Taxon: Lablab purpureus (L.) Sweet

Family: Fabaceae

Common Name(s): bonavist bean
Egyptian bean
field bean
hyacinth bean
lablab bean
papapa
pi

Synonym(s): Dolichos lablab L.
Dolichos purpureus L.

Assessor: Chuck Chimera **Status:** Approved **End Date:** 2 Oct 2024

WRA Score: 0.0 **Designation:** L **Rating:** Low Risk

Keywords: Perennial Herb, Naturalized, Fodder, Creeping/Climbing, Self-Fertile

Qsn #	Question	Answer Option	Answer
101	Is the species highly domesticated?	y = -3, n = 0	y
102	Has the species become naturalized where grown?	y = 1, n = -1	y
103	Does the species have weedy races?		
201	Species suited to tropical or subtropical climate(s) - If island is primarily wet habitat, then substitute "wet tropical" for "tropical or subtropical"	0 = low, 1 = intermediate, 2 = high (see Appendix 2)	High
202	Quality of climate match data	0 = low, 1 = intermediate, 2 = high (see Appendix 2)	Intermediate
203	Broad climate suitability (environmental versatility)	y = 1, n = 0	y
204	Native or naturalized in regions with tropical or subtropical climates	y = 1, n = 0	y
205	Does the species have a history of repeated introductions outside its natural range?	y= -2, ? = -1, n = 0	y
301	Naturalized beyond native range	y = 1*multiplier (see Appendix 2), n = question 205	y
302	Garden/amenity/disturbance weed	y = 1*multiplier (see Appendix 2), n = 0	n
303	Agricultural/forestry/horticultural weed		
304	Environmental weed	y = 2*multiplier (see Appendix 2), n = 0	n
305	Congeneric weed	y = 1*multiplier (see Appendix 2), n = 0	n
401	Produces spines, thorns or burrs	y = 1, n = 0	n
402	Allelopathic		
403	Parasitic	y = 1, n = 0	n
404	Unpalatable to grazing animals	y = 1, n = -1	n
405	Toxic to animals		
406	Host for recognized pests and pathogens		

Qsn #	Question	Answer Option	Answer
407	Causes allergies or is otherwise toxic to humans		
408	Creates a fire hazard in natural ecosystems	y = 1, n = 0	n
409	Is a shade tolerant plant at some stage of its life cycle	y = 1, n = 0	n
410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	y = 1, n = 0	y
411	Climbing or smothering growth habit	y = 1, n = 0	y
412	Forms dense thickets	y = 1, n = 0	n
501	Aquatic	y = 5, n = 0	n
502	Grass	y = 1, n = 0	n
503	Nitrogen fixing woody plant	y = 1, n = 0	n
504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	y = 1, n = 0	n
601	Evidence of substantial reproductive failure in native habitat	y = 1, n = 0	n
602	Produces viable seed	y = 1, n = -1	y
603	Hybridizes naturally	y = 1, n = -1	n
604	Self-compatible or apomictic	y = 1, n = -1	y
605	Requires specialist pollinators	y = -1, n = 0	n
606	Reproduction by vegetative fragmentation	y = 1, n = -1	n
607	Minimum generative time (years)	1 year = 1, 2 or 3 years = 0, 4+ years = -1	1
701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)		
702	Propagules dispersed intentionally by people	y = 1, n = -1	y
703	Propagules likely to disperse as a produce contaminant		
704	Propagules adapted to wind dispersal	y = 1, n = -1	n
705	Propagules water dispersed	y = 1, n = -1	n
706	Propagules bird dispersed	y = 1, n = -1	n
707	Propagules dispersed by other animals (externally)	y = 1, n = -1	n
708	Propagules survive passage through the gut	y = 1, n = -1	n
801	Prolific seed production (>1000/m2)		
802	Evidence that a persistent propagule bank is formed (>1 yr)		
803	Well controlled by herbicides	y = -1, n = 1	y
804	Tolerates, or benefits from, mutilation, cultivation, or fire	y = 1, n = -1	y
805	Effective natural enemies present locally (e.g. introduced biocontrol agents)		

Supporting Data:

Qsn #	Question	Answer
101	Is the species highly domesticated?	y
	Source(s)	**Notes**
	Maass, B. L., & Usongo, M. F. (2007). Changes in seed characteristics during the domestication of the lablab bean (Lablab purpureus (L.) Sweet: Papilionoideae). Australian Journal of Agricultural Research, 58(1), 9-19	"Abstract. Morphological, anatomical, physiological, and nutritional seed characteristics of the lablab bean (Lablab purpureus) were investigated in 46 germplasm accessions, from wild through semi-domesticated forms to landraces and current cultivars. This study aimed to improve the understanding of the domestication process in this tropical crop legume. Wild accessions were distinguished by typical small, brownish and mottled seeds. Cultivated and semi-domesticated forms showed much wider variation in size, colour and shape. Most wild accessions had a thicker seed testa as well as a greater spread of germination over time and larger proportions of hard seeds than most cultivated and semi-domesticated accessions, which germinated more uniformly. Generally, wild accessions showed higher tannin and nitrogen values. In most characteristics, semi-domesticated accessions were intermediate. Not all cultivated accessions combined all typical features of the 'domestication syndrome'. This was particularly obvious in the dendrogram generated by cluster analysis from a relative domestication index calculated from seed mass and seed-coat texture for any pair of accessions. On the basis of seed characteristics of the germplasm studied, the crop is considered to have originated from Africa."
	Lim, T.K. (2012). Edible Medicinal and Non-Medicinal Plants. Volume 2, Fruits. Springer, New York	"Although its largest agro-morphological diversity occurs in South Asia, its origin appears to be Africa. It is one of the most diverse domesticated legume species and has multiple uses. Hyacinth bean is widely cultivated in the tropics and subtropics particularly in India and southeast Asia, Egypt and Sudan. It is probably an ancient introduction to the Pacific islands."

