

## Dwarf koa (*Desmanthus virgatus*)

Automatic translation

Anglais ▼

### Feed categories

All feeds

drilling plants

- ▶ Cereal and grass forages
- ▶ Legume forages
- ▶ Forage trees
- ▶ Aquatic plants
- ▶ Other forage plants

Plant products/by-products

- ▶ Cereal grains and by-products
- ▶ Legume seeds and by-products
- ▶ Oil plants and by-products
- ▶ Fruits and by-products
- ▶ Roots, tubers and by-products
- ▶ Sugar processing by-products
- ▶ Plant oils and fats
- ▶ Other plant by-products

Feeds of animal origin

- ▶ Animal by-products
- ▶ Dairy products/by-products
- ▶ Animal fats and oils
- ▶ Insects

Other feeds

- ▶ Minerals
- ▶ Other products

### Latin names

Plant and animal families

Plant and animal species

### Resources

Broadening horizons

Literature search

Image search

Glossary

External resources

- ▶ Literature databases
- ▶ Feeds and plants databases
- ▶ Organisations & networks
- ▶ Books
- ▶ Journals

[Description](#) [Nutritional aspects](#) [Nutritional tables](#) [References](#)

Click on the "Nutritional aspects" tab for recommendations for ruminants, pigs, poultry, rabbits, horses, fish and crustaceans



### Common names

Dwarf koa, desmanthus, bundle flower [English]; bilil, brusca prieta, frijolillo, ground tamarind, guajillo [Spanish]; koa nain, petit acacia, petit cassie, petit mimosa [French]; guashillo, huarangillo, langalet, virgate mimosa [Hawai]; 合欢草 [Chinese]

### Species

*Desmanthus virgatus* (L.) Willd. [Fabaceae]

### Synonyms

*Acacia angustisiliqua* (Lam.) Desf., *Acacia virgata* (L.) Gaertn., *Acuan depressa* (Willd.) Kuntze, *Acuan depressum* (Willd.) Kuntze, *Acuan texanum* Britton & Rose, *Acuan tracyi* Britton & Rose, *Acuan virgatum* (L.) Medik., *Desmanthus depressus* Willd., *Desmanthus leptophyllus* DC., *Desmanthus pernambucensis* (L.) Thell., *Desmanthus pratorum* Macfad., *Desmanthus strictus* DC., *Desmanthus tenellus* DC., *Desmanthus virgatus* (L.) Willd. var. *depressus* (Willd.) B.L.Turner, *Mimosa angustisiliqua* Lam., *Mimosa depressa* (Willd.) Poir., *Mimosa pernambucensis* L., *Mimosa virgata* L.

*Desmanthus virgatus*, *Desmanthus pubescens*, *Desmanthus pernambucanus*, *Desmanthus glandulosus* and *Desmanthus leptophyllus* were not considered to be different species until 1993 and many authors continued to refer to all species as *Desmanthus virgatus* in the literature until the late 1990s (Cook et al., 2005).

### Feed categories

- Legume forages
- drilling plants

### Related feed(s)

### Description

Dwarf koa (*Desmanthus virgatus* (L.) Willd.) is a highly variable perennial legume. Morphology and habit range from a prostrate herbaceous plant, less than 50 cm high, to an erect or decumbent woody shrub, up to 2.5-3 m high (Gutteridge et al., 1994). It has a deep taproot and is strongly branched from the base. The stems are slender, pithy in the center, angular, green turning brown. The leaves are 2-8 cm long, compound, bipinnate, bearing 10-25 pairs of linear-oblong, 4-12 mm long x 1.5-3 mm broad leaflets. The inflorescence bears 9-11 whitish mimosoid flowers. The fruits are linear, dehiscent, 5.5-8.5 cm long pods. They contain 11-26 reddish-brown or golden-brown U-shaped seeds. Dwarf koa is morphologically very similar to *Leucaena leucocephala* (also called koa haole) but it is smaller and bears smaller leaflets, hence the name "dwarf koa" (FAO, 2010; Cook et al., 2005).

