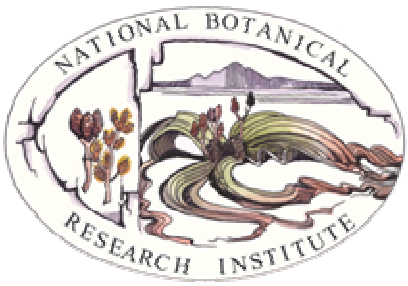

This report was generated from the SEPASAL database (www.kew.org/ceb/sepasal) in August 2007. This database is freely available to members of the public.

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which has been updating the information on Namibian species from Namibian and southern African literature and unpublished sources.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

Chloris gayana Kunth [1808]

Family: POACEAE

Synonyms

None recorded

Vernacular names

Arabic (Sudan)	abu raseyn [2837]
Ateso (Uganda)	akono [6658], ekode [6658]
English	Rhodes grass [350] [2837] [5482] [6590] [6658]
Kavirondo	kube [6590]
Luganda (Uganda)	kasibante [6658]
Lugisu (Uganda)	businyande [6658]
Luo (Uganda)	ombagkidyanga [6658]
Lusoga (Uganda)	kuku omunene [6658]
Maasai	erigaru [2837], ol'piripiri-andoi [2837]
Solai	ngondu kubwa [6590]

Distribution

Plant origin	Continent	Region	Botanical country
Native	Africa	East Tropical Africa	Kenya [1362] [2837] [5482], Tanzania [1362] [2837], Uganda [1362] [2837]
		Northeast Tropical Africa	Chad [2837], Ethiopia [1360] [2837], Somalia [2837], Sudan [1360] [2837] [6590]
		South Tropical Africa	Angola [2837], Malawi [2837], Mozambique [2837], Zambia [1360] [2837] [6590], Zimbabwe [1360] [2837] [6590]
		Southern Africa	Botswana [2837], Namibia [2837], Swaziland [2837]
		West Tropical Africa	Guinea [1360] [2837], Mali [1360] [2837], Niger [1360] [2837], Nigeria [1360]

			[2837], Senegal [1360] [2837]
		West-Central Tropical Africa	Rwanda [2837], Zaire [2837]
.			
Introduced	Africa	Southern Africa	Cape Province, Natal, Orange Free State, Transvaal
	Asia-Temperate	Western Asia	Syria
	Asia-Tropical	Indian Subcontinent	Sikkim
		Indo-China	Thailand
	Australasia	Australia	Lord Howe I, New South Wales [1139] [1808], Northern Territory [1139] [1808], Queensland [1808], South Australia [1139] [1808], Victoria [1139] [1808], Western Australia [1139] [1808]
		New Zealand	Kermadec Is
	Northern America	South-Central U.S.A.	Texas
		Southeastern U.S.A.	Florida, Mississippi
		Southwestern U.S.A.	Arizona, California
	Pacific	South-Central Pacific	Easter Is
		Southwestern Pacific	Tonga
	Southern America	Brazil	
		Caribbean	Cuba, Haiti, Jamaica
		Mesoamerica	Costa Rica, Guatemala, Honduras
		Northern South America	Venezuela
		Southern South America	Uruguay
		Western South America	Colombia, Ecuador
.			
Status Unknown	Asia-Temperate	Arabian Peninsula	Bahrain, Oman, Saudi Arabia

ISO countries: Argentina , India , South Africa [2837] [6590]

Descriptors

Category	Descriptors and states
DESCRIPTION	Herb [6658]; Tussock Forming/Tufted/Caespitose [2837] [5482]; Annual [6590]; Erect [1362] [2837]; Terrestrial [1362]; Perennial [350] [1362] [2837] [5482] [6590] [6658]; Stoloniferous [1362] [6658]; Plant Height 0.5-2.2 m [350] [1139] [1362] [2837] [5482] [6658]
CLIMATE	Not Frost Tolerant [5069]; Tropical Summer Rains [350]; Annual Rainfall >= 600 mm [5069]
SOILS	Saline [350] [1139] [2837]; Alluvial Soils [6590]; Poorly Drained [1139]; Alkaline [2837] [5482]; Loamy [6590]; Clays [1139] [1362]
HABITAT	Plains/Flats/Pans [5482]; Woodland [1362]; Grassland/Forb-Land [1362] [2837] [5482] [6590]; Wooded Grassland [2837] [6590]; Shrubby Grassland [2837]; Hillsides/Slopes