102	Has the species become naturalized where grown?	y
	Source(s)	**Notes**
	Wagner, W.L., Herbst, D.R. & Sohmer, S.H. (1999). Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	"Probably native to tropical Asia, widely cultivated for its edible pods and seeds, easily escaping and widely naturalized throughout the tropics; ill Hawai'i cultivated and naturalized in dry to mesic, disturbed areas such as along roadsides and trails and abandoned homesites, 0-90(-1,190) m, probably on all of the main islands"

103	Does the species have weedy races?	
	Source(s)	**Notes**
	Maass, B. L., & Usongo, M. F. (2007). Changes in seed characteristics during the domestication of the lablab bean (Lablab purpureus (L.) Sweet: Papilionoideae). Australian Journal of Agricultural Research, 58(1), 9-19	"This study aims to build on the previous research in order to improve the comprehension of changes in seed characteristics of L. purpureus in a continuum of different provenances from wild through semidomesticated/weedy forms to landraces and current cultivars, for enhancing the understanding of the domestication process of this legume crop."
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	"Weed of: Cucurbits/Melons" [Cited references do not document negative impacts to crops]

Qsn #	Question	Answer
201	**Species suited to tropical or subtropical climate(s) - If island is primarily wet habitat, then substitute "wet tropical" for "tropical or subtropical"**	**High**
	Source(s)	**Notes**
	Wagner, W.L., Herbst, D.R. & Sohmer, S.H. (1999). Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	"Probably native to tropical Asia, widely cultivated for its edible pods and seeds, easily escaping and widely naturalized throughout the tropics; ill Hawai'i cultivated and naturalized in dry to mesic, disturbed areas such as along roadsides and trails and abandoned homesites, 0-90(-1,190) m, probably on all of the main islands"

202	Quality of climate match data	Intermediate
	Source(s)	**Notes**
	Staples, G.W. & Herbst, D.R. (2005). A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	"Hyacinth bean has been cultivated and widely disseminated throughout Asia for centuries, and its place or origin is speculative at best."

203	Broad climate suitability (environmental versatility)	y
	Source(s)	**Notes**
	Lim, T.K. (2012). Edible Medicinal and Non-Medicinal Plants. Volume 2, Fruits. Springer, New York	"Hyacinth bean is a short day plant. It thrives in the temperature range 18-30°C with a minimum of 3°C. It has low frost tolerance, tolerating very light frosts. It is found from sea level to 2,000 m but prefers lower elevations. It is quite drought tolerant and will grow in areas with annual rainfall as low as 400 mm as it has a deep root system, the suitable rainfall regime is between 750 and 2,500 mm per annum."
	National Research Council. (2006). Lost Crops of Africa: Volume II: Vegetables. National Academies Press, Washington, D.C.	"Rainfall Lablab is suitable for growing as a rain-fed crop where the average annual rainfall is 600-900 mm. In India it is successfully grown commercially, with supplementary irrigation, in areas with a rainfall as low as 400 mm. It requires adequate moisture during the early stages of growth, after which its deep roots enable it to exploit residual soil moisture. When grown as a market-garden crop for the production of the immature pods it requires watering or frequent rains throughout its growing period. Seed production can be a problem in regions with high humidity. Altitude Locations up to and beyond 2,000 m have proved suitable for economic production, at least in equatorial nations such as Papua New Guinea. Low Temperature For optimum results, a warm, equable climate is required, with average temperatures between 18 and 30°C. Many lablab types withstand frost for a limited period, although it is liable to cause leaf damage. Lablab is both self- and bee-pollinated, and cooler weather at flowering time can affect seed-set. High Temperature Most–perhaps all–cultivars tolerate exceptional heat."

204	Native or naturalized in regions with tropical or subtropical climates	y
	Source(s)	**Notes**
	Wagner, W.L., Herbst, D.R. & Sohmer, S.H. (1999). Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	"Probably native to tropical Asia, widely cultivated for its edible pods and seeds, easily escaping and widely naturalized throughout the tropics; ill Hawai'i cultivated and naturalized in dry to mesic, disturbed areas such as along roadsides and trails and abandoned homesites, 0-90(-1,190) m, probably on all of the main islands"

205	Does the species have a history of repeated introductions outside its natural range?	y

Qsn #	Question	Answer
	Source(s)	**Notes**
	Lim, T.K. (2012). Edible Medicinal and Non-Medicinal Plants. Volume 2, Fruits. Springer, New York	"Hyacinth bean is widely cultivated in the tropics and subtropics particularly in India and southeast Asia, Egypt and Sudan. It is probably an ancient introduction to the Pacific islands."
	Wagner, W.L., Herbst, D.R. & Sohmer, S.H. (1999). Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	"Probably native to tropical Asia, widely cultivated for its edible pods and seeds, easily escaping and widely naturalized throughout the tropics; ill Hawai'i cultivated and naturalized in dry to mesic, disturbed areas such as along roadsides and trails and abandoned homesites, 0-90(-1,190) m, probably on all of the main islands"

301	Naturalized beyond native range	y
	Source(s)	**Notes**
	Wagner, W.L., Herbst, D.R. & Sohmer, S.H. (1999). Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	"Probably native to tropical Asia, widely cultivated for its edible pods and seeds, easily escaping and widely naturalized throughout the tropics; ill Hawai'i cultivated and naturalized in dry to mesic, disturbed areas such as along roadsides and trails and abandoned homesites, 0-90(-1,190) m, probably on all of the main islands"

302	Garden/amenity/disturbance weed	n
	Source(s)	**Notes**
	Cook, B.G. et al. (2020). Tropical Forages: An interactive selection tool. 2nd and Revised Edn. International Center for Tropical Agriculture (CIAT), Cali, Colombia and International Livestock Research Institute (ILRI), Nairobi, Kenya. www.tropicalforages.info	"Weed potential. None due to its short-lived nature and poor longevity of seed. Reported as a weed in cropped areas in some humid-tropical locations where individual plants may live up to 3 years, but no report as an environmental weed."

