

# Kew

PLANTS PEOPLE  
POSSIBILITIES



This report was generated from the SEPASAL database ([www.kew.org/ceb/sepasal](http://www.kew.org/ceb/sepasal)) in August 2007. This database is freely available to members of the public.

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which has been updating the information on Namibian species from Namibian and southern African literature and unpublished sources.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

New query

Edit query

View query results

 *Display help*In names list include:  synonyms  vernacular names and display: All  names per page*Your query found 1 taxon***Heteropogon contortus (L.)P.Beauv. ex Roem. & Schult. [1808]**

Family: POACEAE

**Synonyms**

Andropogon contortus L.

**Vernacular names**

(Mexico, Baja California Sur)	secate [ <a href="#">1680</a> ]
Afrikaans (Namibia)	assegaaigras [ <a href="#">1304</a> ] [ <a href="#">2259</a> ] [ <a href="#">5083</a> ] [ <a href="#">5115</a> ] [ <a href="#">5116</a> ], klitsgras [ <a href="#">1304</a> ], pylgras [ <a href="#">2259</a> ] [ <a href="#">5116</a> ]
Afrikaans (South Africa)	as (se)gaaigras [ <a href="#">2259</a> ] [ <a href="#">5117</a> ], gewone pylgras [ <a href="#">2259</a> ], klitsgras [ <a href="#">2259</a> ], malgras [ <a href="#">2259</a> ], pylgras [ <a href="#">2259</a> ], steekgras [ <a href="#">2259</a> ]
Afrikaans (Southern Africa)	assegaaigras [ <a href="#">2182</a> ], pylgras [ <a href="#">2182</a> ]
English	black speargrass [ <a href="#">1653</a> ]
English (American)	tanglehead [ <a href="#">2259</a> ]
English (Australia)	black speargrass [ <a href="#">1286</a> ], bunch speargrass [ <a href="#">1286</a> ]
English (Namibia)	spear grass [ <a href="#">1304</a> ] [ <a href="#">5083</a> ] [ <a href="#">5115</a> ] [ <a href="#">5116</a> ], stick grass [ <a href="#">5115</a> ]
English (South Africa)	common spear grass [ <a href="#">2259</a> ], piercing grass [ <a href="#">2259</a> ], spear grass [ <a href="#">2259</a> ] [ <a href="#">5117</a> ], stick grass [ <a href="#">2259</a> ]
English (Southern Africa)	common spear grass [ <a href="#">2259</a> ], spear grass [ <a href="#">5664</a> ], tanglehead [ <a href="#">2182</a> ]
English (Zimbabwe)	assegai grass [ <a href="#">2259</a> ], spear grass [ <a href="#">2259</a> ], tanglehead [ <a href="#">2259</a> ]
German (Namibia)	Gemeines Speergras [ <a href="#">2259</a> ] [ <a href="#">5083</a> ] [ <a href="#">5115</a> ] [ <a href="#">5116</a> ], Speergras [ <a href="#">5083</a> ]
Jul'hoan (Namibia)	dukwa [ <a href="#">5115</a> ]
Kalanga (Zimbabwe)	sina [ <a href="#">2259</a> ]
Karanga (Zimbabwe)	Tsine [ <a href="#">2259</a> ], chiTsine [ <a href="#">2259</a> ]
Khoekhoegowab (Namibia)	dukwa [ <a href="#">5083</a> ]
Manyika (Zimbabwe)	Tsine [ <a href="#">2259</a> ], chiTsine [ <a href="#">2259</a> ]
Ndebele (Zimbabwe)	iNzala [ <a href="#">2259</a> ]
Oshiwambo (Namibia)	ohengo jasimbungu [ <a href="#">1304</a> ] [ <a href="#">5083</a> ] [ <a href="#">5115</a> ]
Ronga (Mozambique)	chimungo [ <a href="#">2259</a> ]
Rukwangali (Namibia)	ehege hege [ <a href="#">5083</a> ] [ <a href="#">5115</a> ]
Sotho (South Africa)	selokano [ <a href="#">2259</a> ]
Swazi (Mozambique)	chimungo [ <a href="#">2259</a> ]
Tsonga (South Africa)	xilungwa [ <a href="#">5139</a> ]
Unknown	aceitiua [ <a href="#">2255</a> ], barba negra [ <a href="#">2255</a> ], suriata [ <a href="#">2255</a> ]

