

Desmodium intortum

Scientific name

Desmodium intortum (Mill.) Urb.

Synonyms

Desmodium hjalmarsonii (Schindl.) Standl.

Desmodium trigonum DC.

Hedysarum intortum Mill. [basionym]

Meibomia hjalmarsonii Schindl.

Family/tribe

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

Common names

greenleaf desmodium, beggarlice (English); grünes desmodium (German); pega pega, amor seco, desmodio verde (Spanish); desmodie (French); karikuy-ritkuk (Philippines); thua kleen leap (Thailand).

Morphological description

Greenleaf desmodium is a large trailing and scrambling perennial. It has a strong taproot and the long trailing stems can root at the nodes if in contact with moist soil. These stems are grooved, hairy and reddish-brown in colour and branch freely; it is finer and less hairy than 'Silverleaf' (*D. uncinatum*). The trifoliate leaflets, to 7 cm x 5 cm, have reddish-brown flecking on the upper surface. Although pointed, they are more round than those of *D. uncinatum*. The deep pink flowers are produced on a compact terminal raceme; they develop to narrow segmented pods to 5 cm long, holding 8–12 seeds. The segments break up when mature and, being covered with short hooked hairs, will stick to hair or clothing. There are c. 595,000 seeds per kg.

Distribution

Native to:

Mesoamerica: Belize, Costa Rica, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama.

Caribbean: Hispaniola, Jamaica, Puerto Rico.

South America: Colombia, Ecuador, Peru, Venezuela, and in a restricted area of Brazil between 18 and 25°S.

Now naturalised in small areas of higher altitude tropics and the humid subtropics.

Uses/applications

Used for long-term pastures although it rarely persists permanently. It is also used in irrigated pastures, for conservation as hay and silage, for cut-and-carry systems, and as ground cover where the abundant leaf fall and slow decomposition result in a deep duff layer under the plants.

Ecology

Soil requirements

Will grow on a wider range of soils than will *D. uncinatum*, from sands, light loams to medium clays, but prefers moderate fertility and pH above 5.0. It is not tolerant of salinity or high Al and Mn.

Moisture

It generally requires more than 900 mm rainfall with a moderate dry season of less than 6 months, but will grow under much wetter conditions (>3,000 mm) outside of South America. Tolerance to waterlogging or flooding is better than *D. uncinatum*. It wilts less readily than 'Silverleaf' but will drop leaf under extended dry conditions. In Zimbabwe, 'Silverleaf', with its stronger taproot, proved decidedly more drought tolerant than 'Greenleaf'.

Temperature

This is a warm season plant but for cooler climates, e.g. at moderate altitudes in the tropics and low altitudes in the subtropics rather than lowland tropics. It starts growing later in spring than 'Silverleaf', but withstands hot weather better than *D. uncinatum*. Grows well into the cooler season although frost-susceptible. Optimum growth at 30/25°C ±3°C.

Light

D. intortum has good shade tolerance.

Reproductive development

It has a sensitive short-day control of flowering, which is restricted to mid May-early June in the southern hemisphere. However, temperature as well as daylength controls flowering in *D. intortum*. At similar latitudes, plants at higher altitudes flower earlier.

Defoliation

Mature plants cannot stand constant heavy grazing or frequent heavy defoliation in which the growing points are removed; heavy stands are soon reduced to very small individual plants. Adjust grazing pressure to retain bud sites and leaf material. Even under careful grazing management, few pastures of *D. intortum* persist for more than 6 years.

Fire

It does not like fire but will sprout again from the rootstock.

Agronomy

Guidelines for the establishment and management of sown pastures.

Establishment

Green-leaf desmodium has small seed resulting in slow seedling growth. It is usually established into a prepared seedbed, but it can be planted vegetatively from rooted cuttings. Oversewing seed into established pasture is not reliable because of slow seedling growth. Machine harvested seed has a low proportion of hard seed due to mechanical abrasion but hand harvested seed may need scarification.

Seed should be inoculated with specific rhizobia (CB 627 in Australia) prior to sowing.

Fertiliser

It requires moderate levels of fertility and phosphorus, sulphur, potassium and molybdenum may need to be applied.

