

Tropical Forages

Chamaecrista nictitans

Scientific name



Chamaecrista nictitans (L.) Moench

Subordinate taxa:

Chamaecrista nictitans (L.) Moench subsp. *nictitans*
var. *aspera* (Muhl. ex Elliott) H.S. Irwin & Barneby

Chamaecrista nictitans (L.) Moench subsp. *nictitans*
var. *diffusa* (DC.) H.S. Irwin & Barneby

Chamaecrista nictitans (L.) Moench subsp. *disadena*
(Steud.) H. S. Irwin & Barneby var. *disadena* (Steud.) H.
S. Irwin & Barneby

Chamaecrista nictitans (L.) Moench subsp. *patellaria*
(DC. ex Collad.) H. S. Irwin & Barneby var. *glabrata*
(Vogel) H. S. Irwin & Barneby

Chamaecrista nictitans (L.) Moench subsp. *nictitans*
var. *jaliscensis* (Greenm.) H. S. Irwin & Barneby

Chamaecrista nictitans (L.) Moench subsp. *nictitans*
var. *leptadenia* (Greenm.) Gandhi & S. L. Hatch

Chamaecrista nictitans (L.) Moench subsp. *nictitans*
var. *nictitans*

Chamaecrista nictitans (L.) Moench subsp. *patellaria*
(DC. ex Collad.) H. S. Irwin & Barneby var.
paraguariensis (Chodat & Hassl.) H. S. Irwin & Barneby

Chamaecrista nictitans (L.) Moench subsp. *patellaria*
(DC. ex Collad.) H. S. Irwin & Barneby var. *patellaria*
(DC. ex Collad.) Kartesz & Gandhi

Chamaecrista nictitans (L.) Moench subsp. *disadena*
(Steud.) H. S. Irwin & Barneby var. *pilosa* (Benth.) H. S.
Irwin & Barneby

Chamaecrista nictitans (L.) Moench subsp. *patellaria*
(DC. ex Collad.) H. S. Irwin & Barneby var. *praetexta*
(Vogel) H. S. Irwin & Barneby

Synonyms

subsp. *brachypoda*: Basionym: *Cassia brachypoda*
Benth.

subsp. *disadena*: *Chamaecrista stenocarpa* (Vogel) Standl.

subsp. *nictitans* var. *aspera*: Basionym: *Cassia aspera* Muhl. ex Elliott; *Cassia simpsonii* Pollard; *Chamaecrista simpsonii* (Pollard) A. Heller

subsp. *nictitans* var. *diffusa*: Basionym: *Cassia diffusa* DC.

subsp. *disadena* var. *disadena*: Basionym: *Cassia disadena* Steud.

subsp. *disadena* var. *pilosa*: Basionym: *Cassia riparia* var. *pilosa* Benth.

subsp. *nictitans* var. *jaliscensis*: Basionym: *Cassia leptadenia* var. *jaliscensis* Greenm.

subsp. *nictitans* var. *leptadenia*: Basionym: *Cassia leptadenia* Greenm.; *Cassia leptadenia* var. *mensalis* Greenm.; *Chamaecrista leptadenia* (Greenm.) Cockerell; *Chamaecrista nictitans* var. *mensalis* (Greenm.) H.S. Irwin & Barneby



Leaves pinnate, pinnae mostly in 10-20 opposite pairs



Annual or short-lived perennial subshrub



Flowers to 14 mm wide, solitary or clustered in short axillary racemes or terminal panicles (ATF 2204)



Flower width variable, shown here as solitary or clustered in short axillary racemes



Green pods



Ripe pods



Seeds subquadrate, brown to black when mature



Showed promise as cut-and-carry forage in Fujian, China (ATF 2217)

subsp. *nictitans* var. *nictitans*: Basionym: *Cassia nictitans* L.; *Cassia nictitans* var. *mohrii* (Pollard) J.F. Macbr.

subsp. *patellaria* var. *glabrata*: Basionym: *Cassia patellaria* var. *glabrata* Vogel; *Cassia aeschinomene* DC. ex Collad.; *Cassia lechenaultiana* DC. (not to be confused with *Cassia leschenaultiana* DC., which is a synonym of *Chamaecrista leschenaultiana* (DC.) O. Deg.); *Chamaecrista aeschinomene* (DC. ex Collad.) Greene

subsp. *patellaria* var. *paraguariensis*: Basionym: *Cassia flavicoma* var. *paraguariensis* Chodat & Hassl.