Unknown (Botswana)	seloka [ <a href="#">5130</a> ]
Unknown (Mozambique)	sine [ <a href="#">5480</a> ], tongue [ <a href="#">5480</a> ], uncine [ <a href="#">5480</a> ]
Unspecified (Angola)	tchicapaingo [ <a href="#">2259</a> ]
Unspecified (Mozambique)	mutalac?nhe [ <a href="#">2259</a> ]
Zezuru (Zimbabwe)	Tsine [ <a href="#">2259</a> ], chiTsine [ <a href="#">2259</a> ]
unspecified (East Africa)	spear grass [ <a href="#">2259</a> ]

## Distribution

Plant origin	Continent	Region	Botanical country
Native	Africa	South Tropical Africa	Angola [ <a href="#">2259</a> ] [ <a href="#">5126</a> ], Malawi [ <a href="#">3</a> ] [ <a href="#">2259</a> ], Mozambique [ <a href="#">3</a> ] [ <a href="#">2259</a> ] [ <a href="#">5480</a> ] [ <a href="#">5664</a> ], Zambia [ <a href="#">3</a> ] [ <a href="#">2259</a> ] [ <a href="#">5481</a> ], Zimbabwe [ <a href="#">3</a> ] [ <a href="#">2259</a> ] [ <a href="#">5125</a> ] [ <a href="#">5664</a> ]
		Southern Africa	Botswana [ <a href="#">3</a> ] [ <a href="#">2182</a> ] [ <a href="#">2259</a> ] [ <a href="#">5104</a> ] [ <a href="#">5186</a> ] [ <a href="#">5664</a> ], Cape Province [ <a href="#">2182</a> ] [ <a href="#">2259</a> ] [ <a href="#">5104</a> ] [ <a href="#">5664</a> ], Caprivi Strip [ <a href="#">3</a> ] [ <a href="#">5115</a> ] [ <a href="#">5116</a> ] [ <a href="#">5664</a> ], Lesotho [ <a href="#">2182</a> ] [ <a href="#">2259</a> ] [ <a href="#">5104</a> ] [ <a href="#">5550</a> ] [ <a href="#">5664</a> ], Namibia [ <a href="#">2182</a> ] [ <a href="#">2259</a> ] [ <a href="#">5104</a> ] [ <a href="#">5115</a> ] [ <a href="#">5116</a> ] [ <a href="#">5664</a> ], Natal [ <a href="#">5104</a> ] [ <a href="#">5664</a> ], Orange Free State [ <a href="#">2182</a> ] [ <a href="#">2259</a> ] [ <a href="#">5104</a> ] [ <a href="#">5664</a> ], Swaziland [ <a href="#">2182</a> ] [ <a href="#">2259</a> ] [ <a href="#">5104</a> ] [ <a href="#">5452</a> ] [ <a href="#">5664</a> ], Transvaal
	Australasia	Australia	New South Wales [ <a href="#">1808</a> ], Northern Territory [ <a href="#">1808</a> ], Queensland [ <a href="#">1808</a> ], Western Australia [ <a href="#">1808</a> ]
	Europe	Middle Europe Southeastern Europe Southwestern Europe	Switzerland Italy, Sicilia, Yugoslavia Balears, France, Spain
Introduced	Northern America	North-Central U.S.A.	Oklahoma
Status Unknown	Africa	East Tropical Africa Macaronesia Middle Atlantic Ocean Northeast Tropical Africa Northern Africa West Tropical Africa	Kenya [ <a href="#">2259</a> ], Tanzania [ <a href="#">2259</a> ], Uganda [ <a href="#">2259</a> ] Canary Is, Cape Verde Ascension Chad, Ethiopia, Socotra, Somalia, Sudan Algeria Benin, Burkina, Ghana, Ivory Coast, Nigeria, Sierre Leone, Togo

