

Kew

PLANTS PEOPLE
POSSIBILITIES



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SEPASAL is a database and enquiry service about useful "wild" and semi-domesticated plants of tropical and subtropical drylands, developed and maintained at the Royal Botanic Gardens, Kew. "Useful" includes plants which humans eat, use as medicine, feed to animals, make things from, use as fuel, and many other uses.

Since 2004, there has been a Namibian SEPASAL team, based at the National Botanical Research Institute of the Ministry of Agriculture which has been updating the information on Namibian species from Namibian and southern African literature and unpublished sources. By August 2007, over 700 Namibian species had been updated.

Work on updating species information, and adding new species to the database, is ongoing. It may be worth visiting the web site and querying the database to obtain the latest information for this species.

Internet SEPASAL

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 *Display help*In names list include: synonyms vernacular names and display: All names per page*Your query found 2 taxa***Phragmites australis (Cav.)Trin. ex Steud. [1808]**

Family: POACEAE

Synonyms

Trichoon phragmites (L.)Rendle
 Arundo australis Cav.
 Arundo phragmites L.
 Phragmites australis (Cav.)Trin. ex Steud. var. stenophylla (Boiss.)Bor
 Phragmites communis Trin.
 Phragmites communis Trin. var. stenophylla Boiss.
 Phragmites maxima (Forssk.)Blatt. & McCann

Vernacular names

(Mozambique)	canico [5480], gondse [5480]
Afrikaans (Namibia)	fluitjiesgras [1304], fluitjiesriet [5083] [5115], vlakkiesgras [1304]
Afrikaans (Southern Africa)	fluitjiesriet [1340] [2795] [5713], riet [1340], vaderlandsgras [1340]
Derewe	massahunga [1340]
Digo (Africa)	tete [1340]
English (Africa)	bulrush [1340], cane [1340], common reed [1340], reed [1340]
English (Namibia)	common reed [1304] [5115]
English (Southern Africa)	common reed [2795] [5664] [5713]
German (Namibia)	Ried [5115], Schilfrohr [5083] [5115]
Jul'hoan (Namibia)	#a [5083] [5115], ll'angl'o [5083] [5101], ll'engl'o [5115]
Khoekhoegowab (Namibia)	#aa.b [5115]
Kxoe (Namibia)	#a [5083]
Oshiwambo (Namibia)	eenbundu [1304] [5083] [5115], olumbundu [1304] [5115]
Otjiherero (Namibia)	oruu [5115]
Rukwangali (Namibia)	ruu [5083] [5115]
Rumanyo (Namibia)	mbu [5083] [5115]
Sagara (Africa)	matete [1340]
Sotho	leklata [1340]
Spanish (Mexico)	carricillo [1680]
Sukuma	massangesse [1340]
Swati	umhlanga [1340]
Thimbukushu (Namibia)	ka.mbu [5083] [5115]

Tswana	molimahali [1340]
Tswana (Southern Africa)	umhlanga [2795]
Venda	luthanga [1340]
Zulu	ingqulwane [1340], ishani [1340], isiqandolo [1340], umcoboka [1340], umhlanga [1340], uqobose [1340]

Partial distribution

Plant origin	Continent	Region	Botanical country
Native	Africa	South Tropical Africa	Angola [5126], Mozambique [3], Zambia [3] [5481], Zimbabwe [3] [5125]
		Southern Africa	Botswana [3] [2182] [5104] [5186] [5713], Cape Province [2182] [5104] [5713], Caprivi Strip [2182] [5115], Lesotho [2182] [5104] [5550] [5713], Namibia [2182] [5104] [5115] [5713], Natal [2182] [5104] [5713], Orange Free State [2182] [5104] [5713], Swaziland [2182] [5104] [5452] [5713], Transvaal [2182] [5104] [5713]
Introduced	Australasia	Australia	New South Wales [1808], Northern Territory [1808], Queensland [1808], South Australia [1808], Tasmania [1808], Victoria [1808], Western Australia [1808]
		New Zealand	
	Pacific Southern America	Brazil	
Status Unknown	Africa	East Tropical Africa	Kenya, Tanzania, Uganda
		Northeast Tropical Africa	Ethiopia, Sudan
		Northern Africa	Algeria, Egypt, Libya, Morocco
		West Tropical Africa	Niger, Nigeria, Senegal, The Gambia
		West-Central Tropical Africa	Zaire
	Asia-Temperate	Arabian Peninsula	Bahrain, Kuwait, North Yemen, Oman, Qatar, Saudi Arabia, South Yemen, United Arab Emirates
		China	Xizang
		Eastern Asia	Japan, North Korea, South Korea, Taiwan

	Soviet Middle Asia	Kazakhstan, Kirgizistan, Tadjikistan, Turkmenistan, Uzbekistan
	Western Asia	Afghanistan, Iran, Iraq, Israel, Sinai
Asia-Tropical	Indian Subcontinent	Himachal Pradesh, Jammu-Kashmir, Pakistan, Uttar Pradesh
Europe	East Europe	Ukraine
Northern America	Eastern Canada	Nova Scotia
	Northern Mexico	Baja California Sur [1680]
	Western Canada	British Columbia
Southern America	Caribbean	

ISO countries: Argentina , Canada , Chile , India , Mexico , USSR , United States , South Africa [3] [2182] [5104] [5713]