subsp. *patellaria* var. *patellaria*: Basionym: *Cassia patellaria* DC. ex Collad.; *Cassia patellaria* var. *ramosa* Vogel; *Chamaecrista nictitans* var. *ramosa* (Vogel) H.S. Irwin & Barneby; *Chamaecrista patellaria* (DC. ex Collad.) Greene

subsp. *patellaria* var. *praetexta*: Basionym: *Cassia praetexta* Vogel; *Chamaecrista lucesia* Pittier

Family/tribe

Family: *Fabaceae* (alt. *Leguminosae*) subfamily: *Caesalpinioideae* tribe: *Cassieae* subtribe: *Cassiinae*.

Morphological description

Annual, occasionally short-lived perennial, with a more or less woody base (subshrub). Stems herbaceous, decumbent, ascendant to erect 10–50 (–150) cm in height; glabrous to densely appressed-puberulent with incurved trichomes. Leaves alternate, unipinnate, thigmonastic (sensitive to touch); petiole 4–9 mm long, pubescent; slender-stalked umbrella-shaped gland, about 0.4–0.8 mm in diameter on the petiole immediately below basal pinnae (size and shape of the gland is diagnostic between varieties); rachis 5–12 cm long; stipules green, triangulate to lanceolate or foliaceous, persistent, free. Pinnae in (6–) 10–20 (–30) opposite pairs; linear oblong, 4–15 × 2–3 mm, pinnate venation, margin entire, mucronate; basal pinnae longer than terminal pinnae. Flowers perfect, 8–10 (–14) mm wide, solitary or clustered in short axillary racemes or terminal panicles of 2–6 flowers; pedicels 1–4 mm long; sepals 5, lanceolate, 3–4 mm long, acuminate; petals 5, bright yellow (rarely pale yellow), the lowermost sometimes 6–8 mm long and about twice as large as the other four. Fruit linear oblong, 20–40 (–60) mm long, 3–6 mm broad, glabrous to most commonly densely appressed-puberulent, rarely villous, 3–10 seeded; elastically dehiscent along both sutures. Seeds subquadrate, surface smooth, brown to black when mature. 455,000 seeds/kg.

Similar species

***C. nictitans*:** flowers 8–10 (–14) mm wide borne on pedicels 1–4 mm long

***C. fasciculata*:** flowers 25–40 mm wide borne on pedicels 8–15 mm long

Common names

Asia: sa-kham-khom (Thailand); nroj kua dis (Hmong, Vietnam)

English: Japanese tea senna, partridge pea (more appropriately applied to *C. fasciculata*), pinnata cassia, sensitive partridge-pea, sensitive-pea, small partridge pea, wild sensitive-plant.

Pacific: lauki (Hawaii)

Latin America: canela-de-ema, dorme-dorme, falsa-dormideira, falsa-sensitiva, fedegoso-de-folha-miúda, malícia, malícia-de-mulher, maria-dorme-dorme, mata-pasto, peninha, peninha-sensitiva (Brazil); morivivi bobo, tamarindillo (Spanish)

Distribution

subsp. *brachypoda*

Native:

South America: Bolivia (Santa Cruz); Brazil (Mato Grosso, Minas Gerais, Para, São Paulo); Paraguay

subsp. *disadena*

Native:

Northern America: Mexico (Chiapas, Guerrero, Jalisco, Michoacán, Nayarit, Oaxaca, Tamaulipas, Veracruz)

Central America: Costa Rica; El Salvador; Guatemala; Honduras; Nicaragua; Panama

South America: Bolivia; Brazil (Amazonas, Bahia, Ceará, Espírito Santo, Maranhão, Mato Grosso, Minas Gerais, Paraná, Pernambuco, Rio de Janeiro, Rio Grande do Sul, Santa Catarina, São Paulo); Colombia; Ecuador (Cotopaxi); Guyana; Paraguay; Peru (Lambayeque); Suriname; Venezuela

subsp. *nictitans*

Native:

Northern America: Mexico (Baja Norte, Baja Sur, Campeche, Chiapas, Chihuahua, Durango, Guerrero, Jalisco, Michoacán, Nayarit, Oaxaca, Querétaro, Quintana Roo, Sinaloa, Sonora, Tabasco, Tamaulipas, Veracruz, Yucatán, Zacatecas); U.S.A. (Alabama, Arkansas, Connecticut, Florida, Georgia, Illinois, Indiana, Kansas, Kentucky, Louisiana, Maryland, Massachusetts, Michigan, Mississippi, Missouri, New Hampshire, New Mexico, New York, North Carolina, Ohio, Oklahoma, Pennsylvania, Rhode Island, South Carolina, Texas, Tennessee, Vermont, Virginia, West Virginia, Wisconsin)

Caribbean: Aruba; Bahamas; Cuba; Grenada; Guadeloupe; Hispaniola; Jamaica; Netherlands Antilles; Puerto Rico; St. Kitts and Nevis; St. Vincent and Grenadines; Virgin Islands (British); Virgin Islands (U.S.)

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

South America: Argentina (Jujuy, Salta); Colombia; Ecuador (Guayas, Loja); Peru (Piura, Tumbes); Venezuela (Falcón, Miranda, Nueva Esparta, Federal District, Lara)

subsp. *patellaria*

Native:

Northern America: Mexico (Chiapas, Guerrero, Oaxaca, San Luis Potosí, Tabasco, Veracruz)

South America: Brazil (Amapá, Amazonas, Bahia, Ceará, Maranhão, Mato Grosso do Sul, Minas Gerais, Pará, Paraná, Pernambuco, Rio de Janeiro, Rio Grande do Sul, Rondônia, Santa Catarina, São Paulo)

Caribbean: Cuba; Guadeloupe; Hispaniola; Jamaica; Martinique; Puerto Rico; Trinidad and Tobago (Trinidad)

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

South America: Argentina (Chaco, Corrientes, Formosa, Misiones); Bolivia; Colombia; French Guiana; Guyana; Paraguay; Peru; Suriname; Venezuela

Naturalized:

Tropical & subtropical Asia & elsewhere. The subspecies and varieties are endemic to specific and diverse climatic regions, extending from northern USA to northern Argentina, roughly 45° N to about 28° S. The diversity of endemic origin of the subtaxa suggests significant genetic variability within the species. The most common variety naturalized in the wet tropics is *Chamaecrista nictitans* (L.) Moench subsp. *patellaria* (DC. ex Collad.) H.S. Irwin & Barneby var. *glabrata* (Vogel) H.S. Irwin & Barneby

Uses/applications

Forage

C. nictitans can be grazed or used as cut-and-carry forage. Growing to more than double the height of *C. rotundifolia* cv. Wynn, it has potential for hay production in suitable environments.

Environment

It is used as a self-seeding green manure for humid, low altitude tropics, and can also function as a soil stabilizer.

Other

Provides a good pollen source for bees, and while claimed to be used to make a tea, "kobo-cha" and "nemu-cha", in Japan, this may also be attributable to *Chamaecrista leschenaultiana* (DC.) O. Deg. rather than *Chamaecrista lechenaultiana* (DC.), a synonym of *C. nictitans* var. *glabrata*. Extracts shown to exhibit antiviral activity against herpes simplex virus. Also claimed to have medicinal value as a remedy for stomach ache and fever.

Ecology

Found in open woods prairies, thickets, wet or dry shores, on sandy soils, commonly in disturbed habitats.

Soil requirements

Native to a wide range of soil types but most prevalent on free-draining sands of acid to neutral reaction. While recorded pH at collection sites varies from 5.5 to 7, the values represent a small sample and do not necessarily represent the soil reaction limitations for this particularly diverse species.

Moisture

Annual rainfall at collection sites varies from 700 mm in Mexico to 2,400 mm in Panama, sometimes with a pronounced 6 or 7 month dry season.

Temperature

Various subtaxa of the species are found from about 28° S in Argentina to about 45° N in USA. Average annual temperature at native sites or collection sites varies from less than 10 °C in northern USA to 15 °C at 2,850 m asl in Bolivia and 27 °C at 490 m asl in Indonesia.

Light

C. nictitans can be found growing in open situations and in light shade in savanna and forest, but not in dense shade.

Reproductive development

Flowers July to September in its northern hemisphere native range. Seed has been collected in the southern hemisphere as early as February and as late as July, but most frequently in April and May.