303	Agricultural/forestry/horticultural weed	
	Source(s)	**Notes**
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	"Weed of: Cucurbits/Melons" [References cited do not describe impacts to affected crops]
	Cook, B.G. et al. (2020). Tropical Forages: An interactive selection tool. 2nd and Revised Edn. International Center for Tropical Agriculture (CIAT), Cali, Colombia and International Livestock Research Institute (ILRI), Nairobi, Kenya. www.tropicalforages.info	"Weed potential: None due to its short-lived nature and poor longevity of seed. Reported as a weed in cropped areas in some humid-tropical locations where individual plants may live up to 3 years, but no report as an environmental weed." [Impacts to crops unspecified]

304	Environmental weed	n
	Source(s)	**Notes**
	National Research Council. (2006). Lost Crops of Africa: Volume II: Vegetables. National Academies Press, Washington, D.C.	"At least in theory a vigorous plant like this carries the possibility of invasiveness. However, there are no reports of serious problems in this regard. Indeed, lablab's palatability to cattle, goats, and other herbivores helps lessen the risk of it becoming a problem."
	Cook, B.G. et al. (2020). Tropical Forages: An interactive selection tool. 2nd and Revised Edn. International Center for Tropical Agriculture (CIAT), Cali, Colombia and International Livestock Research Institute (ILRI), Nairobi, Kenya. www.tropicalforages.info	"None due to its short-lived nature and poor longevity of seed. Reported as a weed in cropped areas in some humid-tropical locations where individual plants may live up to 3 years, but no report as an environmental weed."
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	"Weed of: Cucurbits/Melons" [References of environmental weeds cited for this species do not document any detrimental environmental impacts]

Qsn #	Question	Answer
305	Congeneric weed	n
	Source(s)	Notes
	Wagner, W.L., Herbst, D.R. & Sohmer, S.H. (1999). Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	"A monotypic Paleotropical genus, now widely cultivated and often naturalized in tropical areas"

401	Produces spines, thorns or burrs	n
	Source(s)	Notes
	Wagner, W.L., Herbst, D.R. & Sohmer, S.H. (1999). Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	"Climbing or creeping perennial herbs; stems up to 5 m long. Leaflets deltate-ovate, the lateral ones obliquely so, 2.5-15 cm long, 1.5-14 cm wide, glabrous or pubescent, apex acute to acuminate, base cuneate to truncate. Flowers in pseudoracemes 4-50 cm long; corolla white, blue, crimson, purple, or cream tinged mauve, the keel sometimes with a purple tip, standard 12-14 mm long. Pods 7.5-14 cm long, 2-3 cm wide, glabrate to pubescent, also with small dot-like tuberculate hairs. Seeds 2-4, white, red, or black, ovoid, laterally flattened, 10-12 mm long, 4-6 mm in diameter."

402	Allelopathic	
	Source(s)	Notes
	Rugare, J. T., Pieterse, P. J., & Mabasa, S. (2021). Allelopathic potential of green manure cover crops on germination and early seedling development of goose grass [Eleusine indica (L.) Gaertn] and blackjack (Bidens pilosa L.). International Journal of Agronomy, 2021(1), 6552928	[Possibly. Extracts exhibit allelopathic effects in petri dishes] "Green manure cover crops (GMCCs), which are recommended for improving soil fertility, also have the potential of reducing weed populations in cropping systems through allelopathy. ,e objective of this study was to evaluate the e4ect of eight GMCCs on the germination and seedling development of two weeds of divergent morphology, namely, goose grass [Eleusine indica (L.) Gaertn] and blackjack (Bidens pilosa L.). Aqueous leaf, stem, and root extracts of hyacinth bean (Lablab purpureus L), red sunnhemp [Crotalaria ochroleuca (G.) Don], showy rattlebox (Crotalaria grahamiana Wight & Arn.), common bean (Phaseolus vulgaris L.), common rattlepod (Crotalaria spectabilis Roth.), radish (Raphanus sativus L.), tephrosia (Tephrosia vogelii L.), and black sunnhemp (Crotalaria juncea L.) at 0, 1.25, 2.5, 3.75, and 5% wv−1 were applied to weed seeds in Petri dishes to determine their effect on germination, radicle and plumule growth, and germination vigor index. ,e experimental design was 3(tissue types) □ 5(concentrations) treatment combinations replicated four times in a completely randomized design. In the pot study, 25 seeds of either goose grass or blackjack were planted separately in approximately 400 g of soil mixed with cover crop tissue powder at 1% concentration per pot. ,e experimental design was cover crop residues + control replicated four times in randomized complete blocks. ,ere was a significant ($p < 0.05$) extract □ concentration interaction on all germination parameters across all GMCCs. ,e di4erent cover crop aqueous extracts di4erentially reduced all germination parameters of both weeds in the order leaf > stem > root extract except for radish root extracts being most inhibitory to all germination parameters of goose grass. ,e leaf, stem, and root soil-incorporated residues of GMCCs significantly ($p < 0.05$) a4ected seedling emergence, dry weight, and vigor indices of both weeds. Based on the results of this study, it was concluded that the di4erent GMCC tissues contain allelochemicals that inhibit the emergence of both monocotyledonous and dicotyledonous weeds."

