

Tropical Forages

Dichanthium caricosum

Scientific name

Dichanthium caricosum (L.) A. Camus



Stoloniferous perennial (CPI 84719)



Inflorescence a digitate panicle comprising mostly 2-4 racemes; no pubescence on peduncle (distinguishing feature)

Synonyms

Basionym: *Andropogon caricosus* L.

Family/tribe

Family: *Poaceae* (alt. *Gramineae*) subfamily:

Panicoideae tribe: *Andropogoneae* subtribe:

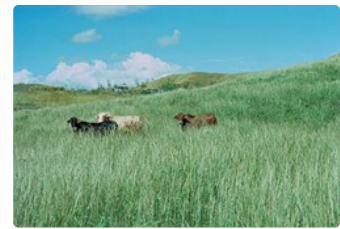
Anthristeriinae.

Morphological description

Stoloniferous perennial, stolons spreading to 1.5–2 m; tillers erect to 30–80 cm or decumbent, tufted at stolon nodes. Stems often blue-tinged. Leaf blades lanceolate, 4–20 (–30) cm long, 2–7 (–15) mm wide, glabrous or with a few hairs at base, margins smooth or scabrid, apex acuminate; ligule membranous, less than 1 mm, margin ciliate. Culms geniculately ascending to 1 m, peduncle glabrous, nodes glabrous to finely pubescent. Inflorescence digitate panicle comprising (1–) 2–4, 2.5–5, 2–6 (–7.5) cm long; rachis many-jointed, fragile at the nodes, subterete, ciliate on margins, internodes and secondary peduncles filiform. Spikelets paired, close-packed and overlapping along the rachis; fertile spikelet sessile bearing 10–25 mm, weakly geniculate awn; sterile spikelet pedicellate. Caryopsis obovate-oblong.



Seed units



Nadi bluegrass (*D. caricosum*) pasture, Fiji

Similar species

D. caricosum: peduncle nodes glabrous or shortly pubescent; peduncle internodes glabrous.

D. aristatum: peduncle nodes glabrous or shortly pubescent; short, dense pubescence on peduncle immediately below lowest raceme.

D. annulatum: peduncle nodes with annulus of long hairs; peduncle internodes glabrous.

Common names

Asia: □□□ dan sui cao (China); indaing-myet-kha, padaw-ni, padaw-nyo (Myanmar); หญ้าหนวดเจ้าชู้ ya nuat chao chu, หญ้าหนวน ya waen (Thailand); song hoa thảo kiết, cỏ rói, cỏ hai gai (Vietnam)

English: Nadi (pronounced Nandi) blue grass, nawai grass (Fiji); Antigua hay grass (West Indies); roadside bluestem (USA); alabang grass (Philippines)

French: balais savane

Indian subcontinent: zinzvo, marvo, zinu-kaneru (Gujarat); kanda bathhada hullu (Kannada); bari kail, bilaria kandi, detara, detta, kartah, khel, kheral, killa machhar, marvel, motha marwel, palmanega gadi, parihullu, urukun hullu (India); geta mana (Sri Lanka)

Latin America: camagüeyana, jiribilla (Cuba); dicantio rastrero, escoba de la sabana, pasto Antigua, pasto azul Nandi (Spanish)

Distribution

Native:

Asia: China (Guizhou, Yunnan); India; Indonesia; Malaysia; Myanmar; Sri Lanka; Thailand

Melanesia: Papua New Guinea

Naturalized:

Africa: Kenya; Nigeria; Tanzania

Australasia: Australia (Queensland)

Indian Ocean: Mauritius

Melanesia/Polynesia: Fiji and other Pacific islands

Southern America: Argentina; Paraguay

Caribbean: West Indies (Antigua)

Uses/applications

Forage

A semi-improved perennial grazing pasture with excellent ground cover. It is suitable for cut-and-carry and hay making.

Environment

Used as a ground cover for erosion control. It has been very effective in competing with the serious pasture weed, Navua Sedge (*Cyperus aromaticus* (Ridl.) Mattf. & Kük.) in low-lying (wet) areas in Fiji.

Ecology

Soil requirements

May be better adapted to lighter soils than are *D. annulatum* and *D. aristatum*, often being found on sands and clay loams, as well as on heavy dark clays, providing soils are of moderate fertility and in the slightly acid to alkaline pH range with no aluminium challenge. *D. caricosum* has little salt tolerance.

Moisture

D. caricosum is very drought tolerant, growing in areas with average annual rainfall down to 700 mm with dry season up to 6 months, although makes little growth in dry weather. While collections have been made in areas with rainfall up to only 1,300 mm, it has proven adapted up to 2,500 mm. It can tolerate short-term flooding and poor drainage, including swampy places.

Temperature

While *D. caricosum* is primarily a species originating in the lowland tropics, it occurs at altitudes to about 1,000 m, and has become naturalized in the warm subtropics of Argentina, Paraguay and Australia.

Light

D. caricosum is largely found in areas receiving full sunlight in grassland and along roadsides, but extends into moderately shaded areas, such as open woodland and in savanna.

