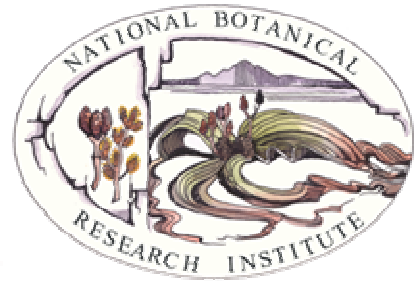


# Kew

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which has been updating the information on Namibian species from Namibian and southern African literature and unpublished sources.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***Themeda triandra** Forssk. [1808]

Family: POACEAE

## Synonyms

Themeda australis (R.Br.)Stapf

## Vernacular names

- (Mozambique) chindindi [5480], longue [5480], nlehongeve [5480], rajaculue [5480], tem?da ou t?meda [2259]
- (Mozambique, Porto Amelia) chigora [2259]
- Afrikaans (Namibia) rooigras [2259] [5083] [5115] [5116]
- Afrikaans (South Africa) Ho?veldrooigras [2259], angelgras [2259], asgras [2259], blougras [2259], platgras [2259], rooiangel [2259], rooigras [2259] [5117], rooihawergras [2259], rooisaadgras [2259], soetgras [2259], swartangelgras [2259], blourooigras [2259]
- Afrikaans (South Africa, Free State) rooigras [5668]
- Afrikaans (Zimbabwe) rooigras [2259]
- Changana (Mozambique) tlongu? [2259]
- Chope (Mozambique) dichongua [2259]
- English native kangaroo grass [1139]
- English (Africa) red oatgrass [1653]
- English (Kenya) red oat grass [1375]
- English (Namibia) red grass [2259] [5083] [5115] [5116]
- English (South Africa) angle grass [2259], blue grass [2259], red grass [2259]
- English (South Africa, Free State) red grass [5668]
- English (Southern Africa) red grass [2182] [5664]
- English (Zimbabwe) red grass [2259], rooi grass [2259]
- German (Namibia) Rotgras [2259] [5083] [5115] [5116]
- Ronga (Mozambique) chongu? [2259]
- Sotho (South Africa) seboku [2259], sechaba [2259], seloka [2259]
- Swazi (Mozambique) muf?tileb?vo [2259]
- Tsonga (South

Africa)

Zulu (South Africa) iNsinde [[2259](#)]