	[5482]; Anthropogenic Landscapes [1139]; Altitude 120-2300 m a.s.l. [1362]
PHYSIOLOGY	Grazing/Browsing Resistant [2837] [5482]; Trampling Resistant [2837]
SOURCES OF PLANTING MATERIAL	RBG Kew Seed Bank
SEPASAL DATASHEET STATUS	Nomenclature Checked

Uses

Major use	Use group	Specific uses
ANIMAL FOOD	Aerial Parts	unspecified aerial parts, grazing [350] [2837] [5482] [6590]; unspecified aerial parts, forage [1139]; unspecified aerial parts, fodder [6590]; unspecified aerial parts, silage [2837]; unspecified aerial parts, hay/straw [2837] [5069] [6590]
ENVIRONMENTAL USES	Unspecified Environmental Uses	saline soils
	Erosion Control	sands
	Revegetators	saline soils [350] [2837]
	Soil Improvers	soil structure improvers, sands [1139] [2837]

Picture

None recorded

Notes

DISTRIBUTION

East Africa:
It is more widespread and common in East Africa than in West Africa [2837] .
Throughout Africa, introduced or naturalized elsewhere [1362] .
Throughout tropical East Africa from Sudan to Rhodesia, also in West Africa, South Africa and introduced into many parts of the world as a fodder grass [6590] .

ORIGIN/DOMESTICATION

Widely introduced as a pasture grass, and sometimes becoming naturalised [2837] .

DESCRIPTION

Growth form:
Forms loose tussocks, sometimes with stolons [2837] .
Height:
1 m [1139] .
Height:
Culms 0.5-2 m high [2837] .
Height:
Culms 0.5-2.2 m [1362] .
Roots:
Spreading by rooting runners [5482] .
Lifespan:
Perennial or sometimes annual [6590] .

Plant height:
1.5 m [6658] .

ANIMAL FOOD - AERIAL PARTS

Unspecified aerial parts, forage:
Capable of producing large quantities of forage in regions with high summer rainfall [1139] .
Unspecified aerial parts, grazing:
Valuable feed for stock but overgrazing must be avoided [350] .
Unspecified aerial parts, grazing:
A valuable grazing grass [2837] .
Unspecified aerial parts, hay, silage:
It can be made into hay, but silage made from it in northern Nigeria was very low in protein although otherwise of good quality [2837] .
Unspecified aerial parts, hay:
From the point of view of nutrition, the hay is of average value [5069] .
Unspecified aerial parts, grazing:
One of the most useful grasses for the establishment of pasture leys. By means of its creeping stems it rapidly covers the ground, forming a sward under grazing conditions [5482] .
Unspecified aerail parts, fodder:
A Valuable fodder grass [6590] .
Unspecified aerial parts, grazing, hay:
Used both as a pasture and a hay grass [6590] .
Unspecified aerial parts, hay:
Makes excellent hay, which possesses a high nutritive value, while its aroma and palatability make it very acceptable to stock [6590] .

ENVIRONMENTAL USES - REVEGETATORS

Saline soils:
It has some promise as a grass for mildly saline soil [2837] .
Saline soils:
Revegetation of saline areas. Replaces highly susceptible native grasses on margins of affected areas where salinization is less severe [350] .

ENVIRONMENTAL USES - SOIL IMPROVERS

Soil structure improvers, sands:
It has been tried as a sand-binder in Australia, with some success [2837] .
Soil structure improvers, sands:
Useful in sand binding [1139] .

RAINFALL

Africa:
A widespread grass, most of whose range lies in the regions of higher rainfall. However some forms certainly occur within the semi-arid belt [2837] .

TEMPERATURE

Africa:
-8ºC destroys completely, -4ºC destroys partially [5069] .

ALTITUDE

Kenya:
2000 ft to over 6500 ft [5482] .

TOPOGRAPHY/SITES

Australia:
Waste areas and roadsides [1139] .