403	Parasitic	n

Qsn #	Question	Answer
	Source(s)	**Notes**
	Wagner, W.L., Herbst, D.R. & Sohmer, S.H. (1999). Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	"Climbing or creeping perennial herbs; stems up to 5 m long." [Fabaceae. No evidence]

404	Unpalatable to grazing animals	n
	Source(s)	**Notes**
	Lim, T.K. (2012). Edible Medicinal and Non-Medicinal Plants. Volume 2, Fruits. Springer, New York	"Hyacinth bean provides a good forage/fodder crop for cattle, sheep, goats and pigs either green or as hay or silage. Incorporating the legume into grass pastures enhances the quality, palatability and digestibility of the pasture."
	Grubben, G.J.H. & Denton, O.A. (ed.). (2004). Plant Resources of Tropical Africa. Volume 2. Vegetables. PROTA, Wageningen, Netherlands	"The whole plant is used as a fodder for cattle, either green or as hay or silage. The stems are stronger and more fibrous than the similar cowpea, and animals tend to eat the leaves only and leave the stems. As an annual or short-lived perennial fodder crop it is grown in Australia on a large scale. In Africa it has been grown for the same purpose by large-scale farmers in Kenya and Zimbabwe, where lablab hay is fed to animals to supplement poor quality stover and hay. The dry seeds are also used as fodder, but their acceptability is low. In the 1920s, lablab was promoted in the Gezira scheme (Sudan) as a dual-purpose crop: fodder for livestock and seed for human consumption."

405	Toxic to animals	
	Source(s)	**Notes**
	Lim, T.K. (2012). Edible Medicinal and Non-Medicinal Plants. Volume 2, Fruits. Springer, New York	"Certain cultivars contain cyanogenic gylcoside which is poisonous."
	Grubben, G.J.H. & Denton, O.A. (ed.). (2004). Plant Resources of Tropical Africa. Volume 2. Vegetables. PROTA, Wageningen, Netherlands	"The dry seeds have a high content of toxic cyanogenic glucosides and trypsine. These toxic compounds are broken down by heat. The content of crude protein in the dry matter of the whole plant and in the leaves is 10-22% and 14.5-38.5%, respectively. As the lower values refer to aged plant material this is a clear indication that lablab can provide a valuable addition to a protein-poor diet of cattle. The leaves are free of tannins." [Seeds may be toxic]
	Cook, B.G. et al. (2020). Tropical Forages: An interactive selection tool. 2nd and Revised Edn. International Center for Tropical Agriculture (CIAT), Cali, Colombia and International Livestock Research Institute (ILRI), Nairobi, Kenya. www.tropicalforages.info	"Toxicity: Leaf does not contain anti-nutritive factors such as tannins. Mixed plantings with forage sorghum prevents the occurrence of bloat. Grain contains tannins, and phytate and trypsin inhibitors. Concentrations vary among varieties. Soaking or cooking reduces the activity of these compounds."
	WRA Specialist. (2024). Personal Communication	Potentially toxic to animals if consumed raw in large quantities. The seeds and pods contain cyanogenic glycosides, which can release hydrogen cyanide when chewed or digested. Symptoms of poisoning may include vomiting, diarrhea, difficulty breathing, and lethargy.

406	Host for recognized pests and pathogens	
	Source(s)	**Notes**

Qsn #	Question	Answer
	National Research Council. (2006). Lost Crops of Africa: Volume II: Vegetables. National Academies Press, Washington, D.C.	"Despite resisting attacks from Mexican bean beetles and other insects that devastate common bean, lablab is not immune to pests. Insects of the leaves, pods, flowers, and soil have proven serious in northern Australia, for example. And in Africa the neat little holes drilled by bruchid beetles are often seen in lablab seed. Similarly, although generally reported to be fairly resistant to disease, lablab is not immune from attack. Some cultivars, for instance, have proven susceptible to bean rust and fungal rot. Root-knot nematodes also can afflict this crop, sometimes seriously. And, in some African areas, the parasitic weed striga sucks the plant's juices and energy with as much gusto as on other crop species."
	Staples, G.W. & Herbst, D.R. (2005). A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	"Few pests or diseases bother this plant."
	Grubben, G.J.H. & Denton, O.A. (ed.). (2004). Plant Resources of Tropical Africa. Volume 2. Vegetables. PROTA, Wageningen, Netherlands	"In general, lablab suffers from the same pests and diseases as cowpea but it is more resistant. Anthracnose (Colletotrichum lindemuthianum) can cause serious crop losses; spraying with zineb or captan may give reasonable control. Leaf spot (Cercospora dolichi) and powdery mildew (Leveillula taurica var. macrospora) may also be troublesome and are controlled by spraying with fungicides. Xanthomonas phaseoli can cause severe defoliation in humid weather. Sclerotium rolfsii may cause rotting of the stem bases. In Asia several pests have been recorded on lablab: pod boring larvae (e.g. Adisura atkinsoni) are the most serious pest, which can be controlled by spraying with Bacillus thuringiensis preparations; in addition, army worm (Heliothis armigera), plume moth (Exelastis atomosa) and spotted podborer (Maruca testulalis) are of economic importance. Insect infestation during storage may be caused by bruchid beetles (Callosobruchus spp.), which also attack the crop in the field. Harvesting individual pods as soon as the seed is ripe reduces bruchid infestation. Lablab roots are attacked by several nematodes. There is lack of information \ on diseases and pests of lablab in Africa."