Descriptors

Category	Descriptors and states
DESCRIPTION	Herb; Can be Coppiced [6107] [6113]; Aquatic [5713]; Erect [5664]; Terrestrial; Rhizomatous [3] [5334] [5664] [6088]; Perennial [3] [2182] [5104] [5115]; Plant Height <= 6 m [3]
CLIMATE	Not Frost Tolerant; Subtropical, Hot and Arid [3] [5115] [5664] [5713]; Warm Temperate Humid [3] [5713]; Annual Rainfall >= 50 mm
SOILS	Sometimes Waterlogged (frequency unknown) [2182] [5115] [6121]; High Water-Table [2189] [6113]; Acid; Permanently Waterlogged [5664] [5713]; Neutral; Saline; Poorly Drained [2182] [5115] [6113] [6121]; Alkaline; Sandy [6116]; Silts [6088]; Clayey [6116]
HABITAT	Pioneer Species [6088]; Dominant within Stands of Natural Vegetation [5664] [5713]; Grassland/Forb-Land [2182]; Wooded Grassland [2182]; Hillsides/Slopes; Wooded Shrubland [2182]; Gullies [123] [3018] [5664]; Desert [2182]; Semi-Desert [2182]; Dunes [1415]; Watercourses [3] [2182] [5115] [5664] [5713]; Estuaries; Lakes/Ponds/Pools [3] [5713]; Floodplains [3]; Vlei/Dambo/Seasonally Flooded Grassland [3] [5101] [5664] [5713]; Flats [3]; Altitude 0-3000 m a.s.l. [2255]
PHYSIOLOGY	C3 [2182] [6110]; Susceptible to Non-Insect Pests
PRODUCTION AND VALUE	Traded Locally [6] [1415]; Used in Manufacturing Industry [6107] [6113]
SOURCES OF PLANTING MATERIAL	RBG Kew Seed Bank; Other Seed Sources [5181]
CONSERVATION	IUCN Status - Lower Risk, Least Concern (LC) [5400]
FURTHER DATA SOURCES	Botanical Illustration [2182] [5713]; Additional References [5638] [5659] [6105] [6122]; Regional Distribution Map [5664]; Botanical Photograph [2182] [5115] [5664]; Databases [5123]; Habit Illustration/Photograph [5664]; Grid Map [2182] [5115] [5123] [5125]
SEPASAL DATASHEET STATUS	All Data Transferred from SEPASAL Paper Files [6040]; Nomenclature Checked
CHEMICAL ANALYSES	Biological Activity - entire plant [1340]; Poisonous Compounds - leaves [1415]; Unspecified Flavonoids - leaves [6114]; Unspecified Analyses - unspecified parts [6121] [6125]; Unspecified Sugars - aerial parts [6]; Flavones - inflorescences [6117]; Unspecified Sugars - unspecified parts [6125]; Proteins - aerial parts [6] [6101]; Other Analyses - stems [6118]; Other Analyses - leaves [6118]; Other Analyses - unspecified parts [1340] [6121];

Proteins - unspecified parts [6125]

Uses

Major use	Use group	Specific uses
FOOD	Unspecified Parts	tea substitutes [1340]
	Stems	vegetables [38]; condiments/relishes/chutneys
	Leaves	green vegetables [1136]
	Inflorescences	vegetables, raw; flower buds, green vegetables [1415]
	Infructescences	fruits, dessert fruits
	Seeds	cereal/starch based preparations [38]
	'Roots'	root/tuber vegetables [38]; alcoholic beverages; rhizomes, starches [6] [2795]; rhizomes, raw, famine food [2514]; rhizomes, starches, bread [6]; rhizomes, alcoholic beverages [6113]; rhizomes, non-alcoholic beverages; rhizomes [1214] [1340]; rhizomes, raw
FOOD ADDITIVES	Exudates	raw
	Unspecified Parts	potable water, water clarifiers
ANIMAL FOOD	Stems	stolons, sweeteners (non-sugar) [2795]; sweeteners (non-sugar) [2795]; pickles [1239]
	Aerial Parts	leaves, bovines, grazing; leaves, Equidae, grazing; leaves, grazing; leaves, bovines, fodder; leaves, fodder; unspecified aerial parts, silage; stems, primates [2514]; unspecified aerial parts, fodder [1415] [6113]; unspecified aerial parts, horses, fodder [6]; unspecified aerial parts, cattle, fodder [6] [2189]; stems, grazing [6113]; unspecified aerial parts, cattle, grazing [6124]; unspecified aerial parts, grazing [1139] [6116]; unspecified aerial parts, fodder, winter [6125]; unspecified aerial parts, grazing, winter [6116]; stems, cattle, fodder [6107]; unspecified aerial parts, silage [1415] [6101]; stems, forage; unspecified aerial parts, forage [1415] [6113]
MATERIALS	Unspecified Materials	stems; stems, fishing equipment; stems, arrow shafts; stems, traps/snares; stems, pipes (smokers'); stems, huts; stems, wattles/laths; stems, fences; stems, tools; stems, blown idiophones
	Fibres	unspecified aerial parts, thatch [2795] [5664]; inflorescences, brushes/brooms [6] [557] [1415]; stems, basketry (from fibre), baskets; stems, netting; stems, plaiting; stems, matting; stems, fibreboard [6113]; stems, packing/stuffing/filling; stems, pipes (smokers'); stems, wood adhesives; stems, musical instruments; stems, thatch, buildings; stems, woven material, baskets [35] [1137] [2795] [5664]; unspecified aerial parts, paper [5664]; unspecified aerial parts, thatch, huts [1304]; stems, basketry (from fibre), baskets [6] [1137] [2795] [5713]; stems, matting, mats [557] [1214] [1239] [1304] [1415] [2795] [5118] [5664]; stems, matting, outbuildings; stems, buildings [6]; leafy stems/branches, thatch [1415]; unspecified aerial parts, plaiting, sandals [1239]; unspecified aerial parts, cord/string/twine [1214] [1415]; unspecified aerial parts, netting [1214] [1415]; stems, cellulose derivatives [6113]; unspecified aerial parts, pulp [1415]; unspecified aerial parts, cardboard [6102]; stems, paper, printed material [6106]; stems, paper [6106] [6113]; infructescences, packing/stuffing/filling [6113]; other inflorescence parts, matting, mats [2189]; stems,