## Distribution

Plant origin	Continent	Region	Botanical country
Native	Africa	East Tropical Africa	Kenya [ <a href="#">1519</a> ] [ <a href="#">2075</a> ] [ <a href="#">2259</a> ], Tanzania [ <a href="#">2075</a> ] [ <a href="#">2259</a> ] [ <a href="#">6573</a> ], Uganda [ <a href="#">2075</a> ] [ <a href="#">2259</a> ] [ <a href="#">6573</a> ]
		Northeast Tropical Africa	Ethiopia [ <a href="#">2075</a> ], Somalia [ <a href="#">2075</a> ], Sudan [ <a href="#">2075</a> ]
		Northern Africa	Algeria [ <a href="#">2075</a> ], Egypt [ <a href="#">2075</a> ], Morocco, Tunisia [ <a href="#">2075</a> ]
		South Tropical Africa	Angola [ <a href="#">2259</a> ] [ <a href="#">5126</a> ], Malawi [ <a href="#">3</a> ] [ <a href="#">2075</a> ] [ <a href="#">2259</a> ], Mozambique [ <a href="#">3</a> ] [ <a href="#">2075</a> ] [ <a href="#">2259</a> ] [ <a href="#">5480</a> ], Zambia [ <a href="#">3</a> ] [ <a href="#">2075</a> ] [ <a href="#">2259</a> ] [ <a href="#">5481</a> ], Zimbabwe [ <a href="#">3</a> ] [ <a href="#">2075</a> ] [ <a href="#">2259</a> ] [ <a href="#">5125</a> ]
		Southern Africa	Botswana [ <a href="#">3</a> ] [ <a href="#">2075</a> ] [ <a href="#">2259</a> ] [ <a href="#">5104</a> ] [ <a href="#">5186</a> ], Cape Province [ <a href="#">2075</a> ] [ <a href="#">2259</a> ] [ <a href="#">5104</a> ], Caprivi Strip [ <a href="#">3</a> ] [ <a href="#">5115</a> ] [ <a href="#">5116</a> ], Lesotho [ <a href="#">2259</a> ] [ <a href="#">5104</a> ] [ <a href="#">5550</a> ], Namibia [ <a href="#">2075</a> ] [ <a href="#">2259</a> ] [ <a href="#">5104</a> ] [ <a href="#">5115</a> ] [ <a href="#">5116</a> ] [ <a href="#">5123</a> ], Natal [ <a href="#">2075</a> ] [ <a href="#">2259</a> ] [ <a href="#">5104</a> ], Orange Free State [ <a href="#">2075</a> ] [ <a href="#">2259</a> ] [ <a href="#">5104</a> ], Swaziland [ <a href="#">2259</a> ] [ <a href="#">5104</a> ] [ <a href="#">5452</a> ], Transvaal [ <a href="#">2075</a> ] [ <a href="#">2259</a> ] [ <a href="#">5104</a> ]
		West Tropical Africa	Burkina [ <a href="#">2075</a> ], Ghana [ <a href="#">2075</a> ], Guinea [ <a href="#">2075</a> ], Mali [ <a href="#">2075</a> ], Nigeria [ <a href="#">2075</a> ], Senegal
		West-Central Tropical Africa	Burundi [ <a href="#">2075</a> ], Cameroon [ <a href="#">2075</a> ], Rwanda [ <a href="#">2075</a> ], Zaire [ <a href="#">2075</a> ] [ <a href="#">2259</a> ]
	Asia-Temperate	Western Indian Ocean	Madagascar [ <a href="#">2075</a> ]
		Arabian Peninsula	North Yemen, Saudi Arabia, South Yemen [ <a href="#">2075</a> ]
		China	Anhui, Fujian, Guangdong, Guizhou, Hebei, Henan, Jiangsu, Jiangxi, Shandong, Sichuan, Xizang, Yunnan [ <a href="#">2075</a> ]
		Eastern Asia	North Korea, South Korea
		Western Asia	Lebanon [ <a href="#">2075</a> ], Syria

	Asia-Tropical	Indian Subcontinent	[2075] Assam [2075], Bihar [2075], Gujarat, Himachal Pradesh, Karnataka, Kerala, Maharashtra [2075], Manipur [2075], Nepal [2075], Orissa [2075], Punjab [2075], Sri Lanka [2075], Tamil Nadu [2075], Uttar Pradesh [2075]
	Australasia	Indo-China Australia	Burma New South Wales [1808] [2075], Northern Territory [1808] [2075], Queensland [1808] [2075], South Australia [1653] [1808] [2075], Tasmania [1808] [2075], Victoria [1808] [2075], Western Australia [1808] [2075]
		New Zealand	New Zealand North [2075]
Introduced	Southern America	Northern South America Southern South America	Guyana [2075] Uruguay
Status Unknown	Asia-Temperate Asia-Tropical	Eastern Asia Indo-China	Japan [2075], Korea [2075] Thailand [2075], Vietnam [2075]
		Malesia	Jawa [2075], Lesser Sunda Is s.l. [2075], Papua New Guinea, Philippines [2075]
	Europe Pacific	Middle Europe Southwestern Pacific	Netherlands [2075] New Caledonia [2075], Solomon Is [2075], South Solomons, Vanuatu

**ISO countries:** Argentina [2075] , Indonesia [2075] , India [2075] , Saudi Arabia [2075] , Turkey [2075] , South Africa [2182] [2259] [5104] [5116]