SOILS

Africa:
On light or heavy soils [1362] .
Australia:
Red earth soils, heavy clays near swamps [1139] .
Australia:
Salt tolerant [1139] .
It occurs on alkaline soil containing a considerable amount of soda [5482] .
Africa:
Some forms, from eastern and north-eastern Africa, certainly have some salt and/or alkali tolerance; in western Uganda it forms a zone around salt lakes but further from the water than truly halophilous species such as Sporobolus spicatus and Psilolemma jaegeri [2837] .
In leys, it does better on soils of higher fertility [6658] .

VEGETATION

Africa:
It occurs in open grassland, and also in bushed and wooded grasslands [2837] .
East Africa:
Riverine woodland, scattered tree grassland and open grassland [1362] .
Its chief habitat is in both types of the scattered tree grassland [5482] .
The grass often forms an almost pure stand and is sometimes dominant over considerable areas in the plains, although it is only occasionally met within hilly country [5482] .
East Africa:
Open grassland and savannah [6590] .

ENVIRONMENTAL FACTORS - MISCELLANEOUS

Its stoloniferous habit means that it quickly forms a dense sward, and it withstands grazing and cutting well [2837] .

GERMINATION

Fresh seeds often give poor germination [1204] .
In tests on germination from different depths of planting of seeds, emergence was best from depths of 1-2.5 cm. Virtually no seeds emerged from seeds planted 5 cm deep [2837] .
The seeds are light and small and germinate as a rule rather badly, due to the large number of florets and a fertility of 50% may be considered satisfactory [6590] .

CULTIVATION

Strains:
Many strains have been selected with different characteristics [2837] .
Cultivars:
Numerous cultivars have already been selected, and in some cases named. A few are commercially available. Strains vary in leafiness, drought-resistance, height, number of stolons, etc. and there is clearly considerable scope for the selection of strains which are suited to particular environments [2837] .
Pakistan (Sind):
In arid rangeland improvement trials it did not perform well because water requirements were too high [2362] .
Kenya:
Numerous ecotypes (natural strains) which differ in agricultural value occur. Several of these are under experiment and one, the Nzoia "strain", which originated near the river of that name, is already in commercial seed production.

This type has been proved persistent under intensive grazing and of high pasture value. It forms the main basis of the limited development of ley-farming so far attained and the grass is increasing in importance. Other ecotypes also give promise of contributing to development in this direction [5482] .
There are several varieties available commercially; varieties 'Masaba' and 'Mbarara are most generally useful [6658] .

SEED WEIGHT

450,000-550,000 seeds per kg [2837] .

PROPAGATION FROM SEED

10-20 Kg seed/ha according to the quality of the seed that is used [5069] .
Seeding rate:
A seeding rate of 2 kg/ha gives 100 seeds/m2 [2837] .
It multiplies by seed [5069] .
Propagation is by seed. Seeds are commercially available. Keep seed for one year before sowing [350] .
Establishment from seed is easy [5482] .
Seed is sown March-April (north Africa) on finely prepared earth. Germination is slow and it is essential to prepare the ground carefully. If it doesn't rain sufficiently after seeding, none will be raised. Due to these difficulties, multiplication by picking out young plants which form in great numbers on the stolons in spring is preferred [5069] .
The grain collected in Algeria germinating poorly [5069] .
Sowing:
For sowing it is advisable to have the land in a fine tilth to ensure a good stand. Broadcast sowing is advocated and half the seed should be sown in a direction at right angles to the other half. Advantage should be taken of favourable weather conditions for sowing, as although little moisture is necessary to germinate the seed, a fair amount is required to keep the young seedlings going. When the runners begin to appear the grass may be considered to be well established and will stand a fair amount of dry weather. The runners take sometime to root sufficiently strongly at the joints and early pasturing will pull them from the ground, leaving the spaces for weeds [6590] .
It seeds extremely well and is the easiest ley grass to establish from seed. For this reason it forms a component of most seed mixtures [6658] .

PROPAGATION - VEGETATIVE

Swards can also be established using splits or chopped stolons, and for small areas this may be more reliable than seeding [2837] .