	West-Central Tropical Africa	Burundi, Cameroon, Equatorial Guinea, Rwanda, Sao Tome, Zaire [ <a href="#">2259</a> ]
	Western Indian Ocean	Madagascar, Mauritius, Rodrigues, Seychelles
Asia-Temperate	Arabian Peninsula	North Yemen, Oman, Saudi Arabia
	China	Guangdong, Guangxi, Guizhou, Hong Kong, Sichuan, Yunnan
	Eastern Asia	Japan
	Western Asia	Afghanistan
Asia-Tropical	Indian Subcontinent	Assam, Bangladesh, Bihar, Gujarat, Himachal Pradesh, Jammu-Kashmir, Karnataka, Madhya Pradesh, Maharashtra, Nepal, Pakistan, Punjab, Sri Lanka, Tamil Nadu, Uttar Pradesh, West Bengal
	Indo-China	Burma, Thailand, Vietnam
	Malesia	Lesser Sunda Is s.l., Moluccas, Papua New Guinea, Peninsular Malaysia, Philippines, Sulawesi, Sumatera
Northern America	Northern Mexico	Baja California [ <a href="#">1449</a> ] [ <a href="#">1726</a> ], Baja California Sur [ <a href="#">1449</a> ] [ <a href="#">1680</a> ] [ <a href="#">1726</a> ], Chihuahua, Coahuila, Durango, Guanajuato, Guerrero, Jalisco, Michoacan, Nayarit, Nuevo Leon, Oaxaca, Puebla, San Luis Potosi, Sonora, Tamaulipas
	South-Central U.S.A.	New Mexico, Texas
	Southeastern U.S.A.	Florida
	Southwestern U.S.A.	Arizona
	Subarctic America	Alaska
Pacific	North-Central Pacific	Hawaii
	Southwestern Pacific	Fiji, New Caledonia, Tonga
Southern America	Brazil	Amazonas, Goias, Maranhao, Minas Gerais
	Caribbean	Antigua-Barbuda, Cuba, Dominica, Jamaica, St Kitts-Nevis
	Mesoamerica	Belize, Guatemala, Honduras, Nicaragua, Yucatan
	Northern South America	Guyana, Venezuela
	Southern South America	Paraguay

**ISO countries:** Argentina , Indonesia , India [5664] , Mexico , Malaysia , South Africa [2182] [2259] [5104] [5664]

## Descriptors

<b>Category</b>	<b>Descriptors and states</b>
DESCRIPTION	Herb; Tussock Forming/Tufted/Caespitose [3] [2182] [2259] [5116] [5117] [5664]; Fast Growth Rate [2259] [5116] [5117] [5130]; Erect [3]; Terrestrial [3]; Rhizomatous [2182] [2259]; Perennial [3] [2182] [5104] [5116] [5117] [5664]; Plant Height <= 1.2 m [5116]
CLIMATE	Tropical Summer Rains [3] [2182] [2259]; Subtropical, Hot and Arid [3] [2182] [2259] [5104]; Annual Rainfall >= 300 mm
SOILS	Well Drained [2182] [2259] [5116] [5117]; Boulders/Rocky [2182] [5116]; Saline [1304]; Gravels/Stony [5117]; Sandy [3]; Dry [3]
HABITAT	Woodland [2259]; Montane [5116]; Shrubland/Bushland/Scrub [3] [5117]; Grassland/Forb-Land [2182] [2259] [5117]; Wooded Grassland [3] [2182] [5117]; Hillsides/Slopes [2182] [5664]; Wooded Shrubland [2182] [5117]; Outcrops/Kopjes/Inselbergs [2259] [5116]; Semi-Desert [2182] [5117]; Dunes [3]; Anthropogenic Landscapes [2259] [5117] [5664]; Altitude 0-2500 m a.s.l. [3] [5104]
PHYSIOLOGY	Fire Resistant/Regenerates After Fire [1653] [5664]
SOURCES OF PLANTING MATERIAL	RBG Kew Seed Bank
FURTHER DATA SOURCES	Botanical Illustration [3] [2182] [2259] [5116] [5130]; Additional References [2138] [5123] [5580]; Regional Distribution Map [2259] [5664]; Botanical Photograph [2182] [5117] [5664]; Habit Illustration/Photograph [5117] [5664]; Grid Map [2182] [5115] [5116] [5117] [5123]
SEPASAL DATASHEET STATUS	All Data Transferred from SEPASAL Paper Files [6040]; Nomenclature Checked
CHEMICAL ANALYSES	Nutritional Analyses - aerial parts [1286] [1653] [5251]; Proteins - aerial parts [1286] [5251]

