

Tropical Forages

Centrosema rotundifolium

Scientific name

Centrosema rotundifolium Mart. ex Benth.



Synonyms

GRIN: none recorded

ILDIS: *Bradburya rotundifolia* (Benth.) Kuntze;
Centrosema heptaphyllum Moric.

Family/tribe

Family: *Fabaceae* (alt. *Leguminosae*) subfamily:
Faboideae tribe: *Phaseoleae* subtribe: *Clitoriinae*.

Morphological description

Perennial, creeping herb with strong, deep, storage tap roots developing at the nodes of prostrate stems; leaves trifoliolate (seldom pentafoliolate), leaflets broad-elliptical to obovate, 4–35 mm wide, 6–45 mm long. Aerial inflorescences with 2–6 violet flowers, aerial pods falcate, 25–50 mm long and 4–7 mm wide with 3–8 seeds, c. 5 mm long, 3 mm wide.

The species is amphicarpic: in addition to aerial peduncles and inflorescences, belowground peduncles penetrate from nodes of creeping stems into the soil, branch out and produce very small flowers from which 1- (sometimes 2-) seeded pods develop. In comparison with aerial seeds, below-ground seeds are c. 40% larger and heavier. Approx. 15,000 aerial and about 10,000 belowground seeds per kg.

Common names

None reported

Distribution

Native:

South America: Brazil (Alagoas, Bahia, Ceará, Maranhão, Mato Grosso, Minas Gerais, Piauí, Rio de Janeiro, Rio Grande do Norte, São Paulo); Paraguay

Uses/applications

Forage

Long-term pasture.

Environment

Ground cover (erosion control, dune stabilization).

Ecology

Soil requirements

Very sandy, well drained; medium to low fertility, acid to very acid.

Moisture

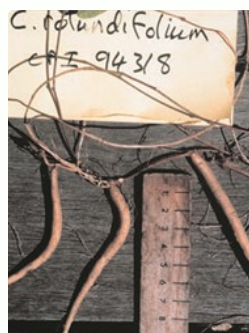
800–1,200 mm/yr, 5–8 dry months. Defoliates in dry



Pentafoliolate leaves (rare)



Creeping perennial legume adapted to sandy soil, E Venezuela



Deep, storage tap roots developing at the nodes of prostrate stems (CPI 94318)



Aerial flowers and trifoliolate leaves



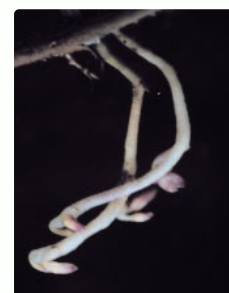
Heavy aerial pod setting



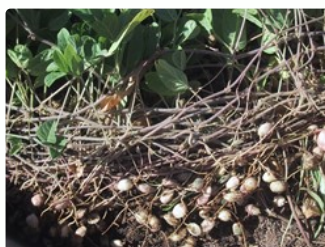
Aerial pods (dehisced)



Subterranean (cleistogamous) flowers



Subterranean (cleistogamous) flowers



Subterranean pods



Immature subterranean pods

season but regrows in rainy season.

Temperature

Warm season growth only, frost tolerance unknown.

Light

Shade tolerance unknown; probably low.

Reproductive development

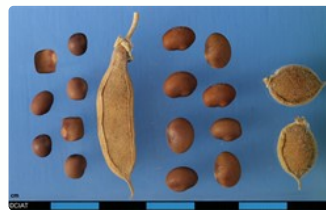
Flowering and pod setting triggered by drought stress. Species is amphicarpic. Below-ground reproduction cleistogamous, mostly one-seeded pods; aerial reproduction chasmogamous with 3–8-seeded pods.

Defoliation

Tolerates heavy grazing.

Fire

Regrows after fire from underground xylopodium meristems and soil seed bank.



Aerial pod and seed (left); mature underground pod and seed (right)



Mixture with *Urochloa humidicola* cv. Lanero



Subterranean pods and dense stem and root system support stable groundcover



Creeping habit and dense foliage - suitable for groundcover and soil stabilization.

Agronomy

Guidelines for establishment and management of sown forages.

Establishment

More hardseededness in aerial seed than in below-ground seed; scarification recommended.

Fertilizer

Phosphorus for establishment recommended.

Compatibility (with other species)

Once established, very good.

Companion species

Grasses: *Urochloa humidicola* and other creeping, stoloniferous grasses.

Pests and diseases

Rhizoctonia foliar blight (occasionally).

Ability to spread

Spread by both stolons and seed.

Weed potential

No information available; probably nil.

Feeding value

Nutritive value

Medium to high. In 8-week old herbage (east Venezuela): CP 22–24%, P 0.39–0.45%, Ca 0.52–0.64%.

Palatability/acceptability

Consumed by cattle and horses.

Toxicity

None recorded.

Production potential

Dry matter

Low, e.g. in east Venezuela: dry season, 75–184 kg/ha in 5 months; rainy season: 2,140–2,420 kg/ha in 4 months.

Animal production

No information available.

Genetics/breeding

$2n = 22$. Above-ground reproduction appears to be partly allogamous.

Seed production

In comparison with aerial seed production, below-ground seed production is more than 3 times higher; harvest by sieving of topsoil (first 15 cm); yields of up to 1.5 t/ha are possible.

Herbicide effects

No information available.

Strengths

- Excellent adaptation to sand soils.
- Persistence under heavy grazing.
- Amphicarpic enables a continuous replenishment of soil seed bank by below-ground seed production.

Limitations

- Low dry matter production.
- Harvest of below-ground seed constrains commercial seed production.

Selected references

Rodríguez, I., Schultze-Kraft, R. and González, S. (2001) Evaluation of *Centrosema rotundifolium* for sand-soil savannas in Eastern Venezuela. Proceedings of the XIX International Grassland Congress, São Pedro, SP, Brazil, 11–21 February 2001. p. 565–566.

Schultze-Kraft, R. and Clements, R.J. (eds). (1990) *Centrosema*: Biology, agronomy, and utilization. CIAT Publication No. 92. Centro Internacional de Agricultura Tropical (CIAT), Cali, Colombia. hdl.handle.net/10568/54383.

Schultze-Kraft, R., Keller-Grein, G., Cárdenas, E. and Díaz Bolívar, F. (1994) Potencial de *Centrosema rotundifolium* como leguminosa forrajera. *Pasturas Tropicales* 16(3):2–8. bit.ly/2WSYnZU

Cultivars

None released to date.

Promising accessions

CIAT 5260, CIAT 5721, CIAT 25148 Selected in Venezuela. Out of a 6-accession collection, the most productive and persistent genotypes.

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