Desmodium incanum

Scientific name

Desmodium incanum DC.

Synonyms

Desmodium canum Schinz & Thell.
Desmodium frutescens Schindl.
Desmodium mauritianum (Willd.) DC.
Desmodium supinus DC.
Hedysarum canum J.F. Gmel.
Hedysarum incanum Sw.
Hedysarum mauritianum Willd.
Hedysarum supinum Sw.
Meibomia cana S.F. Blake
Meibomia mauritiana (Willd.) Kuntze
Meibomia supina Britton

Family/tribe

Family: *Fabaceae* (alt. *Leguminosae*) subfamily: *Faboideae*, tribe: *Desmodieae* subtribe: *Desmodiinae*. Also placed in: *Papilionaceae*.

Common names

kaimi-clover, kaimi, creeping beggar weed; pega-pega (Portuguese, Spanish).

Morphological description

Erect perennial herb or low shrub growing to 60 cm tall, 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. Trifoliate leaves on petioles up to 3.5 cm long, with stipules 3–11 mm long by 1–3 mm wide. The leaflets are very variable, but mostly elliptical. 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 braches 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 on standards up to 6 mm long. The flowers may also be in fascicles of 3.
The seed pods may be up to 4 cm long, with a straight upper margin and strongly indented lower margin, and are covered with hooked hairs. The light brown seeds are usually kidney shaped, 1 mm x 0.5 mm.

Distribution

Native to:
North America: Mexico.
Mesoamerica: Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panama.
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.
South America: Argentina, Bolivia, Brazil, Colombia, Ecuador, French Guiana, Guyana, Paraguay, Peru, Suriname, Venezuela.
Now widely distributed throughout the humid tropics and subtropics. It is abundant on volcanic soils in Hawaii and other Pacific islands.

Uses/applications

A potentially useful legume in heavily grazed pastures and on low to moderate fertility soils, as in rundown *Brachiaria* pastures in the Amazon Basin. No longer sown commercially.

Ecology

Soil requirements

Best adapted to fertile, neutral to alkaline soils but can be found on soil textures from sands to medium clays with pH from as low as 4.0.

Moisture

Adapted to regions with AAR between 1,500–3,000 mm, but will grow in areas of under 1,000 mm. Can tolerate short-term flooding.

Temperature

Tolerant of light frosts at higher altitudes and latitudes, but optimum temperatures are 30/25ºC during the growing season. Found at over 1,500 m asl on the island of Hawaii. 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

Appears to have 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 the establishment and management of sown pastures.

Establishment

No longer sown commercially but was typically established in a fully prepared seedbed or broadcast into existing grasses. Recommended sowing rate of 5 kg/ha sown about 5 mm deep. Initial growth is slow, and trailing stems begin to develop some 6 months after sowing.

Fertiliser

Kaimi clover responds to P but is usually grown without fertiliser on moderately fertile soils. Responded to low levels of lime on a Hawaiian oxisol , but high levels (>6 t/ha) temporarily depressed growth.

Compatibility (with other species)

Grows well with stoloniferous or rhizomatous grasses under heavy grazing.

Companion species

Grasses: *Pennisetum clandestinum* (higher altitudes in Hawaii), *Brachiaria dictyoneura* (humid tropical savannas in South America), *B. mutica* (Belize).

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. Seed pod segments stick to animal hair and human clothing (hence the name - beggar weed), while viable seed can 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

Nitrogen concentrations of 2.0–2.5% have been reported.

Palatability/acceptability

High levels of tannins may reduce palatability .

Toxicity

No toxicity reported.

Production potential

Dry matter

Yields of 6,500 kg/ha/year DM reported but yields are difficult to measure in such a low growing species when it is usually under heavy grazing. Under lenient grazing and additional fertiliser, *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

2*n* = 22. Self-fertile but some outcrossing may occur. Hybrid of *D. incanum* x *D. uncinatum* is sterile.

Seed production

Long flowering period (October to April) in Rio Grande do Sul, Brazil. Best time for harvest was 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 and fluchloralin.

Strengths

- Tolerant of continuous heavy grazing.
- Invades run-down grass pastures and seed spread by cattle.
- Good cold tolerance.

Limitations

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

Selected references

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

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.

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. pp 97–140. (Westview Press, Boulder, Colorado United States).

Internet links

http://www.fao.org/ag/AGP/AGPC/doc/Gbase/data/pf000476.HTM
http://www.ars-grin.gov/cgi-bin/npgs/html/tax_search.pl?desmodium+incanum

Cultivars

Cultivars	Country/date released	Details
None released to date.		

Promising accessions

Promising accessions	Country	Details
CPI 37436	Coastal subtropical Australia	Persisted very well but low yields recorded.
CPI 27826	Subtropical Australia	Best initially but surpassed by CPI 40107 and CPI 40114.
CIAT-3522	Rondonia, Amazonia Basin, Brazil	High yields in wet and dry season in Rondonia cf. other *Desmodium* genotypes.
PI 206317	Tested in USA	Tifhardy-1. This Brazilian accession has been the most winter-hardy selection of the species ever evaluated at Tifton, Georgia, USA.


Closeup of leaves.


Foliage, pods and seeds.


Foliage and flowers.

Foliage and flowers.

Grazed *Desmodium incanum* and *Axonopus compressus* pasture in Vanuatu.

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

From:'t Mannetje, L. and Jones, R.M. (1992) *Plant Resources of South-East Asia No. 4. Forages*. (Pudoc Scientific Publishers, Wageningen, the Netherlands). © Prosea Foundation.