Compatibility (with other species)

Combines well with tussock grasses and will climb over small scrubs. Because it is adapted to cooler climates, it is often grown with subtropical grasses, eg. *Setaria*.

Companion species

Grasses: *Setaria sphacelata*, *Pennisetum clandestinum*, pangola (*Digitaria eriantha*). It will also combine with *Panicum maximum* and *Pennisetum purpureum*.

Legumes: *Macroptilium atropurpureum*, *Neonotonia wightii*.

Pests and diseases

Stands in Australia have been severely attacked by the root-eating *Amnemus* weevil. Leaf fungus can affect stands under high rainfall conditions, especially in Central America.

Ability to spread

It will spread into ungrazed shady areas through the rooting stolons.

Weed potential

Possible weed of riparian vegetation due to its ability to climb and its shade tolerance.

Feeding value

Nutritive value

D. intortum leaf has high protein content but also contains condensed tannins. In vitro digestibility ranges from 52.5–56.6% in reasonably young regrowth, but is at least 10 units less at all stages and in all parts than siratro (*Macroptilium atropurpureum*). Late flowering allows it to provide carryover feed later in autumn than 'Silverleaf'.

Palatability/acceptability

Not particularly palatable because of high tannins, but enough that it requires careful grazing management to persist.

Toxicity

No toxicity recorded and no bloat.

Production potential

Dry matter

DM yields of 12–19 t/ha have been recorded.

Animal production

LW gains have exceeded 500 kg/ha/yr off grass legume pastures using *Panicum maximum* or *Digitaria eriantha*.

Genetics/breeding

Self-fertile but flowers may require tripping for pollination and good seed set.

Seed production

Flowers later than *D. uncinatum* and is thus a less reliable seed producer in areas where early frosts may occur during flowering or seed maturation. Mechanical harvest is made difficult by uneven ripening of the seed and the sticking nature of the seed pods which can 'ball-up'. Stands are windrowed and left to dry for 2 weeks before being threshed by a pick-up harvester using the highest possible drum speed and close concave settings. Yields of 80–100 kg/ha seed are common, although much higher yields have been reported from northern Natal, South Africa.

Herbicide effects

Seedlings show good tolerance to the herbicide 2, 4-D; mature plants are reasonably tolerant of the desiccant diquat.

Strengths

- Good early and late season vigour.
- Shade tolerant.
- Combines with tussock and creeping grasses.

Limitations

- Low seedling vigour.
- Poor persistence under heavy grazing.
- Susceptibility to pests.
- Poor tolerance of drought and salinity.

Selected references

Hacker, J.B. (1992) *Desmodium intortum* (Miller) Urban. In: t Mannerje, L. and Jones, R.M. (eds) *Plant Resources of South-East Asia No. 4. Forages*. pp. 114–115. (Pudoc Scientific Publishers, Wageningen, the Netherlands).

Sweeney, F.C. and Hopkinson, J.M. (1975) Vegetative growth of nineteen tropical and sub-tropical pasture grasses and legumes in relation to temperature. *Tropical Grasslands*, 9, 209-217.

Internet links

<http://www.fao.org/ag/AGP/AGPC/doc/Gbase/data/pf000026.htm>

<http://www.pi.csiro.au/ahpc/legumes/pdf/greenleaf.pdf>

Cultivars

Cultivars	Country/date released	Details
'Greenleaf' (derived from CPI 17916, CPI 18009, CPI 23189)	Australia (1964)	Initially released in 1963 as cv. Beerwah.

Promising accessions

Promising accessions	Country	Details
CPI 46552	Indonesia	Under coconut shade, but not for heavy grazing.



New foliage of cv. Greenleaf with characteristic "flecking" on leaflets.



Flowers, pods (segmented with hooked 'sticky' hairs) and seeds.



cv. Greenleaf - foliage and inflorescences.



Photo: Stuart Graham
CSIRO



Seedcrop of cv. Greenleaf.



Seedcrop of cv. Greenleaf.



Mixed pasture of cv. Greenleaf and *Setaria sphacelata*.



Combination of cv. Greenleaf and *D. uncinatum* cv. Silverleaf, with *Setaria sphacelata*.



Desmodium intortum (Miller) Urb. et Sch. – 1, flowering and fruiting branch; 2, flower; 3, fruit.

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.

