998):
tra		"tapped trees source of true gum arabic (kolhol g., 60 K t a yr by 2008)"	3753	Mabberley, D.J. (2017): The pl
tra		"The European Union is one of the major consumers of gum arabic (200,000 tons, which is equivalent to approximately US$ 432 million […]. Sixty per cent (60%) of gum arabic product comes from Sudan, 24% from Chad, 6% from Nigeria, and 8% from other countries […], including 1% from Senegal."	3896	Bakhoum, N., Fall, D., Fall, F.,
tra		Die afrikanische Ernte liefert jährlich ca. 20.000 t.	2049	Wagner, H. (1985): Pharmaze
tra	ET	"Annual production of gum Arabic from A. senegal and A. seyal species in the period 1988-1999 was 300- 400 tons. A. senegal comprises about 70 % and A. seyal about 15–25% of the species that contribute up to 95% of the total gum entering international trade."	3792	Tadesse, W., Desalegn, G. &
tra	IN	Estimated annual trade: >20000 metric tonnes	3221	Goraya, G.S. & Ved, D.K. (201
tra	SD	"Imports […] to the USA increased between 1976 and 2003, from 6,674 tonnes in 1976 to 14,088 tonnes in 2003. […] The linear trendline showed an increase of 60% for the entire time period and an increase of more than 100% since the beginning of the 1990s. A similar pattern was seen in France […]. It is difficult to distinguish the relative contributions of Acacia senegal or Acacia seyal to these figures […]. Some sources state that Seyal gum is more important […]. Others report that 70% of gum arabic in international trade originates from Acacia senegal and only 15–25% from Acacia seyal. […] However, even with this increased demand the production in Sudan, the main country of production, is declining. […] From the earliest available figures on gum arabic production in 1901, production levels rose steadily to the mid-1960s. From that point production slumped and has been characterized by great variations. […] by the end of the 1980s [production] had reached its lowest level since the beginning of the 20th century. […] The increase in smuggling, however, can most probably not obscure the fact that the production of gum arabic has declined since the end of the 1960s. […] The reasons for declining and variable production are reported as a combination of factors, both climatic and socioeconomic."	3782	Elmqvist, B., Olsson, O., Mirgh
tra	SD	"Sudan continues to be the world's leading producer of gum arabic. At the end of the 1990s, it contributed 70–90% of world production. Most of the gum is produced by smallholders on individual farms where the trees grow naturally. […] Local trade and subsistence use has been, and still is, insignificant in relation to the amount exported"	3782	
tra	US	"sold in this country"	6369	McGuffin, M., Kartesz, J.T., Le

Legislation

Regulation

ICC	Regulation	Ref	
ML	"in Mali the species is protected"	8730	Brendler, T., Eloff, J.N., Gurib-

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Abbreviations and Standards

ICC = ISO Country Codes Ref = literature reference

Altitude: Low / High = minimum and maximum limits of altitude range [m]

Legislation: Source Taxon = name of taxon as contained in legislation

Utilization: TypeUtil

TypeUtil	*TypeUtilLong*
com	commodity
cul	cultivation
exp	export
har	harvest
imp	import
man	management
price	price
rem	remark
socu	socio-cultural significance
sus	sustainability
tra	trade
trend	trend and scale of trade

Distribution Status: Standard

Status	*Explanation*
chk	check entry
nat	native
int	introd., established
adv	introduced, not established
ocd	occurrence doubtful
unc	status unclear
ext	extinct
cul	cultivated
sou	source doubtful
ica	introduced (casual or naturalized)
don	doubtfully native
pex	(presumably) extinct
ali	casual alien
nzd	naturalized
nna	not native
dpn	status doubtful, possibly native
abs	absent but reported in error

Common names: Type

TypeShort	*Type*
?	<unknown>
ayn	ayurvedic name
hom	homoeopathic name
pha	pharmaceutical name
scn	standardized common name
tra	trade name

Ecology: TypeEcol

TypeEcol	*Explanation*
alti	altitude
grow	growth rate
habit	habitat
morph	morphology
regen	regeneration
repro	reproduction

ver	vernacular name