Dwarf koa is primarily used as forage. It is highly palatable to ruminants and may be grazed or fed fresh in cut-and-carry systems (FAO, 2010). It is one of the legumes most tolerant to grazing and withstands regular cutting (US Forest Service, 2010; Cook et al., 2005). It also helps to control soil erosion, provides green manure and adds N to the soil (Eccocrop, 2010).

### Distribution

Dwarf koa originated from tropical and subtropical Americas. It is widespread in Texas and Florida in the USA, in Veracruz and Chiapas in Mexico, in the Caribbean and throughout Central and South America (Cook et al., 2005). It is naturalized in African dry lands (Senegal, Zambia, South-Africa), in the Pacific Islands (New Caledonia, Hawaii) and Indonesia (FAO, 2010). It was introduced in India and Australia (Pengelly et al., 1992). Dwarf koa is mainly found in coastal thickets, roadsides and heavily disturbed areas, from sea-level to an altitude of 2000 m, but most commonly below 500 m (Eccocrop, 2010; Cook et al., 2005).

Dwarf koa is very adaptive and can grow under a wide range of temperatures (including frost conditions) and rainfall conditions (from 250 to 2000 mm) (Cook et al., 2005; Pengelly et al., 1992). Dwarf koa prefers neutral to alkaline clay or clay-loam soils but is also known to do better than *Leucaena* on acid infertile soils (Gutteridge et al., 1994; Pengelly et al., 1992). It is also tolerant of sodic soils (Cook et al., 2005). Dwarf koa is a very drought-tolerant legume. It withstands frost and fire (which may suppress buried seed dormancy) since it can regrow from the crown. Dwarf koa tolerates severe competition from grasses and herbs but disappears when overtopped by trees since it does not withstand shaded conditions (Francis, 2003; Cook et al., 2005).

### drilling management

Yields of dwarf koa range from 7.6 t DM/ha in the humid tropics (2000 mm rainfall) to 2-2.4 t DM/ha in low rainfall (600-750 mm) areas in Northern Australia (Cook et al., 2005). In a comparative study with various fodder legume trees and shrubs in Ghana, *Desmanthus virgatus* was among the low-yielding species and much less productive than *Gliricidia sepium*, *Calliandra calothyrsus* or *Cajanus cajan* (Barnes, 1998).

*Desmanthus virgatus* withstands regular cutting, and plantations can be cut for feed 4 (Cook et al., 2005) or 6 times a year (Radhakrishnan et al., 2007). In drought-prone areas, dwarf koa is one of the most resistant legumes and was able to persist under grazing over a 14 year period (Cook et al., 2005).

*Desmanthus virgatus* was found less suitable than *Leucaena leucocephala* (lower protein and *in vitro* OMD) for grass-legume forage production in alley cropping in the Caribbean (Adjei, 1995).

The contribution of *Desmanthus virgatus* to pasture yield is higher in harsh environments than in more favourable ones, so that it is relatively more valuable on soils of moderate fertility in environments with a marked dry season (Cook et al., 2005).

## Environmental impact

### N-fixing legume

Dwarf koa, provided it is inoculated with adequate rhizobium strains, is a good N-fixing legume. In places where it is not native (Australia), dwarf koa should be inoculated before sowing (Brandon et al., 1998).

### Erosion control

Used in alley cropping, dwarf koa helps controlling soil erosion on steep slopes in the Philippines (US Forest Service, 2010).

### Other services

Dwarf koa is an efficient nursery-stage host for highly priced sandalwood (Ecocrop, 2010).

### Weed potential

Because of its vigorous growth, dwarf koa may become a minor weed in disturbed areas (Cook et al., 2005) and a serious weed in sugar cane fields (US Forest Service, 2010).

