Zornia latifolia

Scientific name
Zornia latifolia Sm.

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

Family/tribe

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.

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 Ríos, 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 dosage 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 (Sphaeceloma 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**


**Cultivars**

None released.

**Promising accessions**

**CIAT 9199** In Colombia. This accession was found to be tolerant of fungal disease, *Sphaceloma scab*. © Copyright 2020. All rights reserved.