'CROP' MANAGEMENT

Ley can readily be ploughed out when necessary [5482] .
Watering:
Its growth is affected more by cold than by drought, but with irrigation the number of cuts can be increased [5069] .
Crop protection (from trampling):
It has been found good practice to allow the grass to seed before grazing and then to put stock on it. Another alternative is to use the first crop for hay [6590] .
Thinning:
Seed is sown March-April (north Africa) on finely prepared earth. Germination is slow and it is essential to prepare the ground carefully. If it doesn't rain sufficiently after seeding, none will be raised. Due to these difficulties, multiplication by picking out young plants which form in great numbers on the stolons in spring is preferred [5069] .

HARVESTING

The grass should be cut for hay as soon as the seeds begin to ripen, and the drying should be done as quickly as possible in order to keep the hay a good colour [6590] .

YIELDS

Yield varies from 30 tonnes with dry culture to 70-80 tonnes when irrigated [5069] .
It produces heavy yields, and 2-3 cuttings per season can be obtained [6590] .

PRODUCTION

Seeds:
Has a good seed production [5482] .
Production usually falls off markedly after the first 12-18 months, as it is less competitive than other grasses [6658] .

RESEARCH NEEDS

There is a need for the widely scattered information on this species to be collected and summarised [2837] .
Strains vary in leafiness, drought-resistance, height, number of stolons, etc. and there is clearly considerable scope for the selection of strains which are suited to particular environments [2837] .

SEED/GENE BANK SOURCES

220 samples in Kenya (National Agricultural Research Centre). Collections of cultivars exist (or existed) at Brisbane, Australia, and Alactra, Madagascar [2837] .

ACKNOWLEDGEMENTS AND DATASHEET PROGRESS

Data transferred from Forage and browse plants for arid and semi-arid Africa, by Ruth Adeka, KENRIK, National Museums of Kenya, November 2005 .
Data transferred from SEPASAL Paper Files by Ruth Adeka, KENRIK, National Museums of Kenya, November 2005 .
Data transferred from East African pasture plants, part 2 by Ruth Adeka, KENRIK, National Museums of Kenya, April 2007 .
Entire species edited by C. Mannheimer, May 2007, SEPASAL Namibia, National Botanical Research Institute .

References

[350] Cummins, V.G. and Benn, M.K. 1981. Watertable salting on the central coast. *Queensland Agric. J*. 107(5): 257-261. En.
[1139] Cunningham, G.M., Mulham, W.E., Milthorpe, P.E. and Leigh, J.H. 1981. *Plants of western New South Wales*. Sydney: Soil Conservation Service of New South Wales. En.
[1204] Humphreys, L.R. 1981. *Environmental adaptation of tropical pasture plants*. London: Macmillan. En.
[1360] Flora of West Tropical Africa. 1954-. London: Crown Agents for Oversea Governments and Administrations. En. Edited by J. Hutchinson et al.
[1362] Flora of Tropical East Africa. 1952-. London: Crown Agents; Rotterdam: Balkema. En. Edited by W.B. Turrill et al.
[1808] Simon, B.K. 1993. *A key to Australian grasses. 2nd ed*. Brisbane: Queensland Department of Primary Industries. 206p.
[2362] Mohammad, N. and Naqvi, A.H. 1987. Dry matter yield of promising grasses in tropical arid rangelands of Sind, Pakistan. *Trop. Agric*. 64(1): 70-71. En.
[2837] International Board for Plant Genetic Resources. 1984. *Forage and browse plants for arid and semi-arid Africa*. Rome: International Board for Plant Genetic Resources; Kew, U.K.: Royal Botanic Gardens, Kew. 293p. En.
[5069] Laumont, P. 1952. *Les fourrages. Revue Agricole de L'Afrique du nord*. Fr.
[5482] Edwards, D.C. and Bogdan, A. V. 1951. *Important grassland plants of Kenya*. Nairobi: Pitman.
[6590] Royal Botanic Gardens, Kew. 1927. *East African pasture plants, part 2 East African grasses*. The Crown Agents for the Colonies. En.
[6658] Wendt, W.B., Stobbs, T.H., Tiley, G.E.D and Tucker, G.G. 1970. *Pasture Handbook; A practical guide for farmers, extension workers and students, to the establishment and management of sown pastures and fodder crops in Uganda*. Department of Agriculture, Ministry of Agriculture and Forestry, Entebbe. En.

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.