## Uses

<b>Major use</b>	<b>Use group</b>	<b>Specific uses</b>
ANIMAL FOOD	Aerial Parts	leaves, bovines, grazing; leaves, Equidae, grazing; leaves, caprines, grazing; leaves, grazing; leaves, grazing, spring; unspecified aerial parts, hay/straw; stems, primates [2514]; unspecified aerial parts, hay/straw [623] [5664]; unspecified aerial parts, grazing [2259] [5116] [5117] [5664]; unspecified aerial parts, game mammals, grazing [5117]; unspecified aerial parts, mammals, fodder [1096] [1238] [2259] [5118] [5130]; unspecified aerial parts, sheep, grazing [1653]
MATERIALS	Fibres	unspecified aerial parts, thatch, roofs [5139]; unspecified aerial parts, thatch, huts [1304] [5115]; paper [1321]
ENVIRONMENTAL USES	Indicators	rangelands [5664]

## Picture

None recorded

## Notes

### NOMENCLATURE/TAXONOMY

#### *Name derivation:*

The generic name is derived from the Greek 'heteros', which means 'different' and 'pogon' which means 'beard' alluding to the difference between the awnless male and awned female spikelets. 'Contortus' the specific name is derived from Latin which means 'twisted', which is descriptive of the tangled awns [2259] .

### DISTRIBUTION

#### *Worldwide:*

Southern Africa and tropical and warm regions of the world. Widespread throughout Africa [5115] .

### DESCRIPTION

#### *Height:*

0.2 - 1 m [5664] .

#### *Height:*

In South Africa up to 0.7 m [5117] .

#### *Height:*

In south tropical Africa up to 0.1 m [3] .

#### *Height:*

Up to 1 m [5104] .

#### *Inflorescence:*

Awns curl when dry and tend to cluster together [5664] .

#### *Lifeform:*

Graminoid [5104] .

### IDENTIFICATION

*Heteropogon contortus* displays considerable variation from one region to another, especially in respect of hairiness, height, branches and colour. The inflorescence of *H. contortus* is sometimes confused with that of *Trachypogon spicatus* and *Urelytrum agropyroides*. Both these grasses are taller and do not have dark brown awns [5664] . The ligule may be used to differentiate this grass from *Themeda triandra* and *Schizachyrium semiberbe*. In *T. triandra* it is notched and in *S. semiberbe* it is strongly curved and the latter plant is usually tinged with purple [5130] .

When flowering, it has been confused with *Trachypogon spicatus*. It is usually, however, considerably smaller than this grass, and it lacks the conspicuous ring of short hairs at the culm nodes that occurs in *Trachypogon*. When not flowering, the tufts resemble *Schizachyrium sanguinum* and some forms of *Themeda triandra*. All three species frequently occur side by side in the veld, and when old all can be similar shade of reddish brown. They can also look like *Eustachys paspaloides*, but in this grass the ligule is a hairy rim [2259] .

### ANIMAL FOOD - AERIAL PARTS

#### *Stems, primates:*

Baboon eat the tillers (Norten et al. 1987) [2514] .

#### *Unspecified aerial parts, game mammals, grazing:*

In South Africa it is preferred by mountain zebra, roan antelope and waterbuck [5117] .

#### *Unspecified aerial parts, grazing:*

Considered a good grazing grass only before the flowering stage, after which it becomes hard [2259] [5116] [5117] [5664] .

#### *Unspecified aerial parts, grazing:*

It is regarded as a very good pasture grass in certain parts of India [5664] .

#### *Unspecified aerial parts, hay:*

It is regarded as a very good hay grass in certain parts of India [5664] .

#### *Unspecified aerial parts, mammals, fodder:*

A hardy, quick growing species considered a good fodder grass [2259] .

*Unspecified aerial parts, mammals, fodder:*

The grass is used for livestock fodder in northern Namibia [5118] .

*Unspecified aerial parts, sheep, grazing:*

Sheep consume only moderate amounts of *H. contortus* herbage and digest it poorly [1653] .

## **MATERIALS - FIBRES**

*Thatch, roofs, unspecified aerial parts:*

This grass is used for thatching roofs by the method of tying the grass into mats first and then attaching these to the roof by the Tsonga people in South Africa [5139] .

## **ENVIRONMENTAL USES - INDICATORS**

*Rangelands:*

In southern Africa it is classified as an Increaser II i.e. grasses that are abundant in overgrazed veld [5664] .