Qsn #	Question	Answer
407	Causes allergies or is otherwise toxic to humans	
	Source(s)	Notes
	Grubben, G.J.H. & Denton, O.A. (ed.). (2004). Plant Resources of Tropical Africa. Volume 2. Vegetables. PROTA, Wageningen, Netherlands	[Possibly, if consumed raw] "The most popular use of lablab in tropical Africa, e.g. in West Africa, Ethiopia and Malawi, is as a vegetable. The young green pods and immature seeds are eaten boiled. Locally, the young leaves are used as a leafy vegetable. Elsewhere, e.g. in northern Nigeria and Kenya , the dry seeds are eaten as a pulse although they require prolonged cooking with several changes of water. In Madagascar and Mauritius lablab is grown on a small scale for both the green and dry seeds. In Ethiopia lablab is grown locally as field crop for the dry seed. In East Africa the ripe seeds are appreciated by the Indian community, because it is popular as pulse in India." ... "The dry seeds have a high content of toxic cyanogenic glucosides and trypsine. These toxic compounds are broken down by heat."
	Quattrocchi, U. (2012). CRC World Dictionary of Medicinal and Poisonous Plants: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL	[Potentially] "Used in Ayurveda. Toxins, seeds contain poisonous glucoside destroyed by heat. Leaves used for diarrhea, nausea, vomiting, leucorrhea, earache; leaves decoction given in bleeding piles; bruise the leaves and apply to draw out the heat and pain of burns; leaves juice to treat ringworm; leaf paste in scabies and skin diseases. Seeds febrifuge, stomachic, antiseptic, aphrodisiac; seed powder with milk to cure leucorrhea. Root decoction drunk as wormicide; old roots decoction with salt used to cure cough; roots for poisoning wild animals. Tender fruits cooked and eaten for diabetes. An important traditional food, served to mothers after childbirth, said to increase mother's milk. Ceremonial.) "

408	Creates a fire hazard in natural ecosystems	n
	Source(s)	Notes
	Grubben, G.J.H. & Denton, O.A. (ed.). (2004). Plant Resources of Tropical Africa. Volume 2. Vegetables. PROTA, Wageningen, Netherlands	"In the wild lablab occurs in grassland, bushland and gallery forest, up to 2400 m altitude. It is normally a short-day plant, but day-neutral and long-day cultivars exist. Lablab prefers lower elevations but it can thrive well up to 2100 m altitude. The temperature requirement for good growth ranges from 22-35°C. Light frost damages the leaves but does not kill the plants. It grows rainfed in areas with a rainfall of 750-2500 mm/year. " [No evidence from native range]

409	Is a shade tolerant plant at some stage of its life cycle	n
	Source(s)	Notes
	Cook, B.G. et al. (2020). Tropical Forages: An interactive selection tool. 2nd and Revised Edn. International Center for Tropical Agriculture (CIAT), Cali, Colombia and International Livestock Research Institute (ILRI), Nairobi, Kenya. www.tropicalforages.info	"Grows best in full light; intolerant of moderate to heavy shading."
	Lim, T.K. (2012). Edible Medicinal and Non-Medicinal Plants. Volume 2, Fruits. Springer, New York	"It is intolerant of moderate to heavy shading."

410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	y
	Source(s)	Notes

Qsn #	Question	Answer
	Cook, B.G. et al. (2020). Tropical Forages: An interactive selection tool. 2nd and Revised Edn. International Center for Tropical Agriculture (CIAT), Cali, Colombia and International Livestock Research Institute (ILRI), Nairobi, Kenya. www.tropicalforages.info	"Grows in a wide range of soils from deep sands to heavy clays, provided drainage is good, and from pH 4.5 to 7.5. Low salinity tolerance with symptoms being chlorotic leaves, reduced growth and plant death. "
	Lim, T.K. (2012). Edible Medicinal and Non-Medicinal Plants. Volume 2, Fruits. Springer, New York	"It is an extremely adaptable crop growing on a wide range of soils from light sandy soils, alluvial to heavy soils with a pH range of 4.5-8. It prefers well-drained soils and abhors water-logged conditions and brackish (saline) waters. It occurs on the coast; in sand, loam, clay; occupying coastal areas, hills, cleared farmland, rubbish tips; growing in cropland, on wasteland, in disturbed natural vegetation and in gardens."
	Grubben, G.J.H. & Denton, O.A. (ed.). (2004). Plant Resources of Tropical Africa. Volume 2. Vegetables. PROTA, Wageningen, Netherlands	"Lablab grows in a variety of soils ranging from deep sands to heavy clays and from acid to alkaline (pH 4.4–7.8) as well as in aluminous soil. It does not tolerate standing brackish water or waterlogging. Provided drainage is good, lablab is tolerant of poor soil texture."

411	Climbing or smothering growth habit	y
	Source(s)	**Notes**
	Wagner, W.L., Herbst, D.R. & Sohmer, S.H. (1999). Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	"Climbing or creeping perennial herbs; stems up to 5 m long."

412	Forms dense thickets	n
	Source(s)	**Notes**
	Wagner, W.L., Herbst, D.R. & Sohmer, S.H. (1999). Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	"Climbing or creeping perennial herbs; stems up to 5 m long." [No evidence]
	National Research Council. (2006). Lost Crops of Africa: Volume II: Vegetables. National Academies Press, Washington, D.C.	"Lablab provides a very dense cover but not right on the surface of the soil. Beneath the canopy there is enough space for water to wash through and (especially on sloping land) cause erosion."