Defoliation

Persistent in cutting trials, but may be better treated as an annual when used as a cut-and-carry forage in sub-tropical environments. As with most subshrubs, taller varieties are best cut at 20–30cm to assist regrowth. Recruitment from seed is possible if there is bare ground, but grasses and weeds progressively invade pure swards.

Fire

No information available, but providing seed is set before the advent of fire, like most annuals, it may well thrive due to heat breakdown of dormancy.

Agronomy

Guidelines for establishment and management of sown forages.

Establishment

Scarified seed germinates quickly after rainfall, but hard seed in the soil requires weathering to break the integrity of the seed coat to enable germination. Seedlings grow rapidly and early-flowering types can flower within 6 weeks. *Chamaecrista* spp. appear to be promiscuous in their rhizobium requirements and often nodulate with native rhizobia belonging to the slow-growing cowpea miscelany. However, inoculating with a broad spectrum strain such as CB756 can provide a measure of insurance if in doubt.

Fertilizer

While *C. nictitans* can grow in less fertile soils, it may respond to fertilizers as indicated from soil test results. Successful establishment into acid red soils in China was achieved with a luxury application of 750 kg/ha lime, 25 kg/ha N, 40 kg/ha P and 50 kg/ha K.

Compatibility (with other species)

Best planted as a pure sward for cutting as hay, silage or forage. Recruitment will be reduced in the presence of other species.

Companion species

Has most potential as a single species grown in a fodder bank for use as cut-and-carry.

Pests and diseases

Seed eaten by birds. Leaves eaten by the larvae of the cloudless sulphur butterfly (*Phoebis sennae*) and the ceraunus blue butterfly (*Hemiargus ceraunus*) in Texas. Plants killed by an anthracnose disease when in flower.

Ability to spread

Recruits readily from seed.

Weed potential

No information available.

Feeding value

Nutritive value

For highest nutritive value for hay production, harvest at early flowering when leaf percentage and crude protein content are high. CP levels of 16 - 22 % has been measured. It does, however, contain high levels of condensed tannins.

Palatability/acceptability

C. nictitans is readily grazed by cattle, buffalo, horses and goats, the latter preferring *C. nictitans* over *C. rotundifolia* cv. Wynn.

Toxicity

None reported.

Feedipedia link

Not available at time of publication.

Production potential

Dry matter

High yield potential as a cut-and-carry forage in acid-infertile, sub-tropical environments, including those with cold winters. Maximum production is likely to be achieved by replanting each year, rather than by locking up to produce seed.

Animal production

No trials have been conducted to assess animal production. Is grazed by a range of herbivores in its native range.

Genetics/breeding

This very variable species is endemic to diverse climatic regions from northern USA to northern Argentina. No breeding programmes are currently being undertaken. Diploid $2n = 32$ is most common, although triploid, $2n = 48$, and tetraploid, $2n = 64$, have also been reported.

Seed production

No information available.

Herbicide effects

Unknown. Likely to be similar to *C. rotundifolia*.

Strengths

- Productive in tropical and sub-tropical environments on acid infertile soils.
- Erect habit enables it to be used as cut-and-carry forage.
- More palatable than *C. rotundifolia*.
- Recruits from seed where competition is removed.

Limitations

- Not yet evaluated for animal production potential.
- May require replanting each year when used as cut-and-carry forage.

Selected references

Hacker, J.B., Shilin, W., Zhaoyang, Y. and Pengelly, B.C. (2001) Selecting *Chamaecrista* spp. for soil stabilisation and forage in southern China. *Tropical Grasslands* 35:96–113. [bit.ly/2UleaPv](https://doi.org/10.1080/00222670108839500)

Luo, T., Weng, B., Lin, Y., Huang, D. and Wang F. (2003) Dynamics of dry-matter yields and NPK contents in three species of *Cassia*. *Acta Prataculturae Sinica* 12:94–98.

Cultivars

No cultivars officially released, although seed of adventive *C. nictitans* ssp. *patellaria* var. *glabrata* is sown as green manure and forage in tropical areas.

Promising accessions

ATF 2217, ATF 2219 Selected in Fujian Province, China. Origin Paraguay, 25°30' S and 27°05' S respectively, in pH 6 soil. Showed promise as cut-and-carry forages, re-establishing from seed and producing good yields in the acid-infertile red soils. ATF 2217 survived the winter at about 26° N.

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