		woven material, bags [35] [1137]
	Cane etc.	stems, lattices; stems, musical instruments [2795]; stems, basketry (from cane etc.), baskets [2795] [5118]; stems, buildings [2795]; stems, constructions [5664]; stems, poles (from cane etc.), roofs [5713]; stems, fences [6] [1340] [5713]; stems, walls [5713]; stems, flutes [35] [557] [1304] [2795]; stems, 'jewellery'/personal adornment; stems, drinking straws [5101]; stems, containers/holders [5101]; stems, arrows [2795] [5101] [5474] [5664]; stems, pipes (smokers') [6] [1214] [1415] [2795]; stems, pens [1239]; stems, poles (from cane etc.) [1214]; stems, poles (from cane etc.), sheds [6]; stems, poles (from cane etc.), traps/snares [1415]; stems, poles (from cane etc.), fishing rods; stems, bobbins/spools/reels [1214] [1239]; stems, mouthpieces (for musical instruments) [1239]; stems, poles (from cane etc.), thatching spars [1137]; stems, poles (from cane etc.), buildings [1415]; stems, poles (from cane etc.), constructions [5664]; stems, poles (from cane etc.), huts; stems, poles (from cane etc.), lattices [5474]
	Cork/Cork Substitutes	stems; unspecified aerial parts [6] [1415]
	Tannins/Dyestuffs	dyes, green; unspecified aerial parts, green [1239]
FUELS	Unspecified Fuels	stems
	Fuelwood	heating fuel [6] [1415] [6103]
SOCIAL USES	'Religious' Uses	stems, ritual/religion/magic [1340]
VERTEBRATE POISONS	Mammals	
MEDICINES	Unspecified Medicinal Disorders	humans
	Genitourinary System Disorders	'roots', humans, diuretic; stems, humans, diuretic; rhizomes, humans, diuretic [557] [1340] [1415] [6107]
	Infections/Infestations	
	Injuries	seeds, humans, burns, ointments [2795] [5713]; sap, humans, bites (non-venomous) [1340]
	Metabolic System Disorders	rhizomes, humans, diaphoretic [1340]
	Pain	stems, humans, lungs, anodyne, oral ingestion [2795]
	Respiratory System Disorders	stems, humans, lungs, pneumonia, oral ingestion [2795]
ENVIRONMENTAL USES	Erosion Control	sands; watercourses [5664] [6113] [6124]; gullies [5664] [6088] [6113] [6124]; wetlands [1415]; dunes [1415]; coastlines [6107]
	Shade/Shelter	watercourses [5664]; croplands/orchards [6]
	Revegetators	mined land
	Indicators	groundwater [2189] [2255]
	Soil Improvers	live plant in situ, improvers of other soil properties, underground water [6113]; live plant in situ, industrial wastes/dumps [6108]; unspecified aerial parts, green manures [6]; heavy metal soils [2255]
	Boundaries/Barriers/Supports	other types of boundaries/barriers/supports, other environmental materials, homesteads [2795]
	Pollution Control	live plant in situ; live plant in situ, waste water purifiers [5664] [6111]
GENE SOURCES		salt tolerance [1123] [6113] [6118]; waterlogging tolerance [6113] [6118] [6124]

Picture

None recorded

Notes

DISTRIBUTION

Worldwide:

In temperate regions of both hemispheres in the Old World and the New. Recorded from all temperate and subtropical regions of Africa and South Africa [3] .

Worldwide:

It occurs throughout the world and is probably the most widely distributed plant in the world [5664] .

Worldwide:

Occurs in temperate and warm regions of both hemispheres, almost throughout southern Africa [5713] .

Angola:

Occurs in the Cuando-Cubango and Cunene provinces [5126] .

Cosmopolitan [2182] .

DESCRIPTION

Habit:

A perennial reed with erect, unbranched culms and long rhizomes [5664] .

Height:

0.6 - 4 m [2182] [5664] .

Height:

0.6 - 6 m [3] .

Height:

In northern Namibia up to 4 m [1304] .

Height:

Up to 4m [5104] .

Inflorescences:

120 - 400 mm long. Spikelets are covered with silky hairs, 10 - 18 mm long [5664] .

Leaves:

Leaf blade is open with a long, loose tip. Leaf sheaths remain on the culm after the leaves have fallen off. Leaf blade 150 - 450 mm long, 10 - 40 mm wide [5664] .