## datasheet citation

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##### Glossary

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[Description](#) [Nutritional aspects](#) [Nutritional tables](#) [References](#)

### Nutritional attributes

Like many other tropical legume plants, dwarf koa has a fairly high protein content, typically in the 15-20% DM range, and the leaves have a higher protein content than the stems (22-28% DM for the leaves vs. 7% for the stems) (Ly et al., 2001; Skerman et al., 1990; Radhakrishnan et al., 2007; Ramirez et al., 2000). Lower protein values (8.9% DM) and much higher fibre values (58.3-73.5% DM) have been reported for *Desmanthus virgatus* hay (Rangel et al., 2009). Compared to 15 other shrub species from northeastern Mexico, *Desmanthus virgatus* had an average crude protein content (17.8% DM vs. 25.2% DM for *Leucaena leucocephala*) and a low NDF (25.9% DM). It was moderately rich in AD lignin (10.6% DM), and high in condensed tannins (8.3% DM) and insoluble ash (2.0% DM) (Ramirez et al., 2000; Ramirez et al., 2001). Empty pods contain much less protein (9% DM) than the whole plant or the leaves (Keoghnan, 1980).

Unlike *Leucaena*, *Desmanthus virgatus* does not contain mimosine and therefore can be fed safely to non-ruminants (Gutteridge et al., 1994).

### Potential constraints

Dwarf koa, unlike *Leucaena leucocephala*, does not contain mimosine or other toxicants (Gutteridge et al., 1994). However, it contains significant amounts of tannins (Adjei, 1995; Ramirez et al., 2001).

### ruminants

Dwarf koa is non-toxic to ruminants and is used for both fodder and grazing (Göhl, 1982). The high condensed tannins content of *Desmanthus* species can prevent bloat (Cook et al., 2005).

#### Palatability

*Desmanthus virgatus* is palatable to ruminants. It has been observed to be less palatable than *leucaena* but more readily eaten than *Stylosanthes scabra*. Its relative palatability depends on the variety or accession (Cook et al., 2005).

#### Nutritive and feeding values

*In vivo* DM and N digestibility in cattle fed *Desmanthus virgatus* leaf meal has been reported to be low: 48 and 44%, respectively (Göhl, 1982), though a higher DM digestibility has also been reported (55%) (Kharat et al., 1980). *In sacco* effective degradability of NDF was also low (36%) (Ramirez et al., 2000).

#### Sheep

There is little published information on the use of *Desmanthus virgatus* in ruminants. A DM intake of 5% of body weight was reported for *Desmanthus virgatus* fodder in sheep, and the authors concluded that it was a potential leguminous fodder source for small ruminants (Radhakrishnan et al., 2007). In Australia, preliminary research suggests that sown *Desmanthus virgatus* could fulfill the role of *Stylosanthes* species in the Mitchell grass (*Astrebala* spp.) bioregion of Western Queensland: 200 g/d of dwarf koa hay added to 600 g/d of *Astrebala* hay had beneficial effects on wool growth, DM intake, ME intake, N intake and weight loss. The relatively high protein content and the sulphur content (0.36% DM) could be beneficial to wool production (Rangel et al., 2009).

#### Pigs

There is a paucity of literature on the use of dwarf koa in pig feeding. While the absence of mimosine should make *Desmanthus virgatus* safer than *Leucaena* for monogastric animals, one attempt to feed pigs with sun-dried leaves (17% in the diet DM) reported extremely low OM, NDF and N digestibilities (37, 30 and 2% respectively) and the authors concluded that dwarf koa leaf meal was unsuitable as an alternative protein source for pigs, unless methods to increase its nutritive value were developed (Ly et al., 2001).

#### Poultry

The nutritional value of dwarf koa leaf meal in poultry is low, as reported for most leaf meals (D'Mello, 1995). An ME value of 5.6 MJ/kg was reported, but when taking this value into account for feed formulation, performance of layers was maintained up to 6% incorporation in diets while enhancing egg yolk coloration (Buakeeree, 2002; Suksombat et al., 2006).

The use of seeds from a related species (*Desmanthus illinoensis*) in broilers resulted in depressed performance, even at 5% inclusion level, and is therefore not advisable (Jacob, 2007).