Reproductive development

Floral initiation response is not clear, with southern hemisphere flowering in April, May in Australia and May, June in Fiji. In the northern hemisphere, flowering and fruiting is said to occur in February, May in India, and October to March in China. However, ripe seed has been collected in November, December in India. While this suggests it flowers in response to short daylength similar to tetraploid *Chloris gayana*, it may also reflect ecotypic differences, possibly related to ploidy levels.

Defoliation

Like other species in the *D. annulatum* complex, *D. caricosum* is extremely tolerant of heavy grazing.

Fire

Tolerant of fire, but usually escapes severe fire by virtue of being palatable and well grazed, thus providing a low fuel load.

Agronomy

Guidelines for establishment and management of sown forages.

Establishment

Usually established by seed in a well-prepared seedbed. It can also be established from cuttings or divided rootstocks.

Fertilizer

D. caricosum is not particularly fertility-demanding, but responds to fertilizer in very infertile soils. Amount and type of fertilizer needed can be ascertained from soil analysis.

Compatibility (with other species)

It is a very competitive species. It can also tolerate the heavy grazing pressures under which many other tropical species, particularly the twining legumes such as *Macroptilium atropurpureum*, succumb.

Companion species

Grasses: *Bothriochloa insculpta*, *Dichanthium annulatum*, *D. aristatum*, *Panicum coloratum*, *Setaria incrassata*.

Legumes: *Grona heterophylla* has persisted in mixtures in better-drained, moist situations, but few legumes are adapted to the seasonally poorly drained situations where *D. caricosum* thrives.

Pests and diseases

Smut diseases caused by *Sporisorium dichanthicola* and possibly also *Sporisorium andropogonis-annulati* have been recorded in India. It is also an alternative host for sheath blight of rice caused by *Rhizoctonia solani*. However, disease is rarely a problem.

Ability to spread

Spreads by seed, and slowly by stolons.

Weed potential

It is a vigorous grass with a tendency to dominate and become a weed in some areas. Considered a weed of sugarcane and other crops.

Feeding value

Nutritive value

CP levels of 6–7%, CF 37–40%, and NFE 43–59%, with respective digestibilities of 43–59%, 56–78% and 60–67%.

Palatability/acceptability

Palatable and readily eaten by cattle, sheep, goats and horses.

Toxicity

None recorded.

Feedipedia link

April 2020: Page under construction

Production potential

Dry matter

Forage yields are only moderate without significant inputs. Fresh yields of about 10 t/yr have been obtained with no input, but 15 t DM/ha have been measured with dry season irrigation.

Animal production

Daily liveweight gains of 473 g/animal (= 254 kg/ha) obtained over a period of 237 days in the Chaco of Argentina on *D. caricosum* alone. Marked responses to the presence of a legume in *D. caricosum* systems have been measured. LWGs of 110 kg/ha/yr were obtained on *D. caricosum* alone, compared with 170 and 270 kg/ha/yr when 10% and 20% of the area was planted to *Leucaena leucocephala*. LWGs of 100 kg/ha/yr from unimproved *D. caricosum* grassland at a stocking rate of 2.5 steers/ha; 150 kg/ha/yr with legumes (sown *Macroptilium atropurpureum* and naturalized *Grona heterophylla*) and superphosphate. Animals may lose weight during the dry season because of poor grass growth.

Genetics/breeding

$2n = 20, 40, 50$ or 60 . Closely related to *D. aristatum*, with which it can hybridize at the tetraploid level; can also hybridize at the diploid level producing both diploid and tetraploid progeny.

Seed production

Fluffy seed can be hand-harvested with sickles or mechanically harvested with a brush harvester.

Herbicide effects

No specific information available, although in view of the closeness of its relationship to *D. aristatum*, information on that species may be relevant.

Strengths

- Well adapted to heavier soils.
- Very tolerant of heavy grazing.
- Tolerant of poor drainage.
- Easy to establish.
- Good control of herbaceous weeds.

Limitations

- Poor production during the dry season.
- Fluffy seed is difficult to handle.
- Susceptible to nematodes on light soils.

Selected references

Bisset, W.J. and Sillar, D.I. (1984) Angleton Grass (*Dichanthium aristatum*) in Queensland. *Tropical Grasslands* 18:161–174. bit.ly/2wADSXw

Partridge I.J. (1979) Improvement of Nadi blue grass (*Dichanthium caricosum*) pastures on hill land in Fiji with superphosphate and Siratro: Effects of stocking rate on beef production and botanical composition. *Tropical Grasslands* 13:157–164. bit.ly/2Uto6Fy

Partridge, I.J. and Ranacou, E. (1974) Effects of supplemental *Leucaena leucocephala* browse on steers grazing *Dichanthium caricosum* in Fiji. *Tropical Grasslands* 8:107–112. bit.ly/2JmCJFG

Vivier, M. and Doreau, M. (1979) The *Dichanthium caricosum* natural grassland in Guadeloupe. II. Botanical and chemical composition of the main species and feeding preferences of cattle. *Agronomie Tropicale* 34:362–371.

Cultivars

'**Dicantio rastrero**' Origin unknown. Commercial in Paraguay and northern Argentina and used on heavier clay soils in the Chaco.

Promising accessions

Marvel 93 Selected in India. Spreading growth habit.

Marvel 40 Selected in India. Erect type.

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