

Tropical Forages

Desmodium incanum

Scientific name



Desmodium incanum (Sw.) DC.

Synonyms

Basionym: *Aeschynomene incana* G. Mey.; *Desmodium canum* (J.F. Gmel.) Schinz & Thell.; *Desmodium frutescens* Schindl.; *Desmodium mauritianum* (Willd.) DC.; *Desmodium supinum* DC.; *Hedysarum canum* J.F. Gmel.

Basionym: *Hedysarum incanum* Sw.; *Hedysarum mauritianum* Willd.; *Hedysarum supinum* Sw.; *Meibomia cana* (J.F. Gmel.) S.F. Blake; *Meibomia mauritiana* (Willd.) Kuntze; *Meibomia supina* Britton

Family/tribe

Family: *Fabaceae* (alt. *Leguminosae*) subfamily:

Faboideae tribe: *Desmodieae* subtribe: *Desmodiinae*.

Morphological description

Ascending to erect perennial herb or low shrub growing to 60 cm tall, in some cases much taller but more typically prostrate and below 20 cm under grazing. Fibrous trailing stems from a deep well-branched root system; stems root readily at the nodes (stolons); inflorescences borne on upright stems. Leaves trifoliolate on petioles up to 3.5 cm long; leaflet shape very variable, round to oval on prostrate stems, lanceolate to elliptical on upright stems. The terminal leaflet may be up to 9 cm long and 4.5 cm wide with lateral leaflets up to 6 cm long and 3 cm wide, but generally the leaves on upper branches are larger and more pointed than those on the lower branches. The upper surface of the leaf is dark green, often with a paler streak along the midrib, but paler and densely pilose on the under surface. The inflorescence is a terminal or axillary raceme, up to 20 cm long with single blue, red or purple flowers; standards up to 6 mm long. The flowers may also be in fascicles of 3. The pods may be up to 4 cm long, with a straight upper margin and strongly indented lower margin, and are covered with hooked hairs; there are up to 8 segments per pod. Seeds are light brown and usually kidney shaped, 1 mm × 0.5 mm. There are 200,000–500,000 seeds per kg.

Common names

Asia: tachi-shiba-hagi (Japan)

Caribbean: sweethearts (Lesser Antilles)

English: beggar weed, creeping beggar weed, kaimi-clover, kaimi, Spanish clover, Spanish tick-trefoil, tick clover; zarzabacoa comun (USA)

French: colle-colle, pois madame



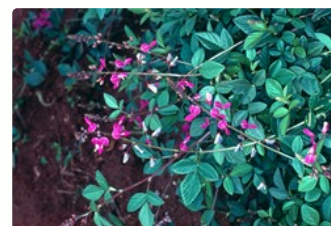
Mature pods break into segments and adhere to receptive surfaces



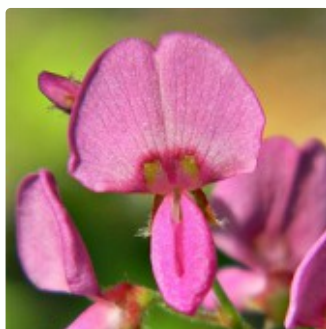
Leaflet shape variable, round to oval on prostrate stems, lanceolate to elliptical on upright stems



Upper leaflet surface often with a paler streak along the midrib



Inflorescence a terminal or axillary raceme (P 15675)



Flower



Immature pod with dense covering of hooked hairs



Seeds with pod segment



Desmodium incanum DC. - 1, habit leafy plant; 2, flowering branch; 3, flower; 4, fruit; 5, seed.