## Descriptors

Category	Descriptors and states
DESCRIPTION	Herb [1139]; Tussock Forming/Tufted/Caespitose [3] [1375] [2259] [5116] [6088]; Deciduous [6573]; Erect [3] [5116] [6573]; Terrestrial [5664]; Rhizomatous [2182] [2259]; Perennial [1375] [2182] [2259] [5104] [5115] [5116] [6573]; Stoloniferous [6088]; Plant Height <= 2 m [3] [5104]
CLIMATE	Subtropical, Hot and Arid [5106] [5115]; Annual Rainfall 375-6250 mm [1375] [6088]
SOILS	Well Drained [1375]; Alluvial Soils [3] [1375]; Sandy [3] [1375]; Dry; Clayey [5664]; Clays [1375]
HABITAT	Forms Monospecific Stands [3] [2182] [6573]; Woodland [3] [1375]; Shrubland/Bushland/Scrub [6573]; Grassland/Forb-Land [3] [1375] [2182] [5117] [5664] [6573]; Wooded Grassland [2182] [5117] [5664]; Wooded Shrubland [2182] [5117] [5664];

Semi-Desert [2182] [5117] [5664]; Watercourses [3]; Rangelands/Pastures [2182] [5117] [5664]; Vlei/Dambo/Seasonally Flooded Grassland [3] [5117] [5664]; Altitude 0-3000 m a.s.l. [1375] [6573]

PHYSIOLOGY Fire Resistant/Regenerates After Fire [1375] [1519] [2259] [2514] [5117]

PRODUCTION AND VALUE Traded Locally [2514]

SOURCES OF RBG Kew Seed Bank

PLANTING

MATERIAL

CONSERVATION IUCN Status - Lower Risk, Least Concern (LC) [5400]

FURTHER DATA SOURCES Botanical Illustration [3] [1653] [2182] [2259] [5116] [5130] [5668]; Additional References [5123] [6086] [6087] [6089]; Regional Distribution Map [2259] [5664]; Botanical Photograph [2182] [5117] [5664]; Habit Illustration/Photograph [5116] [5117] [5130] [5664]; Grid Map [2182] [5115] [5116] [5117] [5123]

SEPASAL Nomenclature Checked

DATASHEET STATUS

CHEMICAL ANALYSES Poisonous Compounds - aerial parts [1340]; Nutritional Analyses - aerial parts [6088]; Nutritional Analyses - stems [6088]; Nutritional Analyses - leaves [6088]; Proteins - aerial parts [6088]; Proteins - stems [6088]; Proteins - leaves [6088]

## Uses

Major use	Use group	Specific uses
FOOD [2658]	Leaves	
	Seeds	entire seeds, famine food [2514]
ANIMAL FOOD	Aerial Parts	unspecified aerial parts, mammals, grazing [5117] [6573]; unspecified aerial parts, mammals, fodder [1340] [2514] [5130]; unspecified aerial parts, hay/straw [1340] [1375]; unspecified aerial parts, grazing [1340] [2259] [5116] [5117] [5668]; unspecified aerial parts, sheep, grazing, summer [5668]; sheep, grazing [2138]; cattle, grazing [934]; grazing [1375]; game mammals, browse [1519]
MATERIALS	Fibres	unspecified aerial parts, paper [1340] [2514]; unspecified aerial parts, thatch, buildings; unspecified aerial parts, thatch, roofs [5139]; unspecified aerial parts, thatch [1340] [2514]
ENVIRONMENTAL USES	Revegetators	croplands/orchards [6088]; degraded land [6088]
	Indicators	rangelands [5117] [5664]

## Picture

None recorded

## Notes

## NOMENCLATURE/TAXONOMY

### *Name derivation:*

The name is derived from the Arabic 'thaemed' which means 'little water', possibly referring to the water storage cells on the upper surface of the leaves. The type specimen came from Yemen, so the name may refer to the habitat.

