

Tropical Forages

Axonopus fissifolius

Scientific name

Axonopus fissifolius (Raddi) Kuhlmann



Synonyms

Basionym: *Paspalum fissifolium* Raddi; *Axonopus affinis* Chase

Family/tribe

Family: *Poaceae* (alt. *Gramineae*) subfamily: *Panicoideae* tribe: *Paspaleae* subtribe: *Paspalinae*.

Morphological description

Shallow-rooted (>90% of roots in the 0–5 cm layer) perennial, initially forming shortly rhizomatous tufts that quickly develop vigorous stolons with relatively short, glabrous oval-section ($\pm 2 \times 1.5$ mm) internodes; forms a dense mat with foliage 15–30 cm tall, and flowering culms mostly 30–60 cm; can be mowed to a turf. Leaf sheath compressed, keeled, largely glabrous; ligule a fringed membrane 0.5 mm long; blades 4–6 (–8) mm wide, and 5–15 (–28) cm long, flat or folded, glabrous except for sparse spreading hairs on the lower margins of young leaves, bluntly acute at the tip. Inflorescence a panicle comprising 2 or 3 (rarely 4–7) slender, spikelike racemes, paired or sub-digitately arranged on a long slender peduncle; racemes (2–) 3–7 (–10) cm long; spikelets 1.7–2.8 mm long, 1 mm broad, inserted alternately at either side of a flattened rachis; caryopsis tan to pale brown, compressed-ellipsoid to lenticular, 1.4–1.8 mm long. 2.5–3 million seeds per kg.



Prostrate, mat-forming habit



Inflorescence a panicle mostly comprising 2 or 3 spikelike racemes,



Sometimes 4-7 racemes



Seeds



Seeds

Similar species

Differs from *A. compressus* in having more slender culms and stolons, narrower leaves and shorter, more obtuse spikelets; culm nodes are glabrous (bearded in *A. compressus*).

Common names

Asia: 草甸草 (China); rumput permaidani (Malaysia)

English: caratao grass, carpet grass, common carpet grass, Louisiana grass (USA); mat grass, narrow-leaved (narrowleaf) carpet grass, Durrington grass (Australia)

Europe: Teppichrasengras (German); assonopo (Italian)

Latin America: grama-missioneira (Brazil); gramalote (Spanish); zacate amargo (Mexico)

Distribution

Native:

Northern America: Mexico (s.), USA (Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, Oklahoma (s.e.), South Carolina, Texas)

Caribbean: Grenada

Central America: Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panama

South America: Argentina, Bolivia, Brazil, Colombia, Guyana, Paraguay, Uruguay, Venezuela

Cultivated/naturalized:

Widely naturalized and used as a turf and forage in the humid tropics and subtropics in Africa, Asia, Australia and the Pacific Islands

Uses/applications

Forage

Used as a permanent pasture in moist, low fertility soils. It is generally too low growing to be useful in cut-and-carry systems or for fodder conservation.

Environment

Dense ground cover for erosion control and turf in moist, low fertility soils.

Ecology

Occurs on low, flat areas in humid and sub-humid warm temperate to tropical woodland and savannah.

Soil requirements

Best growth on light-textured, moist soils with pH 5–6 (4.3–7.0), flourishing in soils too infertile for *Paspalum dilatatum*, but also adapted to clays, mucks and peats.

Moisture

Mostly found in areas with an annual rainfall of 750 mm up to 4,000 mm. Drought tolerance is low but higher than in *A. compressus*. While preferring moist soils, it is not well adapted to prolonged flooding or swampy conditions.

Temperature

Latitudinal range of distribution: 40° N to 40° S. Mean annual temperature range reported: 8–30 °C. Flowering inhibited at temperatures <13 °C. Some frost tolerance (higher than *A. compressus*).

Light

Best growth on long days (15 h). Moderately shade-tolerant, but less so than *A. compressus*.