Life form:

Graminoid [5104] .

Situation:

Hyperhydric or Epiphytic in southern Africa [5713] .

Situation:

Sometimes submerged in south tropical Africa [3] .

Exudates:

The stems contain sweet gum [38] .

IDENTIFICATION

The only other Phragmites species in southern Africa is the very closely related Phragmites mauritianus (Lowveld reed). The leaves of the latter have a hard sharp tip which can hurt when it presses against the skin. The exotic Spanish reed (Arundo donax), which is a serious invader, is also sometimes confused with these two indigenous reeds. Spanish reed is a larger plant, usually with crooked culms and broad leaf lobes (at the base of the leaf blade), and does not necessarily grow near water [5664] .

FOOD - UNSPECIFIED PARTS

Tea substitutes:

The plant is one of the Chinese substitutes (Cheo T-Y 1949) [[1340](#)] .

FOOD - STEMS

Stems, pickles:

The young shoots, if cut from the roots before they are exposed to light make excellent pickles [[1239](#)] .

Stems, vegetables:

The young shoots are really delicious if harvested (in spring) before the green leaves develop. They are boiled in salt water [[38](#)] [[1137](#)] .

FOOD - INFLORESCENCES

Flower buds, green vegetables:

The tender buds are used as salad in China [[1415](#)] .

FOOD - SEEDS

Cereals/starch based preparations:

The seeds are cooked in autumn [[38](#)] .

FOOD - 'ROOTS'

Rhizomes, alcoholic beverages:

Rhizomes are used as the basis of an alcoholic drink [[6113](#)] .

Rhizomes, starches, bread:

If the rootstock is dried and crushed it makes a fairly nutritious bread [[6](#)] .

Rhizomes, starches:

In southern Africa it is said that the rhizomes are a traditional source of starch [[2795](#)] .

Rhizomes:

The thick underground rhizome is eaten by various Indian tribes in N. America [[1214](#)] .

Root/tuber vegetable:

The rootstock is collected in winter and cooked [[38](#)] .

FOOD - EXUDATES

Pre-Columbian Indians of the southern Appalachians (U.S.A.) collected a sweet pasty substance which exudes from the stems as a result of insect attacks. This was compressed into balls for eating. When placed near a fire the balls swelled, turned brown and were then eaten like toffee(?) [[76](#)] .

FOOD ADDITIVES - STEMS

Stems, sweeteners:

A sweet liquid can be obtained by piercing the stem and shaking out the resulting sap. The liquid is used as a sweetener [[2795](#)] .

ANIMAL FOOD - AERIAL PARTS

Stems, cattle, fodder:

Young, tender shoots are fed to cattle [[6107](#)] .

Stems, primates:

In South Africa baboon eat the stem-meristem (Stoltz 1977) [[2514](#)] .

Unspecified aerial parts, cattle, horses, fodder:

When young very suitable as fodder for horses and cattle because it contains a large amount of sugars and proteins but later it is unfit for feed because of the high lignin content [[6](#)] .

Unspecified aerial parts, fodder, winter:

High fodder value if harvested before flowering [[6125](#)] .

Unspecified aerial parts, forage:

It is of little value for forage except the young shoots [1415] [6113] .

Unspecified aerial parts, grazing, winter:

If grazed during the winter the animals need additional protein concentrate feed [6116] .

Unspecified aerial parts, grazing:

Useful and relatively palatable [1139] [6116] .

Unspecified aerial parts, silage:

Silage is made with 10% acid in Romania [6101] .

MATERIALS - FIBRES

Matting, mats, other inflorescence parts:

Flower stalks used for mat making [2189] .

Matting, mats, stems:

In Botswana, traditional sitting mats are made from the reeds [2795] .

Matting, mats, stems:

In Owambo (northern Namibia) sleeping mats are sometimes made from the cane-like stems [1304] .

Matting, mats, stems:

In northern Namibia mats for the huts are woven from the plant. 'Divinda' is a big sleeping mat and 'dishara' a small sleeping mat [5118] .

Matting, mats, stems:

It is used for light construction in the form of mats and screens [557] [1415] .

Matting, mats, stems:

Mats are placed over rafters before the full thatch is put on [1239] .

Matting, mats, stems:

Mats are used by growers to cover their greenhouses or to protect frost tender plants in frames (Burbridge 1965) [2255] .

Matting, mats, stems:

Stems are used for sleeping mats [1415] .

Matting, mats, stems:

The mats are used to form the end of houses in Mexico. They may reach 20 - 25 feet [2255] .

Matting, mats, stems:

The split stems are flattened by beating, and then woven [1239] .

Netting, unspecified aerial parts:

Used for nets, including carrying nets [1214] [1415] .

Plaiting, sandals, unspecified aerial parts:

When plaited it can be used for sandals [1239] .

Pulp, unspecified aerial parts:

Can be used as raw material in paper products [6119] .

Pulp, unspecified aerial parts:

In Romania reeds is harvested mechanically, and it yields up to 60% unbleached pulp. The reed pulp is mixed with wood pulp for paper manufacture [6107] .

Pulp, unspecified aerial parts:

It produces a first class pulp but is difficult to bleach [1415] .

Stuffing, infructescence:

The fruits and associated silk hairs are used for stuffing [6113] .