## **NUTRITIONAL VALUE**

*Aerial parts, crude protein, P, Ca, OM, DM, crude fibre, ADF, NDF, fat, in-vitro digestibility, metabolizable energy, gross energy:*

In Namibia 9 records were analysed. The following results are a summary of the tests presented as ranges (minimum to maximum). Crude protein 1.09 - 4.66%, P 0.01 - 0.09%, OM 89.95 - 92.84%, DM 93.18% 98.42, crude fibre 16.75% - 41.12%, ADF 42.68 - 59.82%, NDF 63.04 - 74.31%, fat 0.68 - 1.78%, in-vitro digestibility 30.08 - 45.20%, metabolizable energy 2.9 - 6.10 MJ/kg, gross energy 15.84 MJ/kg [5251] .

## **CONSTRAINTS - MISCELLANEOUS**

Considered a good fodder or grazing grass only before the flowering stage, after which it becomes hard. When mature, the 'seeds' can penetrate an animal's skin and irritation may be so severe as to affect health. They can also reduce the value of the flesh or skin, especially of sheep, after slaughter. The awns also penetrate the woolly coats of sheep and decreases the quality of the wool [2255] [2259] [5116] [5117] [5664] .

Normally sheep are not grazed on *H. contortus* pastures because the sharp seeds and twisted awns contaminate the wool [1653] .

Seldom cultivated, apparently due to the difficulties with seed production [1653] .

## **RAINFALL**

520 mm [2255] .

## **TEMPERATURE**

*Seasonal variation:*

1.7-40.6 degrees Celsius [2255] .

## **ALTITUDE**

*South tropical Africa:*

0 - 1400 m [3] .

*Southern Africa:*

5 - 2500 m [5104] .

1158-2590 m [2255] .

## **TOPOGRAPHY/SITES**

*Southern Africa:*

It often grows on slopes and in disturbed places such as road reserves where it can form dense stands [2259] [5664] .

## SOILS

*Southern Africa:*

It can grow in poor soil [5664] .

## VEGETATION

*Botswana:*

Often associated with *Themeda triandra* [5130] .

*Southern Africa:*

A subclimax grass [5116] [5664] .

*Southern Africa:*

It is one of the most common grasses in this region [2182] [5664] .

*Southern Africa:*

Occurs in Grassland, Savanna, Nama-Karoo and Fynbos [2182] [5117] .

*Australia:*

*Schima nervosum*-*Dichanthium fecundum*, *Schima nervosum*- *Sorghum australiense* and *Chrysopogon fallax* pasture lands [1286] .

*Mexico:*

Agave, *Yucca* and *Bouteloua* communities [2255] .

## ENVIRONMENTAL FACTORS - MISCELLANEOUS

*Fire resistant:*

Due to the twisting movement of the seed caused by the movement of the awn in response to changes in air humidity, the seed is buried in the soil, this contributing to the fire tolerance of the grass. Fire can also accelerate the development of reproductive tillers (Lazarides et al. 1965) [1653] .

*Stocking rates:*

In a trial in Queensland stocking rates for natural *H. contortus* pastures ranged from 1.8 to 3.6 ha per head of cattle [1653] .

## FLOWERING/FRUITING/SEED SET

*Flowering, southern Africa:*

October to June [2182] .

*Flowering, southern Africa:*

October to March [5117] [5664] .

*Flowering, Australia:*

Populations grown in the north of 20 degrees south flower late in the season, when the daylength is under 12 hours, but no such trend was observed south of 20 degrees [1653] .

*Flowering, Mexico:*

March to December but mainly June to November [6040] .

## CYTOLOGY

For the genus,  $x = 10$  (11) (polyploidy) [5150] .

Plants of a few ploidy levels with  $2n = 20, 40, 60$  and  $80$ , and also with  $2n = 44$  or  $50$  were found. Reproduction is apomictic [1653] .

## CULTIVATION

*Seldom cultivated, apparently due to the difficulties with seed production. It is cultivated in India under an annual rainfall of 1.150 mm Mixtures:*

Sown with *Stylosanthes guianensis*, *S. humilis*, and *Centrosema pubescens* [1653] .



## YIELDS

*H. contortus* yielded 15.6 t fresh herbage/ha, and in mixtures with *S. guianensis* and *Centrosema pubescens* yielded less than *H. contortus* alone. In another year *H. contortus* alone yielded 342 kg CP/ha, its mixture with *Stylosanthes guianensis* yielded 435 kg and with *S. humilis* 535 kg [1653].