#### Rabbits

Dwarf koa may be fed to rabbits, alone or in combination with pelleted feed or commercial mash, without altering their health parameters (Jegatheesan et al., 2006). Dwarf koa resulted in greater weight gains than agati (*Sesbania grandiflora*), *Leucaena* (*Leucaena leucocephala*) and Tridax daisy (*Tridax procumbens*) when it supplemented a concentrate feed (Singh et al., 2007).

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## Dwarf koa (Desmanthus virgatus)

[Description](#) [Nutritional aspects](#) [Nutritional tables](#) [References](#)

### Tables of chemical composition and nutritional value

- Dwarf koa (Desmanthus virgatus), aerial part, fresh
- Dwarf koa (Desmanthus virgatus), seeds

Avg: average or predicted value; SD: standard deviation; Min: minimum value; Max: maximum value; Nb: number of values (samples) used

#### Dwarf koa (Desmanthus virgatus), aerial part, fresh



Main analysis	Unit	Avg	SD	me	Max	Nb
Dry matter	% as fed	35.2		32.0	38.3	2
Crude protein	% DM	15.8	3.5	11.5	22.8	9
Crude fibre	% DM	34.0	11.0	17.6	41.1	4
NDF	% DM	46.7		32.5	60.9	2
ADF	% DM	37.0		20.5	53.4	2
Lignin	% DM	13.1		7.0	19.3	2
Ether extract	% DM	3.0	0.8	2.4	4.2	4
Ash	% DM	6.4	1.4	4.9	8.9	9
Gross energy	MJ/kg DM	19.3				*

Minerals	Unit	Avg	SD	me	Max	Nb
Calcium	g/kg DM	16.5	11.8	2.6	40.5	8
Phosphorus	g/kg DM	3.3	1.6	2.1	5.2	3
Potassium	g/kg DM	19.9		17.4	22.3	2
Sodium	g/kg DM	0.8				1
Magnesium	g/kg DM	8.5		5.0	12.0	2

Secondary metabolites	Unit	Avg	SD	me	Max	Nb
Tannins (eq. tannic acid)	g/kg DM	73.5				1
Tannins, condensed (eq. catechin)	g/kg DM	0.0				1

Ruminant nutritive values	Unit	Avg	SD	me	Max	Nb
OM digestibility, Ruminant	%	61.2				*
Energy digestibility, ruminants	%	58.5				*
OF ruminants	MJ/kg DM	11.3				*
ME ruminants	MJ/kg DM	9.0				*
Nitrogen digestibility, ruminants	%	44.0				1

The asterisk \* indicates that the average value was obtained by an equation.

#### References

Barnes, 1998; CIRAD, 1991; Nasrullah et al., 2003; Work, 1938

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#### Dwarf koa (Desmanthus virgatus), seeds



Main analysis	Unit	Avg	SD	me	Max	Nb
Dry matter	% as fed	93.2	0.8	92.3	94.6	6
Crude protein	% DM	28.0	4.0	20.6	31.3	6

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Ether extract	% DM	1.9	0.3	1.6	2.4	6
Ash	% DM	3.8	0.3	3.5	4.4	6
<b>Minerals</b>	<b>Unit</b>	<b>Avg</b>	<b>SD</b>	<b>me</b>	<b>Max</b>	<b>Nb</b>
Calcium	g/kg DM	2.5	0.4	1.9	2.9	6
Phosphorus	g/kg DM	4.3	0.7	3.6	5.2	6
Potassium	g/kg DM	9.0	0.4	8.4	9.5	6
Sodium	g/kg DM	0.0	0.0	0.0	0.1	6
Magnesium	g/kg DM	2.7	0.2	2.4	3.0	6
Manganese	mg/kg DM	66	18	47	89	6
Zinc	mg/kg DM	50	5	47	61	6
Copper	mg/kg DM	13	4	8	18	6
Iron	mg/kg DM	87	26	67	135	6

The asterisk \* indicates that the average value was obtained by an equation.