Thatch, unspecified aerial parts:

In southern Africa it is rarely used for thatching [2795] .

Woven material, bags, baskets, stems:

Stems used for bags and baskets by Aboriginies in Australia and by Bedouin [35] [1137] .

Woven material, baskets, stems:

In Botswana split stems are woven to make large winnowing baskets [2795] .

Brooms, inflorescences:

Brooms are made from blossoms and sold in country markets [557] .

Buildings, stems:

Makes good foundation for plaster floors. It is incorporated as chaff in adobe bricks, and used for the manufacturing of pressed slab 'karnyshit' [6] [1239] .

Cellulose derivatives, stems:

Aerial stems are a source of cellulose for the synthetic textile industry [6113] .

Fibre board, paper, stems:

Aerial stems are a source of cellulose in hard-board and paper [6113] .

MATERIALS - CANE ETC.

Pipes (smokers), stems:

Pipestems and cigarette holders are made from the stems [6] [1214] [1415] .

Pipes, stems:

The hollow reeds were used as tobacco pipe-stems in southern Africa [2795] .

Poles (from cane), buildings, stems:

Tall stems are used in bundles for the frameworks for houses, stores, and cattle byres [1415] .

Poles (from cane), constructions, stems:

It is used for light construction in southern Africa [5664] .

Poles (from cane), lattices, stems:

The lattices are used in the construction of adobe huts [5474] .

Poles (from cane), sheds, stems:

Stems are used to build sheds for fish preservation [6] .

Poles (from cane), stems:

Culms of reed are used to make Indian prayer sticks [1214] .

Arrows, stems:

Stems are used for arrow shafts [2795] [5101] .

Basketry, baskets, stems:

In northern Namibia it is used to make harvest baskets [5118] .

Basketry, baskets, stems:

In Botswana, the hollow stems are the traditional material for the large grain storage baskets (Terry 1994) [2795] .

Bobbins/spools/reels, stems:

Stems are used for weaving spools and rods [1214] [1239] .

Buildings, stems:

The thick hollow stems are widely used for walls and bomas in the subtropical parts of the world [2795] .

Containers, stems:

The bushman in Namibia use thick culms to hold ostrich feathers [5101] .

Drinking straws, stems:

The culms are used for drinking water from hollow tree trunks in Namibia [5101] .

Fences, stems:

The Southern Sotho use the reed for fencing (Phillips 1917) [1340] .

Flutes, musical instruments, stems:

The hollow reeds were used as flutes and as parts of musical instruments in southern Africa [2795] .

Flutes, stems:

In Owambo (northern Namibia) stems are used as flutes by removing some septa at nodes, except one near where the hole for blowing is located [1304] .

MATERIALS - TANNINS/DYESTUFFS

Green, unspecified aerial parts:

Used for green dye in Sweden [1239] .

FUELS - FUELWOOD

Heating fuel:

In Sweden, experiments have shown that it can be harvested during winter, when dry, and used as a fuel for heating houses. 1 kg of dry matter will yield 5 kW of energy. Cultivation of reed and making reed powder would yield about ten times more energy than would be used for soil preparation, harvesting, grinding and transportation [6103] .

SOCIAL USES - 'RELIGIOUS' USES

Stems, magic:

The Southern Sotho use the reed as a charm (Phillips 1917) [[1340](#)] .

MEDICINES - INJURIES

Sap, humans, bites:

In America the mucilaginous juice from the stem is used to soothe insect bites [[1340](#)] .

Seeds, humans, burns, ointments:

In southern Africa the seeds were ground and made into an ointment for burns [[2795](#)] .

Seeds, humans, burns, ointments:

The powdered seeds are used in the western districts of the Cape (South Africa) as an ingredient in a burn ointment (Kling 1923) [[5599](#)] .

MEDICINES - PAIN

Stems, humans, lungs, anodyne, oral ingestion:

A sweet liquid can be obtained by piercing and shaking out the resulting sap. The liquid is used to treat pneumonia as it is an expectorant and relieves pain [[2795](#)] .

MEDICINES - RESPIRATORY SYSTEM DISORDERS

Stems, humans, lungs, pneumonia, oral ingestion:

A sweet liquid can be obtained by piercing and shaking out the resulting sap. The liquid is used to treat pneumonia as it is an expectorant and relieves pain [[2795](#)] .

ENVIRONMENTAL USES - EROSION CONTROL

Gullies, watercourses:

The dense roots control erosion of gullies, creeklines, washouts, river and canal banks and other channels [[6113](#)] .

Gullies:

Is sometimes established in gullies to curb soil erosion [[5664](#)] .

Gullies:

It is very useful in reclamation of dongas where there is likely to be a good deal of moisture [[6088](#)] .

Watercourses:

It protects soil from flooding [[5664](#)] .

Wetlands:

Control marshes within the high water table [[1415](#)] .

Coastlines:

Sturdy roots prevent soil erosion along coastlines [[6107](#)] .

Dunes:

Control dunes within the high water table [[1415](#)] .

ENVIRONMENTAL USES - SHADE/SHELTER

Watercourses:

Offers shelter to many bird species and other animals [[5664](#)] .

Croplands:

Mats made from stems are used by growers to cover their green houses or to protect plants against frost and wind [[6104](#)] .