501	Aquatic	n
	Source(s)	**Notes**
	Wagner, W.L., Herbst, D.R. & Sohmer, S.H. (1999). Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	[Terrestrial] "ill Hawai'i cultivated and naturalized in dry to mesic, disturbed areas such as along roadsides and trails and abandoned homesites, 0-90(-1,190) m"

502	Grass	n
	Source(s)	**Notes**
	USDA, Agricultural Research Service, National Plant Germplasm System. (2024). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/gringlobal/taxon/taxonomysearch. [Accessed 30 Sep 2024]	"Family: Fabaceae (alt. Leguminosae) Subfamily: Faboideae Tribe: Phaseoleae Subtribe: Phaseolinae"

503	Nitrogen fixing woody plant	n

Qsn #	Question	Answer
	Source(s)	Notes
	Lim, T.K. (2012). Edible Medicinal and Non-Medicinal Plants. Volume 2, Fruits. Springer, New York	"It is vigorous and fast growing plant and has Rhizobium bacteria in its root nodules which enrich the soil with nitrogen, making it an excellent green manure crop." [N-fixing perennial herb]

504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	n
	Source(s)	Notes
	Grubben, G.J.H. & Denton, O.A. (ed.). (2004). Plant Resources of Tropical Africa. Volume 2. Vegetables. PROTA, Wageningen, Netherlands	"Climbing or bushy perennial herb, often grown as an annual; taproot well developed, with many lateral roots; stem up to 6 m long"

601	Evidence of substantial reproductive failure in native habitat	n
	Source(s)	Notes
	Grubben, G.J.H. & Denton, O.A. (ed.). (2004). Plant Resources of Tropical Africa. Volume 2. Vegetables. PROTA, Wageningen, Netherlands	"Lablab occurs wild in tropical Africa (including Madagascar) and India. Opinions on the region of first domestication vary. It is often stated that it originates as a crop from India or south-eastern Asia, but a north-eastern African origin is more likely because in large parts of tropical Africa wild and cultivated lablab coexist. In Africa it was dispersed by man probably as early as 800 B.C. and it is now found throughout the continent. It is locally cultivated in most tropical areas of South and Central America, South and South East Asia and Australia."

602	Produces viable seed	y
	Source(s)	Notes
	Grubben, G.J.H. & Denton, O.A. (ed.). (2004). Plant Resources of Tropical Africa. Volume 2. Vegetables. PROTA, Wageningen, Netherlands	"Lablab is propagated by seed, either broadcast or sown in rows. Germination takes about 5 days. Germination is faster when seeds are soaked in water for 4 hours. The weight of 1000 seeds is 250-500 g, in wild plants 50-120 g. Some 3-4 seeds per hole are sown on flat terrain or on ridges, at a depth of 2-5 cm and at a spacing of 30-45 cm between holes and 60-100 cm between rows. The seed rate required is 30-50 kg/ha; in Australia 15-30 kg/ha is recommended. When grown as a field crop, lablab can be established by broadcasting into roughly ploughed land if the seed is covered to some extent. However, it is usually sown in rows."
	Cook, B.G. et al. (2020). Tropical Forages: An interactive selection tool. 2nd and Revised Edn. International Center for Tropical Agriculture (CIAT), Cali, Colombia and International Livestock Research Institute (ILRI), Nairobi, Kenya. www.tropicalforages.info	"Percentage of hard seed is very low and no scarification is required. Complete cultivation is used for lablab monocultures with seeding rates of between 12 and 20 kg/ha. Rows should be 80-120 cm apart, with 30-50 cm between plants. Seed can be planted to a depth of 3-10 cm. Will establish readily when sown into subsurface moisture to a depth of at least 7-10 cm. When planted with grasses, seed rates should be 5-8 kg/ha. Will not establish readily into existing pastures without some form of soil disturbance. Provided seed is of good quality, germination should be rapid and uniform as commercial cultivars have soft seed and require no scarification. Lablab does not always nodulate well with native strains of rhizobia but some virgin soils in sub-tropical Australia appear to have suitable native rhizobia populations, which have resulted in good growth without inoculation of seed. Nevertheless it is recommended to be sown with the appropriate lablab rhizobia strain which in Australia is Group J (CB 1024)."

Qsn #	Question	Answer
	National Research Council. (2006). Lost Crops of Africa: Volume II: Vegetables. National Academies Press, Washington, D.C.	"The lablab plant looks somewhat like cowpea and can be grown in a like manner. Although in the tropics the plant persists two or three years (if well watered) it mostly acts as an annual. When grown for food, lablab is usually sown in rows, either alone or mixed with crops such as maize, beans, potatoes, peas, and bananas. Normally, the seeds are directly planted into the soil of the field, kitchen garden, or fence line where the crop will grow. Germination is rapid, but establishing a good stand requires continuous soil moisture. Typically, several seeds are sown in each hole and the seedlings are left unthinned. The resulting dense growth tends to suffocate weeds."

603	Hybridizes naturally	n
	Source(s)	**Notes**
	Wagner, W.L., Herbst, D.R. & Sohmer, S.H. (1999). Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	"A monotypic Paleotropical genus, now widely cultivated and often naturalized in tropical areas" [No evidence of intergeneric hybridization].

604	Self-compatible or apomictic	y
	Source(s)	**Notes**
	Grubben, G.J.H. & Denton, O.A. (ed.). (2004). Plant Resources of Tropical Africa. Volume 2. Vegetables. PROTA, Wageningen, Netherlands	"Flowers are mainly cross-pollinated, but the degree of self-pollination is considerable."
	National Research Council. (2006). Lost Crops of Africa: Volume II: Vegetables. National Academies Press, Washington, D.C.	"Lablab is both self- and bee-pollinated, and cooler weather at flowering time can affect seed-set."
	Cook, B.G. et al. (2020). Tropical Forages: An interactive selection tool. 2nd and Revised Edn. International Center for Tropical Agriculture (CIAT), Cali, Colombia and International Livestock Research Institute (ILRI), Nairobi, Kenya. www.tropicalforages.info	"Lablab is predominantly self-fertilizing."