Line illustration



With *Paspalum notatum*



With *Axonopus compressus*, Vanuatu

Indian Ocean: famalakantsy, pelatsifotra, savisaha, tialamba (Madagascar)

Latin America: pega-pega, amor seco, amor-de-campo, carrapicho-beiço-de-boi (Brazil); amor seco, cadillo, empanaditas, tajá-tajá, voy contigo (Spanish)

Pacific: ngātoro, piripiri (Cook Islands), ka'imi (Hawaii); lattil pako (Marshall Islands), piripiri 'aratita (Tahiti)



Mixed pasture with *Stenotaphrum secundatum*, Vanuatu

Distribution

Native:

Northern America: Mexico

Caribbean: Antigua and Barbuda, Bahamas, Barbados, Cuba, Dominica, Guadeloupe, Hispaniola, Jamaica, Martinique, Montserrat, Puerto Rico, St. Kitts and Nevis, St. Lucia, St. Vincent and Grenadines

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

South America: Argentina, Bolivia, Brazil, Colombia, Ecuador, French Guiana, Guyana, Paraguay, Peru, Suriname, Venezuela

Naturalized:

Widely naturalized. in paleotropics.

Uses/applications

Forage

A potentially useful legume in heavily grazed pastures and on low to moderate fertility soils, as in rundown *Urochloa* pastures in the Amazon Basin. However, no widespread use.

Environment

Stoloniferous growth habit suggest value as a ground cover in soil conservation.

Other

D. incanum is being successfully tested as an alternative to greenleaf and silverleaf desmodium in controlling the parasitic weed, striga, in push-pull cropping systems in drier areas of East Africa.

Ecology

Soil requirements

Best adapted to fertile, neutral to alkaline (often found in coralline sands of pH 8.5) soils but can be found on low-fertility soils with textures from sands to medium clays and pH from as low as 4.

Moisture

Adapted to regions with annual rainfall between 1,500 and 3,000 mm, but will persist in areas of 1,000 mm. Can tolerate short-term flooding. Growth during dry season is generally slow but there is important genotypic variation in drought tolerance.

Temperature

Tolerant of frosts at higher altitudes and latitudes, but optimum temperatures are 30/25 °C during the growing season. Found at elevations from 0 to 1,800 m asl. Survived winter temperatures as low as -13 °C in the Mississippi River Delta, Louisiana, USA, and was the most vigorous of surviving warm-season legumes.

Light

Has moderate shade tolerance; considered a weed in coffee plantations in South America.

Reproductive development

Flowers over a long growing period, October to April in Rio Grande do Sul, Brazil and in south-east Queensland, Australia. Behaves as a short day plant at higher latitudes.

Defoliation

Very tolerant of heavy grazing and frequently found with creeping grasses in heavily and continuously grazed swards.

Fire

Not usually burned because it occurs in locations which are heavily grazed. However, if burnt, it regrows from buds at the base of its woody stems, as well as regenerating from soil seed reserves.

Agronomy

Guidelines for establishment and management of sown forages.

Establishment

Typically established in a fully prepared seedbed or broadcast into existing grasses. Recommended sowing rate of 5 kg/ha; sowing depth about 5 mm. Scarification to break hardseededness may be necessary; inoculation with an appropriate rhizobium strain is recommended. Initial growth is slow, and trailing stems begin to develop some 6 months after sowing.

Fertilizer

Kaimi clover responds to P but is usually grown without fertilizer on moderately fertile soils. Responded to low levels of lime on a Hawaiian oxisol.

Compatibility (with other species)

Competes well with stoloniferous or rhizomatous grasses under heavy grazing.

Companion species

Grasses: [Cenchrus clandestinus](#) (higher altitudes in Hawaii), [Urochloa humidicola](#) (humid tropical savannas in South America), [U. mutica](#) (Belize), [Paspalum dilatatum](#), [P. notatum](#), [Dichanthium aristatum](#).

Pests and diseases

Reported to be sensitive to Peanut (Groundnut) Mottle Virus and may be a source of this to cultivated peanuts and soybeans in southern USA. Several fungal diseases reported, as are little leaf and *Desmodium* mosaic virus. Seedlings may be damaged by cutworms; rose beetles and cyst nematodes, *Heterodera trifolii*, have been reported in Hawaii. Light infestations by *Meloidogyne* spp. nematodes under coffee in Cuba.

Ability to spread

Spreads locally from creeping stems especially when pushed into moist soil. Main spreading via pod segments that stick to animal hair and human clothing (hence the name, 'beggar weed'), while seed can also be spread through cattle faeces.

Weed potential

Common on waste land and roadsides, and so is considered a weed in some circumstances.