ENVIRONMENTAL USES - INDICATORS

A significant indicator of phreatophyte conditions [[2255](#)] .

ENVIRONMENTAL USES - SOIL IMPROVERS

Heavy metal soils:

See Biol. Abstracts 74 (1): 5726 for ref. to heavy metal cycling [6040] .

Live plant in situ, industrial dumps:

It has developed on coal mine spoil heaps [6108] .

Other soil properties, live plant in situ, underground water:

Used in draining new polders in the Netherlands [6113] .

Green manures, unspecified aerial parts:

Useful when cut fresh [6] .

ENVIRONMENTAL USES - BOUNDARIES/BARRIERS/SUPPORTS

Other types of boundaries, other environmental materials, homesteads:

Neat fencing around huts, houses, fireplaces and swimming pools are made by tying the reeds close together onto horizontal supporting poles. These fences are a distinctive feature of the bushveld regions of southern Africa [2795] .

ENVIRONMENTAL USES - POLLUTION CONTROL

Waste water purifiers, live plant in situ:

An installation which used *Phragmites australis* and *Scirpus lacustris* for the purification of waste water containing phenol, cyanide and thiocyanide has been described [6111] .

Waste water purifiers, live plant in situ:

It filters water [5664] .

Waste water purifiers, live plant in situ:

Phragmites marshes are good assimilators of waste elements [2255] .

TOXICITY/POISONOUS COMPOUNDS

Leaves:

Young foliage suspected of poisoning in India but this may have been due to the fungus *Scirrhia rimosa* which causes dark stripes on leaves and is toxic [1415] .

CHEMICAL ANALYSES - MISCELLANEOUS

Inflorescences, flavonoids:

Major flavonoid constituents of the flower are: C-glycosylflavones (*swertiajaponin* and *isoswertiajaponin*), O-glycosides, 3'-gentiobioside, 3'-O-glucoside of *swertiajaponin*, two flavenol glycosides (*rhamnetin 3-O-rutinoside*, *rhamnetin 3-O-glucoside*) [6117] .

Leaves, cellulose, ash:

30-43% cellulose, 10-18% ash [6118] .

Leaves, unspecified flavonoids:

4 flavonol glycosides, 1 flavone glycoside, 6 C-glycosylflavones including 7,3'-dimethyliso-orientin [6114] .

References to papers which provide results of chemical analyses may be obtained from; Biological Abstracts 74 (1): 5725 for Denmark, Biological Abstracts 73 (2): 9201 for Poland, Biological Abstracts 71 (4): 23337, Biological Abstracts 71 (10) 65445 for Hungary, Biological Abstracts 62 (61) 29174 for U.S.S.R. and Biological Abstracts 45 (11) 4864 for U.K. [2255] .

Stems, cellulose, lignin, ash:

45-50% cellulose, 18-24% lignin, 2-5% ash [6118] .

Unspecified parts, other analyses, silicic acid:

It contains silicic acid [1340] .

Unspecified parts, water:

Water content 62% in Algeria [6121] .

Aerial parts, energy, protein, carotene:

Silage made with 1% acid had 204 kcal of energy, 23.8 g/kg dm of digestible protein, 300 mg/kg dm of carotene [6101] .

Entire plant, biological activity:

The plant has given negative antibiotic tests [1340] .

For CP, Carbohydrate and free amino acids see Yakubovskii and Merezhko, 1975 [6125] .

CONSTRAINTS - MISCELLANEOUS

When young it is suitable for animal food but becomes tough with age, with a high lignin content [6] .

CLIMATE

There are many biotypes and it is found in many climates from the tropics to temperate altitudes higher than 70 degrees north [2255] .

RAINFALL

Occurs in many rainfall regimes but can occur in areas with rainfall as low as 50-100 mm per year. In Algeria it falls in winter, January to April [6121] .

TEMPERATURE

Frost:

Shoots are killed by severe frost [6113] .

Grows in a wide range of temperature regimes. It is also found in Death Valley where summer midday temperatures reach 43-46 degrees C [2255] .

ALTITUDE

Southern Africa:

2-2200 m [5104] .

6-3000 m, but generally a lowland plant [2255] .

Britain:

Up to 510 m [2255] .

Eurasia:

Up to 3000 m [2255] .

TOPOGRAPHY/SITES

South tropical Africa:

Occurs in dense colonies along rivers, in swamps, flood plains, flats, vleis and at the edges of pools or dams [3] .

Southern Africa:

Occurs in swamps, shallow water, at the margins of lakes and ponds, in and along streams, ditches and irrigation canals [5713] .

Found in coastal estuarine and inland areas, may be tidal or non tidal. Found along drainage lines (streams, rivers, creeks, irrigation canals) and in marshes and at margins of lakes, ponds and shallow water. Also in inland and coastal salt marshes, and in mangrove swamps. Often in the upper levels of salt marshes and desert salt marshes [2255] .

DRAINAGE

In the arid areas of Algeria, the water level varied from 50 cm depth up to thoroughly wetted [6121] .

Water table level varies from 4 m below ground level to 4 cm above ground level [6113] .

SOILS

Occurs in sands of low mineralisation to heavy and firm mineral clays [6116] .

Salinity:

Range from 0.0 - 2.75% [1123] .

Salinity:

Reed may bear a salt concentration of 2.5 - 4.0% (1.5 - 2.2% Cl) and salinity caused by chloridesis is more toxic than sulphatic salinity. Salinity should not be greater than 3 - 5 g/l [6118] .