'Triandra' comes from the Greek word 'tri' which means 'three' and 'aner' (andr-), which means 'man'. It alludes to the three stamens [2259].

Clayton W.D of Kew Gardens, London is unable to separate *Themeda triandra* from *T. australis* (R.Br.) Stapf.

[1375] .

*Varieties known include:*

var. burchellii (Hach.) Domin, var. trachyspatha Goossens, var. imberbis (Retz.) A. Camus and var. hispida (Nees) Stapf. [1375] .

## VERNACULAR NAMES

*English (southern Africa), red grass:*

The panicles are well tinged with red or orange [1653] .

## DISTRIBUTION

*Botswana:*

Occurs in the Ngamiland, Chobe and Central districts [5186] .

*Worldwide:*

All warm and tropical regions of the Old World. Widespread in Africa and one of the commonest grasses south of the equator [3] [2259] .

*Worldwide:*

Occurs in a great variety of forms throughout the Old World tropics and subtropics and reaches temperate areas, e. g. in south Australia [1653] .

All warm and tropical regions of the world; abundant in East Africa where it constitutes 16% of the grasslands [1375] .

Occur in tropical and subtropical regions of the Old World [6573] .

## DESCRIPTION

*Height:*

0.3 - 1.5 m [2182] [5117] [5664] .

*Height:*

0.3 - 0.9. Tall forms usually predominate in tropical climates, shorter forms in temperate climates [2259] .

*Height:*

0.3 - 2m [5104] .

*Height:*

Up to 1 m [5116] .

*Inflorescences:*

A false panicle consisting of a number of pendulous racemes. Each raceme consists of a group of spikelets supported by a glabrous or hairy spathe. Sessile spikelets 5-7 mm long, pedicellate spikelets equal or somewhat longer.

Spikelets awned, in drooping triangular clusters with reddish spathes and bractlike sterile spikelets [2182] [5117] .

*Leaves:*

Leaf blades to 300 mm long, 1 - 8 mm wide. Leaf sheaths compressed. Ligule a notched membrane. Blade tips abruptly or gradually tapering [2182] .

*Life form:*

Graminoid [5104] .

*Seeds:*

Caryopsis terete [5150] .

*Growth form:*

Tufted [1375] .

*Height:*

45-180 cm [1375] .

*Height:*

60-150 cm [1139] .

*Height:*

30-300 cm high [6573] .

*Inflorescences:*

Of wedge-shaped clusters of 2-8 compact racemes embraced by sheathing spatheoles these gathered in a false spathate panicle up to 30 cm in length. Each raceme is composed of 2 homogamous spikelet-pairs forming an involucre, one fertile awned spikelet, and a pedicelled spikelet. Homogamous spikelets are 6-14 mm in length with

glabrous to tuberculate hirsute glumes; the sessile spikelets are 6-11 mm long with a pungent bearded callus and with an awn that is 2.5-7 cm in length; pedicelled spikelet 6-14 mm long, glabrous to pilose with tubercle-based hairs [6573] .

*Leaves:*

The basal leaf-sheaths compressed. Leaf-blades flat, up to 30cm long and 1-8 mm wide [6573] .

Tufted perennial with erect culms [6573] .

## IDENTIFICATION

Some forms may vegetatively resemble *Heteropogon contortus*, which has an undivided ligule and blunt, often hooded, leaf blades, or *Schizachyrium sanguineum*, which has a strongly curved, undivided ligule, abruptly pointed leaf blades and a reddish colour [2182] .

## FOOD - LEAVES

Leaves are eaten [2658] .

## FOOD - SEEDS

Grains used as food [2658] .

## ANIMAL FOOD

A 10 hour intake trial (to stimulate a 10 hour grazing day on the range) with Boran cattle at EAAFRO, Muguga, Kenya, gave a dry matter intake of  $70.87 \pm 2.57$  g/kg W<sup>0.75</sup> (not significantly different from Herefords). The dry matter of *T. triandra* hay contained 42.35% crude protein and 6.20% gross energy [1375] .

