Zornia latifolia

Scientific name

Zornia latifolia Sm.

Synonyms

Zornia diphylla var. *gracilis* (DC.) Benth.; *Zornia gracilis* DC.; *Zornia latifolia* subsp. *latifolia* Sm.

Family/tribe

Family: *Fabaceae* (alt. *Leguminosae*) subfamily: *Faboideae* tribe: *Dalbergieae.*

Morphological description

A perennial, tap-rooted herb. Stems 20–50 cm long, glabrous or pubescent, with a prostrate to ascending growth habit and intensive branching. Stipules lanceolate, striate, to 1 cm long. Leaves bifoliolate, leaflets lanceolate-oblong to broadly-ovate, acute at the apex, glabrous or pubescent, 1–4 cm long; leaflets at the base of the stem quite broad and become progressively narrower to lanceolate or linear-lanceolate along the branches, sometimes reduced to a simple leaf. Inflorescence a terminal or axillary peduncled spike; flowers alternate, 1–35 per inflorescence, inserted along elongated axis; stipuliform bracts up to 1.5 cm long, either side of and nearly enclosing the flower, conspicuously dotted with glands. Calyx hyaline, 4 mm long, ciliate. Petals yellow, approximately 1 cm long, the standard with red striations at the centre. Pods 2–8 articulate, shortly beaked, more or less spiny, pubescent, the inferior margin deeply crenate, the superior margin nearly straight, joints rounded, 2–3 mm long and wide, articles dehiscent, each containing a single seed. 550,000–900,000 seeds per kg.

Prostrate to ascending, tap-rooted, perennial herb.

Prostrate stems, bifoliolate leaves (CIAT 9199)

Intensive branching forming a mat

Flowers subtended by lanceolate bracts dotted with glands

Bristled, pubescent, 2-8-jointed pods (ILRI 11406)

Maturing pod (loment), with mature terminal articles ready to dehisce

Seeds

Common names

Latin America: maconha brava, zórnia (Brazil); tencilla, barba de burro, caminadora (Spanish); koemataballi (Suriname)

West Africa: emu (Yoruba)

Note: Many *Zornia* spp. have bifoliolate leaves and have been classified as or confused with *Z. diphylla*. While many of the common names shown under *Z. glabra* will have been applied to *Z. latifolia* because of its resemblance to *Z. diphylla*, the above are probably more specifically applied to it by virtue of its claimed hallucinogenic properties.

Distribution

Native:

South America: Argentina (Cordoba, Chaco, Corrientes, Entre Rios, Santiago del Estero); Bolivia; Brazil; Colombia; Ecuador; French Guiana; Guyana; Paraguay; Peru; Suriname; Uruguay; Venezuela.

Naturalized:

Africa: Western tropical Africa.

Uses/applications

Forage

No evidence of use in sown perennial pastures but potential for improved pastures as well as in intercropping systems is suggested.

Other

Used as an hallucinogenic substitute for cannabis by the Brazilian Indians - hence the name, maconha brava.

Ecology

Soil requirements

Well adapted to the free-draining, acid and low-fertility, Al-toxic oxisols of the South American savannas.

Moisture

Grows well in areas with 1,000–2,000 mm rainfall/year; moderately drought tolerant but sheds leaf during dry season; survives dry season of 4–6 months.

Temperature

Warm-season plant, no growth at <13 °C. In cooler climates, it usually dies back to the rootstock during winter, producing new stems and leaves in spring and summer, and flowers and fruit in autumn.

Light

Little or no shade tolerance.

Reproductive development

Flowering can occur at the Equator but is mainly induced by short days; occurs sequentially from the basal to the terminal flowers of the inflorescence; flowers open for 5–10 hours at anthesis. Fertilization is mainly autogamous, with a very low proportion of insect-dependent crossing. Free-seeding.

Defoliation

Tolerates defoliation.

Fire

Recovers from soil seed bank.

Agronomy

Guidelines for establishment and management of sown forages.

Establishment

Seed sown at 2–3 kg/ha; no rhizobium specificity; fresh seed requires scarification.

Fertilizer

Recommendation in the Llanos Orientales of Colombia: P, K, S at 20, 20, 10 kg/ha respectively for establishment; half the dosis for annual maintenance fertilization.

Compatibility (with other species)

Compatible with low-growing bunch grasses.

Companion species

Grasses: *Andropogon gayanus*, *Urochloa decumbens*.

Legumes: Not generally sown with other legumes.

Pests and diseases

Main limitation to the use of *Z. latifolia* is susceptibility to diseases, namely scab (*Sphaceloma zorniae*) and a virus-blackmould (*Meliola* sp.) complex, causing leafrolling distortion and stunted growth. Formerly promising accession CIAT 728 quite susceptible; accession CIAT 9199 tolerant. Also attacked in seed stands by the bud worm (*Stegasta bosqueella*), which, however, is easily controlled by insecticides.

Ability to spread

Good natural spread by self-sown seed.

Weed potential

Considered to be low.

Feeding value

Nutritive value

Mature, seeding plants: CP 9–17%, IVDMD 66%.

Palatability/acceptability

Palatable.

Toxicity

Oestrogenic activity has been recorded in scab-affected foliage.

Production potential

Dry matter

DM yields recorded in the humid tropics of South America: 2.4–2.8 t/ha in 12 weeks; in the subhumid Colombian Llanos Orientales, 0.6–4.9 t/ha when grown in association with *Urochloa decumbens* and *Andropogon gayanus*.

Animal production

LWG of steers grazing a mixture of *Z. latifolia* CIAT 728 with *Andropogon gayanus* in the Colombian Llanos Orientales was, in the third year, 135 g/day in the 3-month dry season and 420 g/day in the 9-month rainy season.

Genetics/breeding

2*n* = 20.

Seed production

Annual yields of up to 700 kg/ha seed have been obtained over a 3-year period near Brasília, Brazil (latitude 15.5° S). Optimum temperatures for seed setting range from 20 to 27 ºC.

Herbicide effects

No information available.

Strengths

- Adaptation to low-fertility, acid, Al-toxic soils.
- Drought tolerance.
- High seed production potential.

Limitations

- Depending on ecotype, susceptibility to diseases, mainly *Sphaceloma zorniae*.
- Moderate DM production.

Selected references

Jutzi, S.C. and Nösberger, J. (1984) Seed production and growth of the tropical pasture legume *Zornia latifolia* accession CIAT 728. Tropical Grasslands 18:138–148. bit.ly/3dKMCLc

Pott, A. (2016) *Zornia latifolia* (Zórnia). In: Vieira, R.F., Camillo, J. and Coradin, L. (eds) Espécies Nativas da Flora Brasileira de Valor Econômico Atual ou Potencial: Plantas para o Futuro – Região Centro-Oeste. Secretaria de Biodiversidade, Ministério do Meio Ambiente, Brasília, DF, Brazil. p. 585–589. https://bit.ly/2UMZUzo

Thomas, D. and Grof, B. (1986) Some pasture species for the tropical savannas of South America. III. *Andropogon gayanus*, *Brachiaria* species and *Panicum maximum*. Herbage Abstracts **56**:557–565.

Cultivars

None released.

Promising accessions

CIAT 9199 In Colombia. This accession was found to be tolerant of fungal disease, *Sphaceloma* scab.

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