Salinity:

Tolerates moderate salinity [6113] .

Soils are very variable. The organic content varies from 1-97% [6113] .

South Africa:

Grows in moist soils where the silt deposits are not too heavy [6088] .

pH:

At the surface it is 3.6-8.6 and 5.5-7.5 lower down the profile. [6113] .

pH:

May be as low as 2.0 and as high as 8.8 but 6.5-7.2 in the optimum range [6118] .

VEGETATION

Southern Africa:

Occurs in Fynbos, Savanna, Grassland, Nama-Karoo and Desert [2182] .

Found with hydrophytes, helophytes and halophytes [2255] .

ENVIRONMENTAL FACTORS - MISCELLANEOUS

Southern Africa:

Grows near or in sources of water [5664] .

Cannot with stand prolonged heavy grazing. Not more than 50% of the current years growth should be taken off [6116] .

Grazing tends to be deleterious and trampling causes damage to the upper rhizomes and reduces bud density [6113] .

POLLINATION

Cross pollination by wind [6113] .

FLOWERING/FRUITING/SEED SET

Flowering, Israel:

Autumn [1431] .

Flowering, fruiting, Britain:

Flowers from late August to early September. Fruiting in November [6113] .

Flowering, fruiting, Pakistan:

July to October [2255] .

Flowering, southern Africa:

December to June [5334] [5664] [5713] .

Flowering, Arizona:

July to October [1214] .

DISPERSAL

Rhizome fragments are dispersed by water. Seed set is annual. The fruit is shed with a lemma, pallea and a rachilla segment and is plumed. It is dispersed by wind. Transport may also be by birds, and unshed fruits may fall with the panicle and be disperse by water [6113] .

The caryopses are light and may be dispersed long distances by wind [1431] .

GERMINATION

Light:

Light was not obligatory for germination, but germination was higher in the light than the dark [1431] .

Salinity:

Germination is inhibited by salinity (Waisel 1972, Farinneau, 1971). Percentage germination after 28 days varied with salinity of the media i.e. 4% in tap water, 32% in 1% NaCl, 16% in 2% NaCl, and no germination in 5% NaCl and seawater (Chapman 1960). Both saline and glycophytic ecotypes occur. Waisel (1972) found that germination occurred in a wide range of saline media (0-0.5 m NaCl) for the saline ecotype. Germination was greater than 90% in media up to 0.4 m NaCl and 70% in 0.5 NaCl. For the glycophytic ecotype germination was above 90% in solutions

up to 0.3 m NaCl, but only 20 % in 0.4 m NaCl and 0 in 0.5 m NaCl solutions [1123] [1431] [6110] .

Seed age:

Germination is more rapid with age, but it declines after 2 years, but may still occur after 3-4 years storage. Germination can occur from seed stored both dry and wet, but germination may be greater from that stored dry [6113] .

Temperature:

Germinates where maximum day temperature falls in the range 10-30 degrees C. Germination is hindered by low temperatures and is stopped by frost. In the Netherlands optimum germination was at a constant temperature of 30 degrees C [6113] .

Temperature:

The optimum temperature for germination was 25-30 degrees C. Germination percentage at 20 degrees C was the same as at 25-30 degrees, but germination was delayed. At 35 degrees C germination was accelerated but the percentage was lower (in Israel) [1431] .

Water level:

There are varying reports regarding effects of water level (Haslam 1972). e.g. germination can occur even when inundated with water (Waisel 1972). Germination is reduced by flooding but drought also reduces seed germination (Farineau 1971). Some comment that germination doesn't occur just below the water level, or that germination increases on drying (Haslam 1972) [1431] [6110] [6113] .

Establishment from seed is poor in closed stands. In Switzerland 100% germination has been recorded [6113] .

SEEDLING DEVELOPMENT

If seeds germinate below water level, the submerged seedlings may remain alive under certain temperature conditions for long periods but their growth is restricted [1431] .

Low light intensity, cool temperatures and P shortage reduces the chances of seedling survival [6110] .

Seedlings die underwater, by flooding and by frost and desiccation [6113] .

The best seedling development occurs in a flow of nutrient rich water, preferably on mud. Seedlings grow to 2-5 cm high with 2-4 leaves from the seed reserve and can remain for several weeks at the critical stage. They reach 20-40 cm after 1 year and flower in 3rd or 4th year of development [6118] .

LONGEVITY

It is possible that plants live for 1000 years [6113] .

CYTOLOGY

$2n = 24, 36, 44, 46, 48, 49, 50, 51, 52, 54, 72, 84, 96$. It is a highly polymorphous polyploidy series from diploid to octoploid. There is a high complexity in the polyploids with euploids as well as aneuploids. Morphological variation in Iraq is more closely related to clonal accommodation than character number. There is a high complexity in the polyploids with euploids as well as aneuploids. The diploid resulted from transplanting a saline reed form into freshwater soil. It is sterile and creeping [6109] [6112] .

Chromosome base number, $x = 12$ (aneuploids, high polyploidy) [2182] [5150] .

HYBRIDISATION

Intraspecific hybrids [6113] .