Dominates the pastures of the tropical tall grass lands of Northern Australia, but sensitive to large increases in grazing pressure and its breakdown leads to soil exposure [1381] .

Palatability is good when young and unpalatable when mature [1375] .

Palatable nutritious grass when young but becomes rather coarse at maturity [1286] .

Pasture of *T. triandra* has less macrospore space and lower infiltration rates than introduced legume pastures [1537] .

Spring and summer growing and responds to rain at most times of the year. Early reports are of good palatability and heavy grazing. Possibly several varieties of this grass seem to be grazed sparingly in NSW. Younger growth is quite attractive to stock but after good rain it can grow very tall and and forage appears of little value. Stock do not increase in weight. Provides good bulk and roughage though [1139] .

The crude protein content of the hay is insufficient to meet the requirements of the grazing animal and would need a supplement to improve animal performance. Hay cut from a 4 month old stand had 3.4% crude protein in the dry matter. It is generally not highly regarded as a pasture [1375] .

## ANIMAL FOOD - AERIAL PARTS

*Unspecified aerial parts, grazing, hay:*

It is an excellent grazing and hay grass [1340] .

*Unspecified aerial parts, grazing:*

In Namibia not of great importance as pasture [5116] .

*Unspecified aerial parts, grazing, hay:*

It is an excellent grazing and hay grass [2259] .

*Unspecified aerial parts, grazing:*

It is generally regarded as one of the best grazing grasses, especially on the highveld of South Africa. Leaf production is high and it is very palatable in the young stage. It is preferred by nearly all grazers [5117] .

*Unspecified aerial parts, grazing:*

Very palatable when young, forming a very leafy tuft, but becoming less palatable as it matures [5668] .

*Unspecified aerial parts, mammals, fodder:*

Desirable when young but becomes coarse when dry [5130] .

*Unspecified aerial parts, mammals, fodder:*

Used as fodder for livestock [2514] .

*Unspecified aerial parts, sheep, grazing, summer:*



Nutritive value good in summer but poor in winter. Culms unpalatable to sheep during winter [5668] .

*Cattle, grazing:*

Is known to be grazed by cattle and is palatable [934] .

*Game mammals, browse:*

The plant has a fairly leafy herbage after burning which is browsed by impala in the Mara [1519] .

*Game mammals, browse:*

The plant is leafy after burning, whole plant browsed by warthog in the Mara [1519] .

*Grazing:*

Themeda triandra is an important grassland constituent of large areas of productive ranching land in the medium altitude-medium rainfall (around 1000-2000 m and 500-800 mm respectively) zones of eastern tropical and subtropical Africa [1375] .

*Grazing:*

A valuable grazing grass; palatability varies according to soil and rainfall [6573] .

*Unspecified aerial parts, hay:*

It should be cut for hay at the stage of maximum dry matter production i.e. about 8 weeks' growth during the long rains. But Marshall and Bredon, 1967 say the hay is unlikely to be a satisfactory roughage [1375] .

## **MATERIALS - FIBRES**

*Paper, unspecified aerial parts:*

Possibly of use in papermaking [2514] .

*Paper, unspecified aerial parts:*

Suitable for pulping [1340] .

*Thatch, roofs, unspecified aerial parts:*

The traditional method of thatching roofs is to tie grass into mats called 'mackenye'. The mats are rolled up and stacked until the roof is ready to be thatched. Then the mats are laid out on the roof, starting at the lower edge of the roof, and secured [5139] .

*Thatch, unspecified aerial parts:*

Used a lot for thatching. Bundles are sold on Ethiopian markets for this purpose [2514] .

## **ENVIRONMENTAL USES - REVEGETATORS**

*Croplands:*

It has been used for re-establishment of old croplands to natural veld [6088] .

