

Tropical Forages

Centrosema acutifolium

Scientific name



Centrosema acutifolium Benth.

There are two distinct forms:

var. *orinocense* and var. *matogrossense* (both as '*nomen nudum*', i.e. not validly described). The botanical variety, var. *acutifolium*, is not considered here since it is not known in the form of germplasm conserved *ex situ*.

Synonyms

None

Family/tribe

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

Morphological description

var. *orinocense*: Perennial, trailing-twining herb with slender pubescent stems, rooting at the nodes. Leaves trifoliate, leaflets distinctly purplish when young; stipules deltoid-acuminate, pubescent; petioles and petiolules pubescent, reddish at their base; leaflets ovate to ovate-lanceolate, apically acuminate, puberulous to subglabrous on both surfaces; central leaflet symmetrical, 5–8.5 cm long, 3–3.5 cm wide; lateral leaflets somewhat smaller, asymmetrical. Inflorescence an axillary raceme with up to 24 flowers inserted by pairs along the rachis; peduncle conspicuously long, up to 19 cm, pubescent. Flower papilionate, subtended by a pair of ovate-acuminate bracteoles shorter than the calyx; calyx campanulate, 5-toothed, pilose, with short carinal and lateral teeth; petals light violet, standard orbicular-emarginate, 28–35 mm × 32–40 mm, pubescent outside. Pod linear, straight to slightly bent, up to 20 cm long, beaked, scabrid, with 10–15 seeds, dehiscent. Seeds cylindrical, 5–7 mm long, ca. 3 mm wide, greenish yellow with dark, fine mottles. 14,000–20,000 seeds/kg.

var. *matogrossense*: Leaflets more elongated; peduncle not longer than 8 cm; bracteoles slightly longer than calyx; pod shorter, glabrous; seeds yellow, never mottled.

Common names

None reported

Distribution

Native:

South America: Brazil (Amapá, Goiás, Mato Grosso do Sul, Minas Gerais, Paraná, Roraima, São Paulo, Tocantins); Colombia (e.); Venezuela (Amazonas, Bolívar)

var. *orinocense*: restricted to the Orinoco region in Colombia and Venezuela, between 4° and 6° N

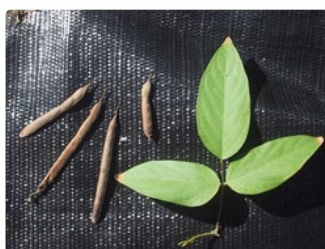
var. *matogrossense*: occurs in an extended area in central-west Brazil



Flower and immature pod of var. *matogrossense*



var. *matogrossense* flower (ILRI 12183)



var. *matogrossense* leaf and mature pods



var. *matogrossense* seeds



Centrosema acutifolium Benth. – flowering and fruiting branch.
Line illustration var. *orinocense*



Variable disease resistance in var. *orinocense*



With *Andropogon gayanus*, Carimagua, Colombia



With *Andropogon gayanus*, Quilichao, Colombia

Uses/applications

Forage

Grazed pastures in mixture with a grass, as a legume-only protein bank and cut-and-carry.

Ecology

Soil requirements

Adapted to very acid, low to medium fertility soils, var. *orinocense* requiring light textured soils, and var. *matogrossense* preferring clayey, less well-drained soils. Tolerant of high levels of available Al and Mn.

Moisture

Sub-humid tropics with (800–) 1,000–2,500 (–3,000) mm rainfall/year with 3–5 months dry season; drought tolerant.

Temperature

Warm season growth only. Average annual temperature in its native distribution is about 26 °C.

Light

No significant shade tolerance.

Reproductive development

Late flowering, probably induced by short days.

Defoliation

Susceptible to heavy grazing.

Fire

No information available; probably low tolerance.

Agronomy

Guidelines for establishment and management of sown forages.

Establishment

Mechanical or acid scarification necessary to reduce the high level of hardseededness. Seed is normally sown at 3–4 kg/ha; inoculation with an effective strain of *Bradyrhizobium* such as CIAT 3101 (= CB 3125 in Australia) is recommended.