## PRODUCTION

### *Australia:*

For the results of trials on *H. contortus* and the effect on liveweight of animals see Bogdan 1977 [1653].

## FIELD TRIALS

### *Australia:*

Trials on stocking rate and animal production were done in Australia [1653].

### *Dhamat:*

Used in sheep grazing/vegetation experiment in YAR area in montane plains S of Dhamat, not one of the widespread grasses when reseeded and after grazing was allowed it remained present but not much (Briede et al 1985) [2255].

## ACKNOWLEDGEMENTS AND DATASHEET PROGRESS

Updated for southern africa by E. Irish; checked by C. Mannheimer; Sepasal Namibia, National Botanical Research Institute, October 2005.

---

## References

- [3] Flora Zambesiaca. 1960-. London: Crown Agents for Overseas Governments and Administrations. En. Edited by A.W. Exell et al.
- [623] Broun, A.F. and Massey, R.E. 1929. *Flora of the Sudan*. London: T. Murby. x, 502p. En.
- [1096] Bhandari, M.M. 1978. *Flora of the Indian Desert*. Jodhpur: Scientific Publishers. 471p. En.
- [1238] Maheshwari, J.K. 1963. *The Flora of Delhi*. New Delhi: Council of Scientific and Industrial Research. viii, 447p. En.
- [1286] Petheram, R.J. and Kok, B. 1983. *Plants of the Kimberley region of Western Australia*. Nedlands, W.A.: University of Western Australia for Rangeland Management Branch, Department of Agriculture Press. xii, 556p. En.
- [1304] Rodin, R.J. 1985. *The ethnobotany of the Kwanyama Ovambos*. St. Louis, U.S.A.: Missouri Botanical Garden. 163p. En. Monographs in Systematic Botany from the Missouri Botanical Garden Vol. 9.
- [1321] Sen, D.N. 1982. *Environment and plant life in Indian desert*. Jodhpur, India: Geobios International. vi, 249p. En.
- [1449] Wiggins, I.L. 1980. *Flora of Baja California*. California: Stanford University Press. viii, 1025p. En.
- [1653] Bogdan, A.V. 1977. *Tropical pasture and fodder plants (grasses and legumes)*. London: Longman. xiii, 475p. En.
- [1680] Lenz, L.W. 1992. *An annotated catalogue of the plants of the Cape Region, Baja California Sur Mexico*. Claremont, California: The Cape Press. xii, 114p. En.
- [1726] Coyle, J. and Roberts, N.C. 1975. *A field guide to the common and interesting plants of Baja California*. California, U.S.A: Natural History Publishing Company. 206p. En.
- [1808] Simon, B.K. 1993. *A key to Australian grasses. 2nd ed.* Brisbane: Queensland Department of Primary Industries. 206p.
- [2138] Briede, J.W., Kessler, J.J., Hoenen, J.G.L.G.M. and Mufareh, M.M. 1985. *Sheep behaviour and vegetation changes during a village grazing trial at the Dhelan Hill enclosure (montane plains, YAR)*. Amersfoort, The Netherlands: DHV Consulting Engineers and RIN. 25p. En. Range and Livestock Improvement Project Communication No. 1.
- [2182] Gibbs Russell, G.E., Watson, L., Koekemoer, M., Smook, L. et al. 1990. *Grasses of Southern Africa*. Pretoria, South Africa: National Botanic Gardens/Botanical Research Institute. 437p. Mem. Bot. Survey South Africa No. 58.
- [2255] SEPASAL.. *Survey of Economic Plants for Arid and Semi-Arid Lands. Notes from SEPASAL datasheet*. Kew,

U.K.: Centre for Economic Botany, Royal Botanic Gardens, Kew.