*Degraded lands:*

Its greatest use is likely to be for reclamation and revegetation of denuded land [6088] .

## **ENVIRONMENTAL USES - INDICATORS**

*Rangelands:*

In southern Africa it is classified as a Decreaser i.e. grasses that are abundant in good veld, but that decrease in number when the veld is overgrazed or undergrazed [5117] [5664] .

## **NUTRITIONAL VALUE**

*Aerial parts, crude protein, crude fibre, acid soluble ash, P, K, Ca, Mg, Na, Cl:*

Samples of the entire shoots were taken at the age of 2 months during the 1932 - 33 season at Onderstepoort. Crude protein 9.2%, crude fibre 32.2%, acid soluble ash 2.9%, P 0.24%, K 1.38%, Ca 0.68%, Mg 0.41%, Na 0.03%, Cl 0.45% [6088] .

*Leaves, crude protein, ether extract, N-free extract, crude fibre, total ash, P, K, Ca, Mg, Na, Cl:*

Samples of green leaves were taken on the 19 January 1927 at Ermelo and analysed: Crude protein 6.9%, ether extract 3.4%, N-free extract 53.1%, crude fibre 29.8%, total ash 6.8%, P 0.20%, K 1.35%, Ca 0.24%, Mg 0.24%, Na 0.01%, Cl 0.56%. Samples of green leaves were taken during June 1931 at the Natal Coast: Crude protein 5.3%, ether extract 2.5%, N-free extract 52.6%, crude fibre 28.4%, total ash 11.2%, P 0.19%, K 1.23%, Ca 0.46%, Na 0.79%, Cl 0.44%. Leaves, crude protein, ether extract, N-free extract, crude fibre, total ash, P, K, Ca, Mg, Na, Cl: Samples of green leaves, were taken on the 19 January 1927 at Fauresmith and analysed: Crude protein 10.4%, ether extract 3.9%, N-free extract 42.3%, crude fibre 31.2%, total ash 12.3%, P 0.39%, K 2.35%, Ca 0.69%, Mg 0.40%,



Na 0.02%, Cl 0.44% [6088] .

*South Africa:*

Its nutritional value is low in winter [5117] .

*Stems, crude protein, ether extract, N-free extract, crude fibre, total ash, acid soluble ash, P, K, Ca, Mg, Na, Cl:*

Samples of the stems were taken on the 31 October 1935 at Fauresmith and analysed: Crude protein 6.7%, ether extract 2.2%, N-free extract 45.2%, crude fibre 37.8%, total ash 8.1%, acid soluble ash 3.5%, P 0.29%, K 2.03%, Ca 0.38%, Mg 0.31%, Na 0.01%, Cl 0.83% [6088] .

*Unspecified parts, nutritional analyses:*

Crude protein (3.6), crude fibre (32.1), ash (11.6), EE (2.0), NFE (50.7), DCP (1.0), TDN (54.2). Data collected in dry season [1375] .

*Unspecified parts, nutritional analyses:*

Crude protein (4.6), crude fibre (27.8, ash (17.4), EE (2.4), NFE (47.8), DCP (1.6), TDN (58.0). Data collected in wet season [1375] .

*Unspecified parts, nutritional analyses:*

Crude protein (5.8% in green state, 1.2 % in dry state), phosphorous (0.02-0.07%), digestibility (20-50%) [1286] .

## TOXICITY/POISONOUS COMPOUNDS

*Aerial parts, hydrocyanic acid:*

Although it has produced hydrocyanic acid poisoning under field conditions (Mettam 1932), it is an excellent grazing and hay grass (Botha 1939) [1340] .

## CONSTRAINTS - MISCELLANEOUS

The mature fruit of Themeda becomes entangled in the wool of sheep. The callus irritates and even penetrates the skin. This may cause serious injury to their general health and condition, especially in long-woolled breeds (de Kock 1928). The result is 'traumatic purulent dermatitis' [1340] .