Fertilizer

Responds well to P and K, with per hectare rates of 22 kg P, 30 kg K, 20 kg Mg and 20 kg S at sowing, and a maintenance dressing of half this every two years, being effective on a very acid infertile soil.

Compatibility (with other species)

Combines well with bunch grasses and other species that produce a more open stand, but there are positive experiences also with *Urochloa humidicola* cv. Llanero.

Companion species

Grasses: [Andropogon gayanus](#), [Urochloa brizantha](#), [U. humidicola](#), [Megathyrsus maximus](#).

Legumes: [Stylosanthes capitata](#), [S. guianensis](#).

Pests and diseases

Mainly var. *matogrossense*: Susceptible to *Pseudomonas* bacterial wilt and little leaf disease (phytoplasma); less susceptible to foliar blight (caused by *Rhizoctonia solani*) than [C. brasilianum](#). Cultivar Vichada of var. *orinocense* has shown to be susceptible to an unidentified, probably fungal, disease but there is variability in the germplasm collection.

Ability to spread

No significant spread.

Weed potential

Probably nil.

Feeding value

Nutritive value

3-month old leaf: CP 21–29%; IVDMD 52–69%; P 0.14–0.25%; Ca 0.38–0.82%.

Palatability/acceptability

High.

Toxicity

None reported.

Production potential

Dry matter

Rainy season: 1–3 (–5) t DM/ha/12 weeks.

Dry season: <1 t DM/ha/12 weeks.

Annual: >5 t DM/ha.

Animal production

Var. *orinocense* in mixture with [Andropogon gayanus](#) has produced daily LWG/steer of 530–670 g in rainy season and sustained LW in dry season at a stocking rate of 1.5 steers/ha.

Var. *matogrossense* in association with [A. gayanus](#) or [U. humidicola](#): increased milk yields of grazing Holstein cows by 15–20% over grass alone.

Genetics/breeding

2n = 22; autogamous; no breeding projects.

Seed production

Moderate to low, e.g. in Colombia 150–200 kg/ha handpicked, but potential yields up to 700 kg/ha. With its late flowering habit, early onset of the dry season can seriously interfere with seed production.

Herbicide effects

No information available.

Strengths

- Adaptation to very acid, high Al and Mn, low-fertility soils.
- High forage quality.
- Potentially high seed production.

Limitations

- Disease susceptibility of the only cultivar released so far.
- Low seed production in unsuitable environments.

Internet links

[https://uses.plantnet-project.org/en/Centrosema_acutifolium_\(PROSEA\)](https://uses.plantnet-project.org/en/Centrosema_acutifolium_(PROSEA))

Selected references

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Schultze-Kraft, R., Benavides, G. and Arias, A. (1987) Recolección de germoplasma y evaluación preliminar de *Centrosema acutifolium*. *Pasturas Tropicales* 9(1):12–20. [bit.ly/3bnwAF4](https://doi.org/10.15672/PT090112)

Cultivars

'**Vichada**' (CIAT 5277, BRA 004162, BRA 004219, ILCA 12182, CNPGC 0692, CNPGC 0866, CPAC 1223, CPATU 00690, IRFL 4850, IRFL 4981, CPI 94327, CPI 121846) Released in Colombia (1987). Var. *orinocense*. From Vichada Department, Colombia (4°53' N, 150 m asl, 2,130 mm/yr). High yielding, widely adapted; disease susceptible.

Promising accessions

CIAT 5568 (BRA 004821, CNPGC 0876, CPAC 1324, CPI 092884, CPI 094331, ILCA 12184) Selected in Colombia. Origin Brazil (-8.85 S, 48.3333 W, 290 m asl, rainfall 1,840 mm) var. *matogrossense*.

CIAT 15086 (BRA 012165) Selected in Colombia. Origin Colombia (4.9 N, 67.8667 W, 130 m asl, rainfall 2,766 mm) var. *orinocense*; disease resistant.

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