- [2259] Chippindall, L.K.A. and Crook, A.O. 1976. *Grasses of Southern Africa*. Salisbury, Rhodesia: M.O. Collins. 240 parts in loose leaf form.
- [2514] Peters, C.R., O'Brien, E.M. and Drummond, R.B. 1992. *Edible wild plants of sub-Saharan Africa*. Kew, U.K.: Royal Botanic Gardens, Kew. 239p. En.
- [5083] Craven, P. and Kolberg, H. In prep. *Common names of Namibian plants*. Windhoek.
- [5104] Germishuizen, G. and Meyer, N.L., eds. 2003. *Plants of southern Africa: an annotated checklist*. Strelitzia 14. Pretoria: National Botanical Institute.
- [5115] Klaassen, E.S. and Craven, P. 2003. *Checklist of grasses in Namibia. SABONET Report No. 20*. Pretoria and Windhoek: Southern African Botanical Diversity Network.
- [5116] Müller M.A.N. 1984. *Grasses of South West Africa/Namibia*. Windhoek: Department of Agriculture and Nature Conservation.
- [5117] Van Oudtshoorn, F. 1992. *Guide to grasses of South Africa*. Arcadia, Pretoria: Briza Publications. 301p.
- [5118] Ostermeier-Noczil, B. 1997. *Smallholders of northern Namibia. Ethnobotanical case study of the traditional Mbukushu village "Kaké" in the Kavango/Caprivi-region*. Vienna: University of Vienna. Unpublished Diploma thesis.
- [5123] National Herbarium of Namibia. Undated. *Specimen Database (SPMNDB)*. Windhoek: National Botanical Research Institute of Namibia.
- [5125] Chapano, C. 2002. *A checklist of Zimbabwean grasses. SABONET Report No. 16*. Pretoria: Southern African Botanical Diversity Network.
- [5126] Costa, E., Martins, T. and Monteiro, F. 2004. *A checklist of Angola grasses - Checklist das Poaceae de Angola. SABONET Report No. 28*. Pretoria: Southern African Botanical Diversity Network.
- [5130] Field, D.I. 1976. *A handbook of common grasses in Botswana*. Gaborone: Ministry of Agriculture, Botswana.
- [5139] Liengme, C.A. 1981. Plants used by the Tsonga people of Gazankulu. *Bothalia*. 13(3&4): 501-518.
- [5150] Leistner, O.A., ed. 2000. *Seed plants of southern Africa: families and genera. Strelitzia 10*. Pretoria: National Botanical Institute.
- [5186] Kabelo, M. and Mafokate, D. 2004. *A checklist of Botswana grasses. SABONET Report No. 24*. Gaborone and Pretoria: Southern African Botanical Diversity Network.
- [5251] Ministry of Agriculture, Water and Rural Development. 2004. *Chemgrass Database*. Windhoek, Namibia: MAWRD Agricultural Laboratory.
- [5452] Braun, K.P., Dlamini, S.D.V., Mdladla, D.R., Methule, N.P. et al. 2004. *Swaziland flora checklist. SABONET Report No. 27*. Pretoria: Southern African Botanical Diversity Network.
- [5480] Da Silva, M.C., Izidine, S. and Amude, A.B. 2004. *A preliminary checklist of the vascular plants of Mozambique. SABONET Report No. 30*. Pretoria: Southern African Botanical Diversity Network. 183p.
- [5481] Phiri, P.S.M. 2005. *A checklist of Zambian vascular plants. SABONET Report No. 32*. Pretoria: Southern African Botanical Diversity Network. 167p.
- [5550] Kobisi, K. 2005. *Preliminary checklist of the plants of Lesotho. SABONET Report No. 34*. Pretoria and Roma: Southern African Botanical Diversity Network. 84p.
- [5580] Norton, G.W., Rhine, R.J., Wynn, G.W. and Wynn, R.D. 1987. Baboon diet: a five year study of stability and variability in the plant feeding and habitat of the yellow baboons (*Papio cynocephalus*) of Mikumi National Park, Tanzania. *Folia Primatologica*. 48: 78-120.
- [5664] Van Oudtshoorn, F. 2004. *Guide to grasses of Southern Africa*. Pretoria: Briza Publications. En. 288p.
- [6040] SEPASAL Namibia. 2005/2006. *National Botanical Research Institute of Namibia*. Windhoek: Namibia.

SEPASAL's development has been funded by The Clothworkers' Foundation and its Internet development is funded by The Charles Wolfson Charitable Trust. Nutritional information on African wild foods is funded by Nestlé Charitable Trust.

All data © The Trustees of the Royal Botanic Gardens, Kew, 1999-2007 [Full copyright statement](#)

If you wish to cite SEPASAL, please read [this](#) first

To send us feedback and bug reports, please click [here](#)