Becomes less palatable as it matures. Nutritive value good in summer but poor in winter [5668] .

The seed usually contains a high percentage of chaff, such material being hard to process on account of awns and the sharp points with their one-way ring of stiff hairs. Awns and points can be removed by hammermill but experience is required in treating the seed [6088] .

Early flowering, variation in palatability within swards, fire susceptibility [1375] .

## RAINFALL

375-575 mm [6088] .

It has a wide range. In places where it grows in areas with annual rainfall in excess of 760 mm it is not regarded as a good forage species. Where rainfall is less than 760 mm it is a major African forage species because of its abundance. In India it has a range from 1000-6250 mm [1375] .

## ALTITUDE

*South tropical Africa:*

0 - 2200 m [3] .

*Southern Africa:*

2 - 2500 m [5104] .

*Southern Africa:*

It is particularly common at an altitude of 1300 - 3000 m [5664] .

0-3200 m [6573] .

Sea level to 3000 m in Africa, dominant at 1300-3000 m [1375] .

## DRAINAGE

It does not tolerate flooding; its proportion in a pasture increases with improving drainage [1375] .

## SOILS

### *Southern Africa:*

Grows on all soil types, but mostly in clay [5116] [5117] [5664] .

In Kenya and Tanzania, red oat grass forms almost pure stands on lateritic red earths (latosolic soils) of poor structure, low in lime, phosphorous and potash. It is also adapted to loose sandy soils, alluvial silts and a wide range of other soils [1375] .

Occur on varied soils [6573] .

Usually in association with soil derived from granite, sandstone or basalt. Most common grass basaltic areas of the North Kimberley region [1286] .

## **VEGETATION**

### *Namibia:*

In Namibia it forms a minor component of the veld [5116] .

### *South tropical Africa:*

Grassland and open woodland [3] .

### *Southern Africa:*

Occurs in all veld types especially in Fynbos, Savanna, Grassland and Nama-Karoo. It is common in undisturbed climax grassland [2182] [5117] [5664] .

Occur on open grassland and deciduous bushland, often dominant [6573] .

Plant communities include *Sehima nervosum*, *Sorghum plumosum*, *Chrysopogon fallax* and *Dicanthium fecundum* [1286] .

Widespread as grassland and in open woodlands [1375] .

## **ENVIRONMENTAL FACTORS - MISCELLANEOUS**

### *Africa:*

Forms principal cover in fire climax savanna areas [2514] .

### *Southern Africa:*

It is resistant to burning provided it is rested from grazing afterwards [2259] [5117] .

### *South Africa:*

Because of its high palatability, its occurrence decreases under poor veld management [2259] [5117] .

## **FLOWERING/FRUITING/SEED SET**

### *Flowering, South Africa:*

October to July [5117] .

### *Flowering, southern Africa:*

October to July [2259] [5664] .

### *Flowering, southern Africa:*

September to June [2182] .

## **DISPERSAL**

When the awn becomes moist from dew or rain, it twists, thus boring the sharp seed into the soil [5668] .

## **GERMINATION**

### *South Africa:*

Some types produce seed of high germinating ability [6088] .

## **CYTOLOGY**

For the genus  $x = 5, 10$  (polyploidy) [5150] .

Predominantly an aposporous apomict. There are diploids, tetraploids, hexaploids and octoploids with  $2n$  chromosome numbers 20, 40, 60, or 80, although chromosome numbers  $2n = 30$  and 50 have also been reported [1653] .

## GENETICS

$2n=20, 30, 40, 50, 60, 80$  [1375] .

## PHYSIOLOGICAL TOLERANCES

It has some tolerance to drought [1375] .

Leafy after burning [1519] .

Recovers after fire [1375] .

*Themeda triandra* is favoured by burning. It readily survives fires because the corkscrew-like awns, by alternate moistening and drying, drive the seeds about 2.5 cm into the soil. Some African studies show fires affect the soil only to a depth of 0.5 cm. Burning followed by rain greatly increases germination of *T. triandra* in vacant areas. It is not found where protection from fire occurs [1375] .