Feeding value

Nutritive value

For whole plant material (vegetative stage) high CP concentration (23.5%) and very low IVOMD (36.1%) have been reported; low digestibility probably due to high tannin concentration (0.4–5.9%).

Palatability/acceptability

Low, due to high tannin concentration. In mixture with *Dichanthium aristatum*, palatable only in dry season (Guadeloupe).

Toxicity

No toxicity reported.

Production potential

Dry matter

Yields of 6.5 t DM/ha/year reported but yields are difficult to measure in such a low growing species when it is usually under heavy grazing. Under lenient grazing and with additional Fertilizer, [D. incanum](#) is often less productive than other species such as [D. intortum](#), but is much more persistent and tolerant of grazing.

Animal production

No information available.

Genetics/breeding

2n = 22. Self-fertile but some outcrossing may occur. Hybrid of [D. incanum](#) × [D. uncinatum](#) is sterile.

Seed production

Long flowering period. Best time for harvest is reported to be about 2,000 degree days. Potential yields of over 700 kg/ha are greatly reduced by high rates of flower abortion, giving maximum estimated seed yield of 360 kg/ha. Commercial yields have been around 200 kg/ha.

Herbicide effects

Considered a weed in coffee plantations in South America but can be controlled with single application of either dalapon (8.0 kg/ha) or diquat (1.0 L/ha). Susceptible to trifluralin, fluchloralin, fluroxypyr-meptyl + triclopyr, 2,4 D + aminopyralid and 2,4 D + picloram.

Strengths

- Tolerant of continuous heavy grazing.
- Invades and improves run-down grass pastures.
- Seed spread by cattle.
- Good cold tolerance.
- Shade tolerance.
- Effectively controls the parasitic weed striga in maize cropping systems in Africa.

Limitations

- Low harvestable production.
- No commercial seed.
- High tannin reduces palatability and digestibility.

Internet links

<https://www.cabi.org/isc/datasheet/109200>

http://www.hear.org/pier/species/desmodium_incanum.htm

Selected references

Cameron, D.G., Jones R.M., Wilson, G.P.M, Bishop, H.G., Cook, B.G., Lee, G.R. and Lowe, K.F. (1989) Legumes for heavy grazing in coastal subtropical Australia. *Tropical Grasslands* 23:153–161. bit.ly/3bzkTeq

Hacker, J.B. (1992) *Desmodium incanum* DC. In: Manneje, L.'t and Jones, R.M. (eds) *Plant Resources of South-East Asia No. 4. Forages*. Pudoc Scientific Publishers, Wageningen, the Netherlands. p. 112–114. edepot.wur.nl/327785

Imrie, B.C., Jones R.M. and Kerridge, P.C. (1983) *Desmodium*. In: Burt, R.L., Rotar, P.P., Walker, J.L. and Silvey, M.W. (eds) *The role of Centrosema, Desmodium and Stylosanthes in improving tropical pastures*. Westview Press, Boulder, CO, USA. p. 97–140.

Midega, C.A.O., Wasonga, C.J., Hooper, A.M., Pickett, J.A. and Khan, Z.R. (2017) Drought-tolerant *Desmodium* species effectively suppress parasitic striga weed and improve cereal grain yields in western Kenya. *Crop Protection* 98:94–101.

doi.org/10.1016/j.cropro.2017.03.018

Cultivars

'**Tifhardy-1**' (PI 206317) Released in Tifton, Georgia, USA (1981). Very winter-hardy and persistent in *Paspalum notatum* at Tifton, Georgia. Tolerant of poor soils and recommended as a soil cover in Hawaii, USA.

Promising accessions

CPI 27826, CPI 37436, CPI 40107 and CPI 40114 All of these accessions persisted in trials in southern coastal Queensland (subtropical environment) but none were progressed to cultivar status.

CIAT 3522 This accession was collected from very low fertility soils in Panama and provided high yields in both the wet and dry season in trials at Rondônia, Amazon basin, Brazil.

PI 364508 This accession demonstrated high drought tolerance and retained leaf longer when compared with other *Desmodium* spp. in striga-control experiments in cropping systems in Western Kenya.

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