Desmodium velutinum

Scientific name

Desmodium velutinum (Willd.) DC.

Synonyms

Basionym: *Hedysarum velutinum* Willd.; *Desmodium lasiocarpum* (P. Beauv.) DC.; *Desmodium latifolium* (Roxb. ex Ker Gawl.) DC.; *Desmodium virgatum* Zoll.; *Hedysarum lasiocarpum* P. Beauv.; *Hedysarum latifolium* Roxb.; *Meibomia lasiocarpa* (P. Beauv.) Kuntze

Family/tribe

Family: *Fabaceae* (alt. *Leguminosae*) subfamily: *Faboideae* tribe: *Desmodieae* subtribe: *Desmodiinae*.

Morphological description

Weakly perennial, erect or semi-erect shrub or sub-shrub, up to 3 m high. Branches often dark red, yellow-brown when young, velutinous and short hooked-hairy. Leaves 1-foliolate, rarely 3-foliolate, ovate, ovate-lanceolate, triangular-ovate, or broadly ovate, 4–20 cm long and 2.5–13 cm wide, chartaceous to coriaceous, upper surface continuously appressed-pubescent, lower surface densely velutinous; in some populations leaves are almost glabrous and variegated. Inflorescence often dense, terminal or axillary, racemose or paniculate , 4–10 cm long (terminal ones often broadly paniculate, to 20 cm long), with 2–5 flowers at each node; flowers purple to pink, rarely white. Pods narrowly oblong, 1–2.5 cm long, 2–3 mm wide, lower suture incised between seeds, upper suture nearly straight, with dense yellow straight hairs intermixed with short hooked hairs, (3-)5–7-jointed. Seeds ovate, flat, 1.3–1.6 mm × 1.8–2.5 mm, yellow when ripe. Depending on genotype, there are 320,000–830,000 seeds per kg.

Common names

Africa: naka-buray (The Gambia); a loko u lelef, hu diukuk, hu mbélo, nétéba, nakaburé, notoba (Senegal)

Asia: □□□□□ rong mao shan ma huang (China);

India: goch-biyoni-haputa (Assamese), orila (Malayalam), orila, sirupulladi, angusapadi ("orila" may also apply to *D. gangeticum*)

English: velvet-leaf desmodium

Distribution

Native:

Africa: Angola, Benin, Burundi, Cameroon, Central African Republic, Chad, Congo, Cote D'Ivoire, DRC, Ethiopia, Guinea, Guinea-Bissau, Kenya, Liberia, Mali, Malawi, Mozambique, Niger, Nigeria, Rwanda, Senegal, Sierra Leone, South Africa (Limpopo), Sudan, Tanzania,


Inflorescences and maturing pods


Variable species comprising erect or semi-erect shrubs or sub-shrubs


Leaves mostly simple (rarely trifoliolate); in some populations leaves almost glabrous (image)


Leaves mostly appressed-pubescent upper surface, densely velutinous lower surface; inflorescence a racemose panicle


Yellow-brown velutinous young stem; pods mostly 5–7-jointed and covered with dense yellow straight hairs and short hooked hairs


Compact racemose panicle (ILRI 16560)


Inflorescence and ripening pods


Maturing pods (ILRI 16560)


Mature pods; prolific seed-set.

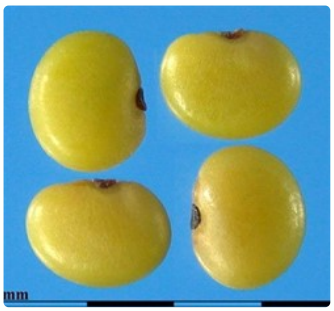

Pod segment and seeds

Togo, Uganda, Zambia

Indian Ocean: Madagascar

Asia: Bhutan, China (s.), India, Indochina, Indonesia, Malaysia, Myanmar, Nepal, Philippines, Sri Lanka, Taiwan (s.), Thailand

Papuasia: Papua New Guinea



Seeds

Uses/applications

Forage

Incipient use as forage in cut-and-carry or grazed systems.

Ecology

Soil requirements

Adapted to a wide range of soil pH, from very acid (pH 4.0) to alkaline. Adapted to low-fertility soils. Does not tolerate poorly drained conditions.

Moisture

Prefers more humid climates of 1,000 – >3,000 mm rainfall/year. However, tolerates up to 4–5 months dry season.

Temperature

Grows at altitudes from sea level to 1,500 m asl, with average temperature above 20 ºC. Is killed by frost.

Light

Has some shade tolerance as it has been found in forest verges.

Reproductive development

Indeterminate flowering.

Defoliation

Regrows well after infrequent severe defoliation in its native habitats. Regrowth potential appears to be dependent on genotype and cutting/grazing height. Suggested cutting frequency 6–8 weeks, cutting height 40–50 cm.

Fire

No information available.

Agronomy

Guidelines for establishment and management of sown forages.

Establishment

Can be established by cuttings or through seed. For the latter, scarification is needed to break hardseededness. Distance between rows 0.6–1.5 m, in the row 0.5–1 m, planted with 3–5 seeds per planting site.

Fertilizer

In the Patía valley, Colombia, 15–20 kg P/ha is recommended for establishment.

Compatibility (with other species)

Since initial growth is low weed control during the establishment phase is required.

Companion species

Has been established successfully with erect grasses such as *Megathyrsus maximus*.

Pests and diseases

Leaf eating insect larvae have been observed; no major information available.

Ability to spread

Being a prolific seeder, is easily spread by means of pod segments sticking to the skin of grazing animals.

Weed potential

Being a prolific seeder, could become a weed.

Feeding value

Nutritive value

High nutritive quality of edible material (leaf and thin twigs), CP 16–27%, IVDMD 53–80%, depending on accession; nil to very low amounts of tannins.

Palatability/acceptability

Moderately palatable to cattle; higher acceptability in the dry than in the wet season.

Toxicity

No information available; probably none.

Production potential

Dry matter

Annual yields are in the range 5.5–16 t DM/ha, depending on dry season stress. DM yields of 1.5–3 t/ha/cut are reported; up to 10 t DM/ha in 6 months under cutting on savanna soils in northern Nigeria.

Animal production

No information available.

Genetics/breeding

2*n* = 22.

Seed production

A prolific seeder.

Herbicide effects

No information available.

Strengths

- Adapted to a wide range of soil pH.
- Grows on low-fertility soils.
- High nutritive quality, mainly IVDMD.
- Moderately drought tolerant.

Limitations

- Still insufficiently researched.
- Persistence under cutting and grazing not conclusive.

Internet links

https://plants.jstor.org/compilation/desmodium.velutinum

https://plants.jstor.org/stable/10.5555/al.ap.upwta.3_502

Selected references

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Schultze-Kraft, R., Peters, M., Vivas, N., Parra, F. and Franco, L.H. (2005) *Desmodium velutinum* - a high quality legume shrub for acid

soils in the tropics. Tropical Grasslands 39:231. bit.ly/39vxvlL

Cultivars

None released to date. In terms of evaluation of its potential and on-farm experiences, *D. velutinum* is still a rather 'new' species.

Promising accessions

CIAT 33443, CIAT 33352, CIAT 13953 (all erect), **CIAT 23981** (semi-erect). Selected from a 137-accession collection evaluated at Santander de Quilichao, Colombia (CIAT research station) for edible forage yield (≥190 g DM/plant/8 weeks), drought tolerance and nutritive value (IVDMD ≥68%; CP ≥20%). CIAT 23981 particularly promising in the dry-subhumid Patía valley, Cauca, Colombia. CIAT 13953 also had the best yield across a range of acid to moderately acid soils in Costa Rica.