## CULTIVATION

*South Africa:*

It is not regarded as an important grass either from the aspect of leys or of cultivated pastures [6088] .

## SEED WEIGHT

About 280,000 seeds per kg [1653] .

## PROPAGATION FROM SEED

*Seeding rate:*

In South Africa in well-spaced rows at least 50 lb of seed is needed (seed with high chaff content) [6088] .

Sowing time and rate is summer at 20-30 Kg/ha [1375] .

There is some after-ripening dormancy for approximately 12 months before a full germination potential is realized. Dormancy results from a combination of embryo dormancy and mechanically resistant glumes. Successful germination of spikelets entails the splitting of the tough upper glumes by radicles. Glume removal, plus treatment with gibberellic acid increases germination [1375] .

## 'CROP' MANAGEMENT

*Grazing management:*

At Rumuruti in Kenya, it has been shown that red oat grass should be rotationally grazed in 5 blocks, with grazing during the most critical period of growth confined to only one year in every 5. It can thus be maintained well and kept highly productive at a stocking rate of one head of cattle to about 5 hectares. The best time to graze *T. triandra* grassland is when 70% of the grass is green that is for a period of 4 weeks during the short rains (December to March) and 6 weeks during the long rains (May-August), both beginning about the 6th week of the grass's growth. Grazing intensity is the main factor in determining the composition of *T. triandra* grassland. In Southern Africa, it has been shown that an early summer (rather than late summer) rest period gave maximum production of dry matter, crude protein, roots growth reserves and flowering culms. Continuous grazing during the winter severely denuded *T. triandra* [1375] .

Ndawula-Senyimba, 1972 showed that *T. triandra* persists best when cut at the end of the growing season. Frequent cutting shortens the life of the stand under semi-arid conditions. Under sub-humid conditions, frequent cutting gives rise to lawn [1375] .

## HARVESTING

*Seeds:*

Awns and points can be removed by hammermill but experience is required in treating the seed [6088] .

Seed is usually well formed, but harvesting is difficult as each plant produces a relatively small number of seeds which shed easily when ripe. The spikelets are awned and each contains a single caryopsis. When threshed, the caryopses are mixed with a good deal of chaff and are not easy to separate [1375] .

## PRODUCTION

### *In Uganda:*

Harrington, 1973 recorded a live-weight gain of 0.3 Kg per head per day for continuous grazing at 0.6 ha per head and 0.4 Kg per head per day for continuous grazing at 2.4 ha per head [1375] .

### *Kenya:*

Karue, 1975 estimated from dry matter and crude protein contents that the grass could carry a stocking rate of one 350 Kg live-weight animal to 5 ha during the short rains on the Athi River Ranch in Kenya, and during the long rains, one 250 Kg live weight animal plus one 100 Kg live weight calf could be kept on 1 hectare. A year-long carrying capacity of one 250 Kg live weight animal to 5 ha is usually recommended. If seed were available in quantity, Bogdan and Pratt, 1967 recommended its use in mixtures to reseed range at altitudes of about 1800 m a.s.l. [1375] .

Weight gains of Boran steers were not significantly different at 1.76, 2.8 and 5.2 ha per head and averaged 0.29 Kg per day, over 1 year. This varied seasonally from 0.68 Kg per day to nil, with short periods of weight loss. Live-weight gain was less under a 3-paddock/one-herd deferred rotation than it was with continuous grazing at 1.76 and 2.8 ha per head [1375] .

## TRADE

### *Ethiopia:*

Bundles of grass for thatching are sold at the local markets [2514] .

## FIELD TRIALS

Used in sheep grazing/vegetation experiment in YAR, area in montane plains of South of Dhamar. Grew abundantly with reseeded and remained abundant when controlled grazing was allowed [2138] .

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