#### References

Schlink et al., 1993

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[Description](#) [Nutritional aspects](#) [Nutritional tables](#) [References](#)

### References

- Adjei, M. B., 1995. Component forage yield and quality of grass-legume cropping systems in the Caribbean. *Trop. Grassl.*, 29: 142-149 
- Barnes, P., 1998. Fodder production of some shrubs and trees under two harvest intervals in subhumid southern Ghana. *Agroforestry Systems*, 42: 139-147 
- Brandon, N. J. ; Date, R. A. ; Clem, R. L. ; Robertson, B. A. ; Graham, T. W. G., 1998. Growth responses of *Desmanthus virgatus* to inoculation with rhizobium strain CB 3126. II. A field trial at 4 sites in south-east Queensland. *Trop. Grassl.*, 32: 20-27 
- Buakeeree, K., 2002. The study of yield and nutritive value of hedge lucerne (*Desmanthus virgatus*) and utilization of hedge lucerne meal as protein supplement in layer diets. Ph.D. dissertation, Suranaree University of Technology, Thailand 
- Cook, B. G. ; Pengelly, B. C. ; Brown, S. D. ; Donnelly, J. L. ; Eagles, D. A. ; Franco, M. A. ; Hanson, J. ; Mullen, B. F. ; Partridge, I. J. ; Peters, M. ; Schultze-Kraft, R., 2005. Tropical forages. CSIRO, DPI&F(Qld), CIAT and ILRI, Brisbane, Australia 
- Cruz, S. E. S. B. ; Beelen, P. M. G. ; Silva, D. S. ; Pereira, W. E. ; Beelen, R. ; Beltrao, F. S., 2007. Characterization of condensed tannin of the species manicoba (*Manihot pseudoglaziovii*), flor-de-seda (*Calotropis procera*), feijao-bravo (*Capparis flexuosa*) and jureminha (*Desmanthus virgatus*). *Arq. Bras. Med. Vet. Zootec.*, 59 (4): 1038-1044 
- D'Mello, J. P. F., 1995. Leguminous leaf meals in non-ruminant nutrition. In: *Tropical Legumes in Animal Nutrition*. J.P.F. D'Mello and C. Devendra, Eds. CAB International, Wallingford, UK. 
- Ecocrop, 2010. Ecocrop database. FAO 
- FAO, 2010. Grassland Index. A searchable catalogue of grass and forage legumes. FAO 
- Francis, J. K., 2003. *Desmanthus virgatus*. In: *Wildland Shrubs of the United States and its Territories: Thamnisc Descriptions*. General Technical Report IITF-WB-1. U.S. Department of Agriculture, Forest Service. International Institute of Tropical Forestry and Shrub Sciences Laboratory 
- Göhl, B., 1982. The feed in the tropics. FAO, Production and Animal Health Division, Rome, Italy 
- Gutteridge, R. C. ; Shelton, H. M., 1994. Forage tree legumes in tropical agriculture. The Tropical Grassland Society of Australia 
- Jacob, J. P., 2007. Evaluation of Illinois bundleflower (*Desmanthus illinoensis*) for broiler chicks. *J. Appl. Poult. Res.*, 16: 39-44 
- Jegatheesan, G. ; Sivakumar, T. ; Murugan, M., 2006. Haematological study of New Zealand white rabbits under different feeding systems. *Indian Vet. J.*, 83 (10): 1116-1117 
- Keoghlan, J. M., 1980. Adaptable and productive forage legumes and grasses for more intensive small ruminant livestock systems in the Caribbean. *Trop. Anim. Prod.*, 5 (1): 8-14 
- Kharat, S. T. ; Prasad, V. L. ; Sobale, B. N. ; Sane, M. S. ; Joshi, A. L. ; Rangnekar, D. V., 1980. Note on comparative evaluation of *Leucaena leucocephala*, *Desmanthus virgatus* and *Medicago sativa* for cattle. *Indian J. Anim. Sci.*, 50 (8): 638-639 
- Ly, J. ; Pok Samkol, 2001. Nutritional evaluation of tropical leaves for pigs; *Desmanthus (Desmanthus virgatus)*. *Livest. Res. Rural Dev.*, 13 (4) 
- Pengelly, B.C. ; Topark-Ngarm, A., 1992. *Desmanthus virgatus* (L.) Willd.. Record from Proseabase. Mannedtje, L.'t and Jones, R.M. (Editors). PROSEA (Plant Resources of South-East Asia) Foundation, Bogor, Indonesia. 
- Radhakrishnan, L. ; Murugan, M. ; Sivakumar, T., 2007. Biomass yield, chemical composition and nutritive value of *Desmanthus virgatus* (hedge lucerne) for sheep. *Anim. Nutr. Feed Technol.*, 7 (1): 119-123 
- Ramirez, R. G. ; Neira-Morales, R. R. ; Ledezma-Torres, R. A. ; Garibaldi-Gonzalez, C. A., 2000. Ruminant digestion characteristics and effective degradability of cell wall of browse species from northeastern Mexico. *Small Rumin. Res.*, 36 (1): 49-55 
- Ramirez, R. G. ; Haenlein, G. F. W. ; Nunez-Gonzalez, M. A., 2001. Seasonal variation of macro and trace mineral contents in 14 browse species that grow in northeastern Mexico. *Small Rumin. Res.*, 39 (2): 153-159 
- Rangel, J. H. de A. ; Gardiner, C. P., 2009. Stimulation of wool growth by *Desmanthus* spp. as a supplement to a diet of Mitchell grass hay. *Trop. Grassl.*, 43 (2): 106-111 
- Rangnekar, D. V. ; Bhosrekar, M. R. ; Joshi, A. L. ; Kharat, S. T. ; Sobate, B. N. ; Badve, V. C., 1983. Studies on growth performance and semen characteristics of bulls fed unconventional fodder (*Leucaena leucocephala* and *Desmanthus virgatus*). *Trop. Agric. (Trinidad)*, 60 (4): 294-296 
- Seng Sokerya; Rodriguez, L., 2001. Foliage from cassava, *Flemingia macrophylla* and bananas compared with grasses as forage sources for goats: effects on growth rate and intestinal nematodes. *Livest. Res. Rural Dev.*, 13 (2) 
- Singh, D. A. P. ; Kumar, P. ; Saravanakumar, V. R., 2007. Production performance of White Giant rabbits fed with *Tridax procumbens*. *Indian Vet. J.*, 84 (11): 1212-1213 
- Skerman, P. J. ; Riveros, F., 1990. Tropical grasses. FAO Plant Production and Protection Series No. 23, FAO, Rome 