605	Requires specialist pollinators	n
	Source(s)	**Notes**
	Delaplane, K. S. (2023). Crop Pollination by Bees, Volume 2: Individual Crops and their Bees, 2nd Edition. CABI, Wallingford, UK	"Insects appear to play a negligible, albeit modestly facilitating role in L. purpureus pollination. They are first and foremost facilitators of selfing, helping bridge the spatial gap between dehisced anthers and receptive self-stigmas. They likely contribute to floral crossing with non-self-pollen; however, the relative quantity of this contribution and its effects on economic outcomes are virtually unknown. K11own bee visitors to hyacinth bean include a species of carpenter bee, Xylocopa spp., in the West Indies (Harland, 1920). A survey in a hyacinth bean plantation near Bangalore, India recorded 1390 insects representing 4 7 families. The three most heavily represented families were flies, constituting 56% of all visitors."
	National Research Council. (2006). Lost Crops of Africa: Volume II: Vegetables. National Academies Press, Washington, D.C.	"Lablab is both self- and bee-pollinated, and cooler weather at flowering time can affect seed-set."

606	Reproduction by vegetative fragmentation	n
	Source(s)	**Notes**

Qsn #	Question	Answer
	Cook, B.G. et al. (2020). Tropical Forages: An interactive selection tool. 2nd and Revised Edn. International Center for Tropical Agriculture (CIAT), Cali, Colombia and International Livestock Research Institute (ILRI), Nairobi, Kenya. www.tropicalforages.info	"Ability to spread - Will not spread naturally under grazing. May volunteer in subsequent crops but this is usually only for one year because of the low level of hard seed." [No evidence of spread by vegetative means]

607	Minimum generative time (years)	1
	Source(s)	**Notes**
	Cook, B.G. et al. (2020). Tropical Forages: An interactive selection tool. 2nd and Revised Edn. International Center for Tropical Agriculture (CIAT), Cali, Colombia and International Livestock Research Institute (ILRI), Nairobi, Kenya. www.tropicalforages.info	"Being an annual or weak perennial, lablab flowers and sets seed in the first season of growth."
	Grubben, G.J.H. & Denton, O.A. (ed.). (2004). Plant Resources of Tropical Africa. Volume 2. Vegetables. PROTA, Wageningen, Netherlands	"Short-day cultivars of lablab start flowering as early as 42 days after sowing depending on sowing date. Flowers are mainly cross-pollinated, but the degree of self-pollination is considerable. Improved cultivars start fruiting 60-65 days after sowing and continue for 90-120 days. Mature seeds are harvested 150-210(-300) days after sowing depending on cultivar and time of sowing."

701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	
	Source(s)	**Notes**
	Wagner, W.L., Herbst, D.R. & Sohmer, S.H. (1999). Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	[Possibly. Seeds lack means of attachment, but occurrence along roads and trails suggests some dispersal may occur] "Pods 7.5-14 cm long, 2-3 cm wide, glabrate to pubescent, also with small dot-like tuberculate hairs. Seeds 2-4, white, red, or black, ovoid, laterally flattened, 10-12 mm long, 4-6 mm in diameter." ... "ill Hawai'i cultivated and naturalized in dry to mesic, disturbed areas such as along roadsides and trails and abandoned homesites"

702	Propagules dispersed intentionally by people	y
	Source(s)	**Notes**
	Lim, T.K. (2012). Edible Medicinal and Non-Medicinal Plants. Volume 2, Fruits. Springer, New York	"Hyacinth bean is widely cultivated in the tropics and subtropics particularly in India and southeast Asia, Egypt and Sudan. It is probably an ancient introduction to the Pacific islands."
	Staples, G.W. & Herbst, D.R. (2005). A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	"Hyacinth bean was introduced quire early to Hawai'i; the first herbarium specimen dates from 1864-65, and by the 1880smit was widely dispersed through the islands."
	Wagner, W.L., Herbst, D.R. & Sohmer, S.H. (1999). Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	"Probably native to tropical Asia, widely cultivated for its edible pods and seeds, easily escaping and widely naturalized throughout the tropics; ill Hawai'i cultivated and naturalized in dry to mesic, disturbed areas such as along roadsides and trails and abandoned homesites, 0-90(-1,190) m, probably on all of the main islands"

703	Propagules likely to disperse as a produce contaminant	
	Source(s)	**Notes**
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	[Possibly yes, as a cultivated crop] "Major Pathway/s: Contaminant, Crop, Herbal, Ornamental, Pasture Dispersed by: Humans, Escapee"

704	Propagules adapted to wind dispersal	n

Qsn #	Question	Answer
	Source(s)	Notes
	Wagner, W.L., Herbst, D.R. & Sohmer, S.H. (1999). Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	"Pods 7.5-14 cm long, 2-3 cm wide, glabrate to pubescent, also with small dot-like tuberculate hairs. Seeds 2-4, white, red, or black, ovoid, laterally flattened, 10-12 mm long, 4-6 mm in diameter." [No adaptations for wind dispersal]

705	Propagules water dispersed	n
	Source(s)	Notes
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	"Major Pathway/s: Contaminant, Crop, Herbal, Ornamental, Pasture Dispersed by: Humans, Escapee"

706	Propagules bird dispersed	n
	Source(s)	Notes
	Wagner, W.L., Herbst, D.R. & Sohmer, S.H. (1999). Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	"Pods 7.5-14 cm long, 2-3 cm wide, glabrate to pubescent, also with small dot-like tuberculate hairs. Seeds 2-4, white, red, or black, ovoid, laterally flattened, 10-12 mm long, 4-6 mm in diameter." [Not fleshy-fruited]