Reproductive development

A. fissifolius flowers over a wide range of daylengths, seed production being greatest at 12–14 h daylength.

Defoliation

Thrives under heavy grazing, down to stubble height of 5–5.7 cm. Frequent grazing also helps to maintain it in a vegetative state.

Fire

Although mostly growing in areas where fire is not a problem, it recovers quickly from fire.

Agronomy

Guidelines for establishment and management of sown forages.

Establishment

When seed is available, it is broadcast onto, or shallowly sown into, a well-prepared seedbed or ashes after a scrub burn. Subsequent rolling helps maintain soil moisture and ensures close contact between soil and seed. Choice of sowing rate depends on quality of seedbed and the rate of ground cover required; 5–15 kg/ha are recommended.

Fertilizer

Adapted to low-fertility soils but will respond to fertilizers, particularly nitrogen, however, with low use efficiency.

Compatibility (with other species)

Dominates annual weeds in forages. As soil nitrogen levels decline, because of its low-fertility requirements *A. fissifolius* can successfully invade pastures of more fertility demanding species such as [Paspalum dilatatum](#) and [Cynodon dactylon](#).

Companion species

Grasses: [Axonopus compressus](#), *Chrysopogon aciculatus*.

Legumes: [Arachis pintoii](#), *Grona heterophylla*, *G. triflora*, [Lotus uliginosus](#), *Trifolium repens*, [T. semipilosum](#), [Vigna parkeri](#).

Pests and diseases

Although a range of fungi and nematodes have been found on *A. fissifolius*, biotic constraints are not considered to be a production-limiting factor.

Ability to spread

Under favourable conditions and being a prolific seeder, spreads by seeds (more so than *A. compressus*) and by stolons and rhizomes (less so than [A. compressus](#)).

Weed potential

It can become a troublesome weed in the wet tropics.

Feeding value

Nutritive value

Much lower than e.g. *Paspalum dilatatum*. Reported CP of fresh grass: 7.0%, dropping after seeding to 4–6%; data from south Brazil: 10.3% CP after 6 weeks, 6.3% after 20 weeks. In vivo organic matter digestibility of fresh grass: 66.0%.

Palatability/acceptability

Fairly palatable in vegetative state. Usually well-grazed in association with companion legume.

Toxicity

No record of toxicity.

Feedipedia link

<https://www.feedipedia.org/node/499>

Production potential

Dry matter

DM yields are low in comparison with other pasture grasses; mostly in the range of 1–5 t/ha/yr, even in fertilised grass.

Animal production

Live-weight gains recorded on unfertilised *A. fissifolius* are very low (70–170 kg/ha).

Genetics/breeding

$2n = 20, 40, 60, 80$.

Seed production

Commercial seed is largely produced in the humid sub-tropics, mostly as 'opportunity' crops. While in most other grass seed crops, stands are 'cleared off' to produce a synchronous crop, and nitrogen fertilizer applied to promote tillering, this is generally not followed for seed crops of this species. Crops ripen unevenly and are mostly harvested non-destructively, providing about 50 kg/ha of seed per pass. Fresh seed should be dried at no more than 35 °C, to avoid damage to the seed.

Herbicide effects

Susceptible to DSMA, bentazon, bromoxynil, 2,2-DPA and metsulfuron methyl. Tolerant of diclofop methyl.

Strengths

- Grows on poor soil.
- Good ground cover.
- Tolerates heavy grazing.
- Does not compete strongly with companion legume.

Limitations

- Poor drought tolerance.
- Very low nutritive value.
- Low dry matter yield.
- Short growing season.

Internet links

https://plants.usda.gov/factsheet/pdf/fs_axfi.pdf

<https://www.cabi.org/isc/datasheet/112632>

http://www.efloras.org/florataxon.aspx?flora_id=2&taxon_id=242435815

Selected references

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Cultivars

None released.

Promising accessions

None reported.

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