PHOTOSYNTHESIS

Photosynthesis was 53.1 mg per decimeter squared per day. Stocker found leaf temperatures 4 degrees below ambient temperatures, and node temperatures 1.1 degrees C below them. Transpiration was a compromise between avoidance of desiccation and overheating at the expense of photosynthesis [6121] .

Transpiration:

In a desert salt marsh, Algeria, relative transpiration was 54% and 34.9 g water per decimeter squared per day were transpired [6121] .

C3, XyMs+ [2182] .

PHOTOPERIODISM

The thermal optimum temperature for photosynthesis was 30 degrees C. Rates were greatly reduced at higher temperatures. Leaf temperature was kept 8 degrees below air temperatures of 43 - 46 degrees C (by transpiration cooling, large leaf size and vertical orientation of leaf) in order to enhance photosynthesis [6120] .

PHYSIOLOGICAL TOLERANCES

Salinity:

Glycophytic and halophytic ecotypes were similar (in one case) in growth, relative growth, Na uptake, and ion distribution in organs (i.e. similar Na, K and Ca metabolism), fertility and responses to inundation in one case. In another case the saline ecotype had greater growth than the glycophyte in saline conditions [1431] .

Salinity:

In a concentration of above 2g/l NaCl fibre type and other characters alter [6113] .

Salinity:

It is a cumulative halophyte. The salt concentration rises continuously during the growing season, but when a certain level is reached the plant dies [1590] .

Salinity:

Respiration rate increases when subjected to NaCl [1431] .

Salinity:

Under unfavourable conditions (strong salinity and dry soil) the reed forms long stolons which root at the nodes [6118] .

See Biol. Abstracts 74 (1):

5726 for ref. to heavy metal cycling [2255] .

Waterlevel:

For the effect of water table on the development of new rhizomes see Yamasaki 1981 (1961?) [2255] .

Waterlevel:

Phreatophyte. Can withstand inundation, washing out and sediment deposition [6124] .

Waterlevel:

Sudden changes in waterlevel can be deleterious. It is intolerant of much water movement. The depth at which it is possible to grow increases with temperature. In Uganda it occurs at 4 m depth. It may be deeper in eutrophic lakes than in oligotrophic lakes. At the other extreme the permanent water table can be more than 4 m below ground level on flat ground and much more than this on slopes [6113] .

Waterlevel:

Water level is the most important factor governing yield and plant height. On drier or drying up habitats the reed can only develop if the groundwater is high (not deeper than 3-4 cm below the surface) [6118] .

FUNGAL DISEASES

Young foliage suspected of poisoning in India but this may have been due to the fungus *Scirrhia rimosa* which causes dark stripes on leaves and is toxic [1415] .

OTHER PESTS/DISEASES

See Haslam, 1972 [2255] .

SEED STORAGE

Seed age:

Germination is more rapid with age, but it declines after 2 years, but may still occur after 3-4 years storage.

Germination can occur from seed stored both dry and wet, but germination may be greater from that stored dry [6113] .

PROPAGATION FROM SEED

Establishment from seed is poor in closed stands. In Switzerland 100% germination has been recorded. Commercial propagation may be by seed [6113] .

PROPAGATION - VEGETATIVE

The most suitable commercial propagation method is layering stems developing from terminal and lateral buds of the first order in June to mid July [6123] .

Vegetative propagation is efficient. It may be by both rhizomes and runners. Rhizomes may extend for 50 m.

Rhizome fragments are dispersed by water [1431] [6113] .

Commercial propagation may be by rhizomes (with or without roots) or by young green shoots about 1 m high (with or without some rhizomes below) [6113] .

For reclamation purposes it is mainly propagated from rhizomes [6088] .

'CROP' MANAGEMENT

Fertiliser Reed consumes more nutrients from the soil than many agricultural plants [6118] .

HARVESTING

Harvesting every 2 or 3 years than rather annually caused an increase in cellulose of 4.7% and reduction in starch and invert sugar of 1.17% and 2.73% respectively [6115] .

Haslam (1972) recommends annual or biennial cropping, and if it has not been cropped after 2 years the stand should be cleared in the third. If it is left longer it should be burned. Good management improved reed quality for thatching. However it tends to disappear under annual mowing (Demina 1979) and yields of stems were significantly increased when it was mowed biennially or every 3 years rather than annually (Kenig 1980). Regulation of flooding and alternation of times of mowing would aid reed preservation and retain high yields (Demina, 1979). Rhizomes may be cut, and replacement crops are produced if the water is warm enough. It can persist even if disturbed several times a year (Haslam 1972) [6113] [6115] .

In Romania reeds are harvested mechanically [2255] .

Reeds are harvested (e.g. in Britain and Romania) when the plant are dormant and have dropped most of their leaves, and carbohydrate is stored in the rhizome. The plant grows back in spring and summer [6107] [6113] .

Depth of water covering reed is a most important factor governing height and yield [6118] .

YIELDS

Russia:

Average USSR 10 ton/ha ranges from 4-15 ton./ha [6118] .

Seeds:

May reach up to 1000 fertile seeds per inflorescence [6113] .

10 ton dm/ha [6103] .

SEED SUPPLIERS

National Plant Genetic Resources Centre, National Botanical Research Institute, Private Bag 13184, Windhoek, Namibia [5181] .

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Updated for southern Africa by E. Irish, checked by C. Mannheimer; SEPASAL Namibia, National Botanical Research Institute, January 2006 [6040] .

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