707	Propagules dispersed by other animals (externally)	n
	Source(s)	Notes
	Wagner, W.L., Herbst, D.R. & Sohmer, S.H. (1999). Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	"Pods 7.5-14 cm long, 2-3 cm wide, glabrate to pubescent, also with small dot-like tuberculate hairs. Seeds 2-4, white, red, or black, ovoid, laterally flattened, 10-12 mm long, 4-6 mm in diameter." [No means of external attachment]

708	Propagules survive passage through the gut	n
	Source(s)	Notes
	Gardener, C.J., McIvor, J.G. & Jansen, A. (1993). Survival of Seeds of Tropical Grassland Species Subjected to Bovine Digestion. Journal of Applied Ecology 30(1): 75-85	"Only hard seed and a small amount of germinating seed was viable after digestion. The rest either disintegrated in the nylon bags during digestion, or rotted during the germination test. For the two species with all soft seed, Cajanus cajan and Lablab purpureus, no seeds survived."

801	Prolific seed production (>1000/m2)	
	Source(s)	Notes
	Cook, B.G. et al. (2020). Tropical Forages: An interactive selection tool. 2nd and Revised Edn. International Center for Tropical Agriculture (CIAT), Cali, Colombia and International Livestock Research Institute (ILRI), Nairobi, Kenya. www.tropicalforages.info	"Intermittent flowering and pod production in the forage types. Grain maturation on the forage cultivars is not uniform but crop landrace types have more synchronous maturity. High grain yields of 1-2.5 t/ha of forage types, depending on cultivar, but when grown on trellises in smallholder systems the grain yields can be far greater. In mixtures with other crops, grain yields 0.5 t/ha. Late seeding varieties (e.g. cv Rongai) may be affected by early frosts."

802	Evidence that a persistent propagule bank is formed (>1 yr)	
	Source(s)	Notes
	Grubben, G.J.H. & Denton, O.A. (ed.). (2004). Plant Resources of Tropical Africa. Volume 2. Vegetables. PROTA, Wageningen, Netherlands	"Seed stored under commercial storage conditions maintains its viability for 3-4 years." [Longevity under natural conditions unknown]

Qsn #	Question	Answer
	Cook, B.G. et al. (2020). Tropical Forages: An interactive selection tool. 2nd and Revised Edn. International Center for Tropical Agriculture (CIAT), Cali, Colombia and International Livestock Research Institute (ILRI), Nairobi, Kenya. www.tropicalforages.info	"Weed potential - None due to its short-lived nature and poor longevity of seed."

803	Well controlled by herbicides	y
	Source(s)	**Notes**
	Cook, B.G. et al. (2020). Tropical Forages: An interactive selection tool. 2nd and Revised Edn. International Center for Tropical Agriculture (CIAT), Cali, Colombia and International Livestock Research Institute (ILRI), Nairobi, Kenya. www.tropicalforages.info	"Lablab is highly sensitive to 2,4-D, M.C.P.A., 2,4-D-B and dicamba."

804	Tolerates, or benefits from, mutilation, cultivation, or fire	y
	Source(s)	**Notes**
	Cook, B.G. et al. (2020). Tropical Forages: An interactive selection tool. 2nd and Revised Edn. International Center for Tropical Agriculture (CIAT), Cali, Colombia and International Livestock Research Institute (ILRI), Nairobi, Kenya. www.tropicalforages.info	"Three harvests possible from annual types, but will not stand heavy grazing of stems. For green manure, the crop should be cut before flower initiation. More tolerant of grazing than cowpea, and more harvests possible. As a forage, the crop should be utilised before flowering. Fire Intolerant of fire."

805	Effective natural enemies present locally (e.g. introduced biocontrol agents)	
	Source(s)	**Notes**
	Staples, G.W. & Herbst, D.R. (2005). A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	"Few pests or diseases bother this plant." [Possibly No]

Summary of Risk Traits:

Lablab purpureus (hyacinth bean) is an annual or short-lived perennial, scandent (twining) or trailing herb believed to be native to the Old World tropics. It is one of the most diverse domesticated legume species and has multiple uses. Hyacinth bean is widely cultivated in the tropics and subtropics particularly in India and southeast Asia, Egypt and Sudan and is probably an ancient introduction to the Pacific islands. In the Hawaiian Islands it is cultivated and naturalized in dry to mesic, disturbed areas such as along roadsides and trails and abandoned homesites, from sea level to over 1000 m elevation, on all the main islands. It has a long history of cultivation in Hawaii and is not reported to have any serious negative impacts where grown or naturalized.

High Risk / Undesirable Traits
• Broad elevation range
• Thrives and spreads in regions with tropical climates
• Widely naturalized, including the main Hawaiian Islands
• Sometimes reported as a weed of certain crops, but impacts to yield are not documented
• Extracts demonstrate allelopathic effects
• Seeds have a high content of toxic cyanogenic glucosides and trypsine (these toxic compounds are broken down by heat)
• Tolerates many soil types (spread not limited by substrate)
• Climbing and potentially smothering growth habit
• Reproduces by seed
• Self-fertile (both self- and bee-pollinated)
• Reaches maturity in one growing season
• Seeds dispersed by gravity, possibly accidentally along roads, trails, or as a soil contaminant, and through intentional cultivation

• Tolerant of repeated cutting and grazing

Low Risk Traits
• No reports of serious negative impacts where cultivated or naturalized
• Unarmed (no spines, thorns, or burrs)
• Provides fodder for livestock and seed for human consumption (cooked)
• Intolerant of moderate to heavy shading (may inhibit spread)
• Not reported to spread vegetatively
• Relatively large seeds lack adaptations for long-distance dispersal
• Herbicides may provide effective control if needed