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##### Broadening horizons

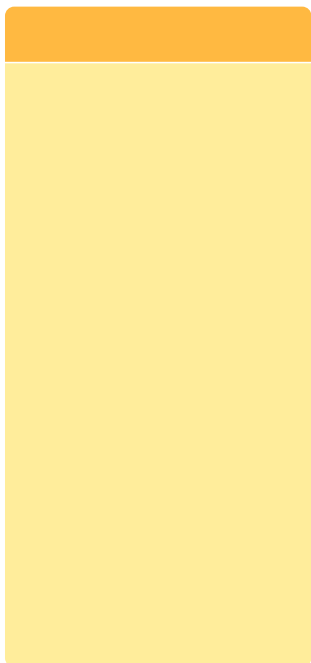
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##### Glossary

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- ▶ Organisations & networks
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- ▶ Journals



Suksombat, W. ; Buakeeree, K., 2006. Utilization of hedge lucerne meal (*Desmanthus virgatus*) as protein supplement in layer diets. *Suranaree J. Sci. Technol.*, 13 (2): 181-187 

US Forest Service, 2010. *Desmanthus virgatus* (L.) Willd.. Pacific Island Ecosystems at Risk (PIER). Online resource 

Work, S. H., 1938. Digestibility of Hawaiian feeding stuffs. *Ann. Rep. Hawaii agric. Exp. Stn*, 65

**29 references found**

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